Annex list

ANNUAL SAFETY RECOMMENDATIONS REVIEW 2018

Annex A

List of 2018 Safety Recommendations Replies

ANNUAL SAFETY RECOMMENDATIONS REVIEW 2018

Australia

Registration	Aircraft Type	Location	Date of event	Event Type
VH-OQA	AIRBUS A380	Singapore Aerodrome 144° M 33K	04/11/2010	Accident

Synopsis of the event:
On 4 November 2010, while climbing through 7,000 ft after departing from Changi Airport, Singapore, the Airbus A380 registered VH-OQA, sustained an uncontained engine rotor failure (UERF) of the No. 2 engine, a Rolls-Royce Trent 900. Debris from the UERF impacted the aircraft, resulting in significant structural and systems damage.
The flight crew managed the situation and, after completing the required actions for the multitude of system failures, safely returned to and landed at Changi Airport.

Safety Recommendation ASTL-2013-039 (ATSB):

The Australian Transport Safety Bureau recommends that the European Aviation Safety Agency, in cooperation with the US Federal Aviation Administration, review the damage sustained by Airbus A380-842, VH-OQA following the uncontained engine rotor failure overhead Batam Island, Indonesia, to incorporate any lessons learned from this accident into the advisory material.

Reply No 2 sent on 26/06/2018:

EASA is cooperating with the FAA to take into account the lessons learnt from this accident and other uncontained engine rotor failures in revisions of FAA AC 20-128A and EASA AMC 20-128A.

An expansion of the compliance demonstration for small fragments is envisaged.
FAA is leading this activity with the drafting of the revision to their advisory circular, and EASA will seek harmonisation.

The next step in the process is the public consultation by the FAA of a proposed revision to AC 20-128A, currently estimated to take place in Q3/2018.

Status: Open

Austria

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

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

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

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

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

Safety Recommendation AUST-2013-006 (VERSA):

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

Reply No 2 sent on 08/02/2018:
Current Certification Specification (CS) 25.729 (e) requires that a position indicator and warning device of the landing gear system are triggered when any landing gear component is in an unintended position.

Moreover, (CS) 25.1585 (a)(3) demands that operating procedures be furnished for "emergency procedures for foreseeable but unusual situations in which immediate and precise action by the crew may be expected to substantially reduce the risk of catastrophe".

Also, (CS) 25.1585 (b) prescribes that "Information or procedures not directly related to airworthiness or not under the control of the crew, must not be included, nor must any procedure that is accepted as basic airmanship”. In addition, in accordance with Acceptable Means of Compliance (AMC) 25.1581, the primary purpose of the EASA approved AFM is to provide an authoritative and concise source of information considered to be necessary for safely operating the aeroplane.

The combination of applicable certification specifications and approved manufacturer procedures should allow the flight crew to land the aeroplane safely with any or all of its landing gear components retracted or damaged.

Considering that manufacturers’ checklists should be safe and concise, including “all available options for observation and control of components” might introduce elements which would unduly increase the flight crew workload without any clear beneficial effect. In essence, the Agency considers that the flight crew should focus on their flight tasks.

Consequently, EASA considers that no further actions are necessary.

Status: Closed – **Category:** Disagreement

Austria

Registration	Aircraft Type	Location	Date of event	Event Type
	CESSNA 414	Ellbögen,Bezirk Innsbruck Land, Tirol	30/09/2012	Accident

Synopsis of the event:
Am Unfalltag startete der Pilot mit sieben Passagieren vom Flughafen Innsbruck zu einem Sichtflug nach Valencia. Am Flughafen Innsbruck herrschten Sichtflugwetterbedingungen. Nach dem Start auf der Piste 26 flog der Pilot in einen linken Gegenabflug und anschließend in das Wipptal Richtung Brennerpass ein. Im Gemeindegebiet von Ellbögen kollidierte das Luftfahrzeug in dichtem Nebel mit ansteigendem Gelände. Es brach ein Brand aus. Der Pilot und fünf Passagiere erlitten tödliche Verletzungen, zwei Passagiere wurden schwer verletzt. Das Luftfahrzeug wurde zerstört.
Die Untersuchungen ergaben, dass der Pilot im Besitz eines gültigen Privatpilotenscheines ohne Instrumentenflugberechtigung war. Das Luftfahrzeug wurde nicht im Rahmen eines Luftverkehrsbetreiberzeugnisses betrieben. Der Flug war entgeltlich und der Pilot war in Instrumentenflugwetterbedingungen eingeflogen.
Trotz umfangreicher und detaillierter Untersuchungen wurden keinerlei Hinweise auf vorbestandene unfallkausale technische Mängel festgestellt.

Safety Recommendation AUST-2015-003 (VERSA):

[German] - SE/UUB/ZLF/04/2015, ergeht an die EASA.
Ergreifung von Maßnahmen die sicherstellen, dass Signale von Notsendern nach unfallbedingten Aufschlägen von Luftfahrzeugen auch empfangen werden können:
Beim gegenständlichen Aufschlag des Luftfahrzeuges an der Unfallstelle wurde der Notsender aktiviert und sendete bis zu seinem Abschalten über einen Zeitraum von 52 Stunden Notsignale. Da aber die beiden, links und rechts neben der Seitenflossenstrake angebrachten Stabantennen unfallbedingt abbrachen, waren die ausgesendeten Signale so schwach, dass sie nur im Umkreis von einigen Metern empfangen hätten werden können. Da jedoch dieser Unfall zufälligerweise von Ohrenzeugen in alpinem Gelände beobachtet wurde, konnte derUnfallort lokalisiert und die schwer verletzten Überlebenden gerettet werden. Auf Grund der Wetterlage hätten Suchflüge das Wrack weder visuell und auf Grund der abgebrochenen Notsenderantennen auch nicht elektronisch orten können.
Bei unfallbedingten Aufschlägen von Luftfahrzeugen wird oftmals die Verbindung zwischen Notsender und Notsenderantenne(n) unterbrochen oder brechen, wie im gegenständlichen Fall herkömmliche Notsenderstabantennen ab. Damit können die von den aber noch intakten Notsendern ausgesendeten Signale von den dafür vorgesehenen Stellen nicht mehr empfangen werden. Auf diesen Umstand weist die SUB/ZLF im Zuge der Untersuchung von Flugunfällen seit Jahren hin. Da nach unfallbedingten Aufschlägen von Luftfahrzeugen Signale von Notsendern von den dafür vorgesehenen Stellen oftmals nicht empfangen werden können, soll die EASA geeignete Maßnahmen setzen die nach Flugunfällen die Aussendung von brauchbaren Notsignalen von Notsendern verbessern, (durch Verwendung von Antennen, die möglichen Unfällen besser standhalten können; durch Einführung von automatisch aktivierten Notsendern, die bereits vor dem Aufschlag Notsignale senden; etc.). Durch die lange Lebensdauer von Luftfahrzeugen sollen dabei auch Maßnahmen gesetzt werden, die nach Flugunfällen die Aussendung von brauchbaren Notsignalen bereits zertifizierter und in Betrieb befindlicher Luftfahrzeuge verbessern, (durch Verwendung von Antennen, die möglichen Unfällen besser standhalten können; etc.)

Reply No 2 sent on 28/09/2018:
Broken emergency locator transmitter (ELT) antennas are known to be one of the issues preventing correct operation of ELT following an accident.

On 12th December 2016, EASA published the Certification Memorandum (CM) "Installation of ELTs" (CM-AS-008), which provides guidance for the installation of ELTs and recommendations for the maintenance procedures to improve the reliability of ELTs. This CM deals with those issues related to the installation and maintenance of the system that are out of the scope of the European Technical Standard Order ETSO-C126b "406 and 121.5 MHz Emergency Locator Transmitter" approval, and are specific to the installation on the aircraft, mainly for helicopters and general aviation aeroplanes.

In addition, EASA is participating in and supporting the joint EUROCAE WG98/RTCA SC-229, which aims at improving ED-62B/DO-204B "Minimum Operational Performance Specification for Aircraft Emergency Locator Transmitters 406 MHz and 121.5 MHz (Optional 243 MHz)". Among the tasks of this joint working group is the improvement of the robustness to crash, through more stringent testing, and improved installation recommendations. This will trigger the amendment of ETSO-C126c, which is expected to be published as part of Rulemaking Task RMT.0457 (regular update of CS-ETSO) by mid-2019.

The same EUROCAE group produced ED-237 "Minimum Aviation System Performance Specification For Criteria To Detect In-Flight Aircraft Distress Events To Trigger Transmission Of Flight Information", which was published on 1st February 2016 and contains criteria for the automatic transmission when flight parameters permit to anticipate an imminent crash. This will allow transmission of an alert before the crash environment alters the beacon performance.

Status: Open

Austria

Registration	Aircraft Type	Location	Date of event	Event Type
	BELL 47G	near Pertisau, approx. 25 kilometres north-east of the departure point	10/05/2017	Accident

Synopsis of the event:
Der Pilot und sein Passagier flogen mit einem Helikopter der Type Westland-Bell 47G-3B-1 am 10.05.2017 um ca. 09:33 Uhr UTC vom Flughafen Innsbruck zu einem Selbstkostenflug nach Sichtflugregeln (VFR) ab.
Der Flugweg führte durch das Inntal, in das Gerntal danach in das Falzthurntal. Ungefähr 260 m nach dem Alpengasthof Gramaialm kollidierte der Helikopter in einer Höhe von ca. 75 m AGL mit dem Zugseil der Materialseilbahn Gramaialm. Der Helikopter stürzte zu Boden und geriet in Brand. Beide Insassen wurden tödlich verletzt, am Helikopter entstand Totalschaden.
Es entstand Flurschaden sowie Beschädigung am Zugseil der Materialseilbahn.

Safety Recommendation AUST-2018-004 (VERSA):

[German] - ergeht an: EASA
Um Unfälle aufgrund eines kontrollierten Fluges ins Gelände (CFIT) zu verhindern, müssen Piloten in der Lage sein, ihre Flugvorbereitungen und Routenentscheidungen richtig durchzuführen.
Eine gründliche Geländebewertung ist, unabhängig davon, ob der Pilot mit dem Gebiet nicht, wenig oder gut vertraut ist, unerlässlich.
Computer-Flugplanungsprogramme können die Flugvorbereitung zusätzlich zu der Verwendung von genehmigten Flugkarten unterstützen.
Die topographische Analyse sollte den Abflugbereich, den Steigflugbereich, den Reiseflugbereich, den Sinkflugbereich sowie den Ankunftsflughafen und seine Umgebung berücksichtigen.
Darauf sollte in der Ausbildung und wiederkehrenden Überprüfung von Piloten verstärkt hingewiesen und wo notwendig, die Ausbildungs- bzw. Prüfungsdokumentationen ergänzt werden.

Reply No 1 sent on 19/07/2018:
The Agency enables the use of software for flight planning and published Opinion 10/2017 to introduce proportionate requirements for the use of EFBs in general aviation (NCO), non-commercial operations with complex motor-powered aircraft (NCC), and commercial specialised operations (SPO)/SPO with complex motor-powered aircraft (CMPA) operators.

The Agency supports the proper use of software for flight preparation but emphasises that the pilot shall still fly in accordance with the rules and check the Air Information Publication and NOTAM to ensure the safety of the flight. Commission Implementing Regulation (EU) No 923/2012 on the common rules of the air requires in “SERA.5005(f)(2) - Visual flight rules” that, except when necessary for take-off or landing, or except by permission from the competent authority, a VFR flight shall not be flown at a height less than 150m (500ft) above the ground or water or 150m (500ft) above the highest obstacle within a radius of 150m (500ft) from the aircraft.

Flight preparation, navigation planning and decisions making are part of the training, testing and checking for all licensed pilots in Annex I (Part-FCL) to Commission Regulation (EU) No 1178/2011. The training requirements are proportionate to the risks and complexity of the operation.

Flight preparation for non-commercial operation on other than complex motor-powered aircrafts is described in NCO.OP.135. When engaged in commercial operation, the requirements are more stringent and the flight crew member designated to act as commander should have adequate knowledge of the route or area to be flown and of the aerodromes, including alternate aerodromes, facilities and procedures to be used (ORO.FC.105).

Status: Closed – **Category:** Agreement

Austria

Registration	Aircraft Type	Location	Date of event	Event Type
	LET L13	Gemeindegebiet Glainach, Kärnten	12/06/2010	Accident

Synopsis of the event:
Nach Absolvierung eines Segelkunstflugprogramms brach der Hauptholm der rechten Tragfläche des Segelflugzeugs nahe der Flügelwurzel unter positiver Last. Die rechte Tragfläche löste sich vom Rumpf und die Besatzung verlor die Kontrolle über das Luftfahrzeug. Die Besatzung erlitt tödliche Verletzungen. Das Luftfahrzeug wurde zerstört.
Dem Flügelbruch ging ein Versagen des Hauptholmuntergurts voraus, das auf Festigkeitsverlust des Werkstoffs der Gurtbänder und auf Ermüdungsrisse in den Nietbohrungen der Gurtbänder mit rauen Bohrungsoberflächen und Bearbeitungsriefen zurückführbar war.
Zum Flügelbruch haben Mängel bei der Instandhaltung und unzureichende Überwachung der Aufrechterhaltung der Lufttüchtigkeit (Continuing Airworthiness) beigetragen.

Safety Recommendation AUST-2018-007 (VERSA):

[German] - Ergeht an den Entwurfsstaat und an den Inhaber der Musterzulassung von L13 Blanik Segelflugzeugen:
Die Anforderungen an die zu führenden Aufzeichnungen über die Aufrechterhaltung der Lufttüchtigkeit (Continuing Airworthiness) von L13 Blanik Segelflugzeugen ist in Anhang I (Teil-M) der Verordnung (EU) Nr. 1321/2014 idgF, Punkt M.A.305, geregelt, welche die Führung eines Luftfahrzeug-Bordbuchs und von Aufzeichnungen über den aktuellen Stand der Komponenten mit Lebensdauerbegrenzung vorsehen.
Die zu führenden Aufzeichnungen über den aktuellen Stand der Komponenten mit Lebensdauerbegrenzung von L13 Blanik Segelflugzeugen erfordern in Hinblick auf die für die sichere Lebensdauer von L 13 Blanik Segelflugzeugen maßgeblichen Betriebsbedingungen (Average Operation Conditions) über jeden Flug vollständige Angaben im Luftfahrzeug-Bordbuch über die relevanten Flugzeiten und –zyklen und sonstige Angaben, die für die Aufrechterhaltung der Lufttüchtigkeit notwendig sind.
In den Betriebsanweisungen für L13 Blanik Segelflugzeugen sollte ersichtlich sein, welche Angaben über jeden Flug das Luftfahrzeug-Bordbuch zu enthalten hat, um die Überwachung und Einhaltung der für die sichere Lebensdauer von L13 Blanik Segelflugzeugen maßgeblichen Betriebsbedingungen (Average Operation Conditions) seit Herstellung des Segelflugzeugs sowie der allenfalls festgelegten Grenzwerte zu gewährleisten, und wie im Falle fehlender bzw. unvollständiger Angaben über einen Flug ersatzweise vorzugehen ist.

Reply No 1 sent on 22/03/2018:
The Agency, in consultation with the Type Certificate Holder (TCH), agrees with the aim of the safety recommendation.

The necessary actions to improve the Aircraft Maintenance Manual (AMM) will be implemented as part of a design change in response to the EASA Airworthiness Directive (AD) 2011-0135R3.

The action is expected from the TCH to be completed by the end of 2018. EASA will monitor the process under the established Continued Airworthiness and Organisation surveillance mechanisms.

Status: Open

Safety Recommendation AUST-2018-008 (VERSA):

[German] - Ergeht an den Entwurfsstaat und an den Inhaber der Musterzulassung von L13 Blanik Segelflugzeugen:
L13 Blanik Segelflugzeuge erforderten eine Grundüberholung im Falle einer Beschädigung gemäß MB L13/059 vom 01.07.1985 („Major Damage") bzw. einer Beschädigung gemäß OVERHAUL MANUAL FOR L13, L13A GLIDERS No. Do-L13-3031.3, edited 1960, revised 1997, Änderungsstand 10.10.1997 („Bigger Glider Damage").
Die Instandhaltungsanweisungen MB L13/059 und OVERHAUL MANUAL FOR L13, L13A GLIDERS No. Do-L13-3031.3 ließen offen, welche Schäden an L13 Blanik Segelflugzeugen als Beschädigung im Sinne der MB L13/059 („Major Damage") zu klassifizieren waren, die eine Grundüberholung erfordern.
Für Schäden an L13 Blanik Segelflugzeugen, die eine Grundüberholung erfordern, sollten in den Instandhaltungsanweisungen Kriterien zur Klassifizierung dieser Schäden erfasst werden.

Reply No 1 sent on 22/03/2018:
The Agency, in consultation with the Type Certificate Holder (TCH), agrees with the aim of the safety recommendation.

The necessary actions to improve the Aircraft Maintenance Manual (AMM) (in relation to the definition of "Major Damage" and instructions for the repairs of certain structure elements) will be implemented through a revision of AMM.

The goal of this AMM revision will be to significantly limit the scope of what can be repaired in line with the AMM and will clarify the list of life-limited parts.

The action is expected from the TCH to be completed by the end of 2018. EASA will monitor the process under the established Continued Airworthiness and Organisation surveillance mechanisms.

Status: Open

Austria

Registration	Aircraft Type	Location	Date of event	Event Type
	OTHER Not mapped (HB Aircraft Industries AG HB 23/2400 Scanliner))	LOLH : Hofkirchen	08/11/2015	Accident

Synopsis of the event:
Nach dem neuerlichen Anlassen des bereits warmen Motors rollte der Pilot zum Rollhalt der Betriebspiste des Flugfeldes Hofkirchen. Während der Überprüfungen vor dem Abflug gab der Pilot Vollgas, das Triebwerk erreichte beim Hochfahren jedoch nicht die Solldrehzahl und er nahm ein ungewöhnlich raues Laufgeräusch wahr. Im Motorraum entstand ein Brand, der weder vom Piloten noch von der Einsatzleitung des Flugfeldes gelöscht werden konnte. Alle Insassen konnten den Motorsegler selbständig verlassen und blieben unverletzt. Der Motorsegler stand beim Eintreffen der Feuerwehr in Vollbrand und wurde durch Brand zerstört.
Der Motorbrand wurde wahrscheinlich ausgelöst durch einen technischen Defekt im Bereich des Einlassventils von Zylinder 3, welcher zum Eintritt heißer Verbrennungsgase in das Ansaugsystem führte. Nach dem Durchbrennen der seitlichen Motorraumabdeckung konnte ein Übergreifen des Brandes vom Motorraum auf das in Holzbauweise gefertigte Tragwerk und die beiden im Flügelmittelstück untergebrachten Kraftstofftanks nicht verhindern werden.

Safety Recommendation AUST-2018-011 (VERSA):

[German] - Ergeht an den Entwurfsstaat und den Inhaber der Musterzulassung von HB 23/2400 Motorseglern:
Rauer Motorlauf, insbesondere nach dem Warmlaufen, weist auf einen Motorschaden hin, der eine vollständige Überprüfung des Triebwerks erfordert. Wird im Falle rauen Motorlaufs infolge eines nicht vollständig schließenden Einlassventils das Triebwerk nicht sofort abgestellt, kann Überhitzung des Triebwerks zu Feuer im Motorraum führen (Vergaserbrand).
Das Flughandbuch gemäß TCDS EASA.A.433, Issue 01, 07.01.2010, „Flughandbuch HB 23/2400 Scanliner", Ausgabe November 1985, vom Bundesamt für Zivilluftfahrt (BAZ) anerkannt am 06.05.1986, sollte einen Hinweis enthalten, dass rauer Motorlauf, insbesondere nach dem Warmlaufen, auf einen Motorschaden hinweist, der ein sofortiges Abstellen und eine vollständige Überprüfung des Triebwerks erfordert.

Reply No 1 sent on 26/04/2018:
The Agency had discussed the issue with the TC Holder and agreed on the necessity to update the Aircraft Flight and Maintenance Manuals (AFM and AMM).

An application has already been provided and the current planning is to finalise the change by end of May 2018.

Status: Closed – **Category:** Agreement

Belgium

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

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

Safety Recommendation BELG-2015-002 (AAIU-BE):
It is recommended that EASA conducts research to determine the most effective restraint systems for parachutists reflecting the various aircraft and seating configurations used in parachute operations.

Reply No 2 sent on 06/11/2018:
EASA has performed a study on the effectiveness of restraint systems provided for parachutists, starting with the operating requirements (as defined in Commission Regulation (EU) No 965/2012) and the technical requirements (as defined in the Certification Specifications CS-23 and Special Condition 'Use of aeroplanes for parachuting activities', doc. No. SC-023-div-01) for their selection and installation.

The study included:
- a review of the current regulatory framework;
- an analysis of occurrence data in the last 11.5 years covering parachute operations with aircraft registered in EASA member states;
- a survey with a sample of European parachute associations;
- an assessment of different type of restraint systems including the advantages and the disadvantages; and
- a review of the available research material for parachutists' restraint systems;

The conclusions of the study are summarised as follows:

The restraint systems are primarily aimed to keep the parachutists in place during critical phases of flight before jumping, in order to maintain the centre of gravity (CG) within the envelope. It is highlighted that the CG envelope can also be protected with alternative means (e.g. handles for parachutists using the aeroplane floor as a station). The restraint systems also provide protection in case of an emergency landing with parachutists still on board, or an aborted take-off or in-flight turbulence. However, there are disadvantages in the use of restraint systems, due to the potential for snagging and other interference with the parachutist's harness), depending on the aircraft model and configuration.

The available methods of restraint systems can be more or less effective depending on factors, such as the parachutists' positions (e.g. aft or forward facing) and aircraft size etc. For example, the most effective method (from a crashworthiness protection point of view) uses restraint systems with dual attachment points. On the other hand, such a solution presents the disadvantage that it takes longer to unfasten, and it may create an impediment on the aircraft floor during the jumping phase and in case of emergency evacuation on the ground after landing. A single attachment point can provide, in some cases (e.g. in light aircraft) a better solution, considering also the fact that it provides a faster single point release.

EASA has concluded that the use of restraint systems for parachutists has advantages and disadvantages, and the current regulatory framework, according to which the selection of the most appropriate type of restraint systems (and the decision to install them or to use a means to hold or strap on instead, for parachutists using the aeroplane floor as a station) is part of the risk assessment by the operator (as required by SPO.OP.230 of Part-SPO (Specialised Operations) of Commission Regulation (EU) No 965/2012), is appropriate.

As a result of the study, EASA has taken the following actions:

EASA Safety Information Bulletin SIB 2018-18 has been issued providing guidance on restraint systems for parachutists, and supporting operators and designers in the installation and use of restraint systems, and in the selection of the most appropriate type of restraint systems.

Special Condition SC-O23-div-01 "Use of aeroplanes for parachuting activities" has been revised to clarify the installation requirements for restraint systems.

The review of occurrence data and the service experience data from the parachute associations does not warrant further actions. In particular the review has shown that in the occurrences analysed (96 occurrences including accidents and serious incidents) in the last 11.5 years, no fatality of parachutists has occurred in those accidents that are classified as survivable, and that the use of restraint system would have increased the survivability rate. An important aspect is that in 68% of the total number of occurrences, the parachutists had jumped out and avoided the consequence of the contact (or impact) with the ground.

Status: Closed – **Category:** Agreement

Safety Recommendation BELG-2015-003 (AAIU-BE):
It is recommended that EASA, at the end of the research about restraint systems for parachutists (see recommendations BE-2015-002), clarifies the technical requirements applicable to such restraint systems.

Reply No 2 sent on 06/11/2018:
EASA has performed a study on the effectiveness of restraint systems provided for parachutists, starting with the operating requirements (as defined in Commission Regulation (EU) No 965/2012) and the technical requirements (as defined in the Certification Specifications CS-23 and Special Condition 'Use of aeroplanes for parachuting activities', doc. No. SC-023-div-01) for their selection and installation.

The study included:
- a review of the current regulatory framework;
- an analysis of occurrence data in the last 11.5 years covering parachute operations with aircraft registered in EASA member states;
- a survey with a sample of European parachute associations;
- an assessment of different type of restraint systems including the advantages and the disadvantages; and
- a review of the available research material for parachutists' restraint systems;

As a result of the study EASA has taken the following actions:

EASA Safety Information Bulletin SIB 2018-18 has been issued providing guidance on restraint systems for parachutists, and supporting operators and designers in the installation and use of restraint systems, and in the selection of the most appropriate type of restraint systems.

Special Condition SC-O23-div-01 "Use of aeroplanes for parachuting activities" has been revised to clarify the installation requirements for restraint systems.

Status: Closed – **Category:** Agreement

Safety Recommendation BELG-2015-004 (AAIU-BE):

It is recommended that EASA carries out a study to assess the need of a pilot's back protection for all airplanes used in parachute dropping activities. When assessed necessary, it is recommended that EASA mandates the installation of such a system.

Reply No 2 sent on 06/11/2018:

EASA has performed a study on pilot back protection during parachute operations. The study included:

- a review of the current regulatory framework;
- an analysis of occurrence data;
- a survey with a sample of European parachute associations;

The investigation revealed that there are advantages and disadvantages in the use of a pilot back protection, also depending on the aircraft model and configuration, and the specific operational procedures applied. For this reason, EASA considers that the decision regarding its installation should be based on the results of the risk assessment which the operator is required to conduct according to SPO.OP.230 of Annex VIII (Part-SPO Specialised Operations) to Commission Regulation (EU) No 965/2012).

As a result of the study, EASA has taken the following actions:

EASA Safety Information Bulletin SIB 2018-18 has been issued, explaining the advantages and the disadvantages in the use of a pilot back protection, in order to guide the operator when performing the assessment as per requirement SPO.OP.230.

EASA has also revised the special condition "Use of aeroplanes for parachuting activities" (Doc. No. SC-023-div-01) to clarify the requirements and the conditions for the installation of a pilot back protection.

The review of the occurrence data and the results of the survey with the parachute associations do not warrant further actions.

Status: Closed – **Category:** Agreement

Belgium

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

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

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

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

Reply No 2 sent on 28/09/2018:
The recommendation has been reviewed with the type certificate holder DAHER Aerospace GmbH. Based on continuing airworthiness data, occurrences linked to an erroneous landing gear extension indication are remote (5.5 x 10-6 i.e. one incident every 181 766 flight hours) and the effect at aircraft level is MAJOR, therefore, the demonstrated probability of a landing with the nose landing gear not fully locked is therefore acceptable, in accordance with CS23.1309

Nevertheless, DAHER has approved modification MOD70-0334-32 of the landing gear actuators to include the improvement of the switch kinematics using hydraulic pressure to help the differential plunger movement. MOD70-0334-32 is a mandatory task of the current approved instructions for continued airworthiness requiring overhaul of the actuator with time between overhaul of 7 years or 10 years depending on the year of manufacture.

Analysis of the historical deliveries of actuators shows that all actuators delivered after end of 2015 are equipped with differential plungers. All the delivered actuators not equipped with differential plungers will therefore be overhauled by 2025 t the latest. It can therefore be stated that in 2025 at the latest, all the landing gear actuators (either installed on an airplane, or in stock at service stations) will be equipped with the differential plungers.

Status: Closed – **Category:** Agreement

Belgium

Registration	Aircraft Type	Location	Date of event	Event Type
	BEECH 33	9,8 NM from EBZW outside the residential area of Bolderberg Heusden Zolder	12/02/2018	Accident

Synopsis of the event:
After refuelling, the aircraft took off at 11:42 UTC at the aerodrome of Kortrijk/Wevelgem for a VFR flight to Genk/Zwartberg where an appointment was made to install a.o. a new communication the radar that the aircraft is starting a descent from 1000 ft QNH when still maintaining its current heading. About 40 seconds later and descended to 400 ft, it starts a sharp righthand turn overhead the residential area of Bolderberg (Heusden-Zolder). It cuts some trees with its righthand wing when finally coming to rest and kept in a vertical position by an overhead power cable. The 2 occupants died upon impact.

Safety Recommendation BELG-2018-002 (AAIU-BE):
It is recommended that EASA amends the Part-NCO regulation along the lines of Part-NCC and others and requires the installation of a seat belt with upper torso restraint on each flight crew seat and any seat alongside a pilot's seat in order to protect the upper body from the dashboard in the event of rapid decelerations.

Reply No 1 sent on 30/10/2018:
The objective of implementing rule NCO.IDE.A.140 of Part-NCO (non-commercial operations with other than complex motor powered aircraft) of Commission Regulation (EU) No 965/2012 (on air operations) is to raise, where deemed necessary, the level of occupants' protection provided by the certification basis for each aeroplane manufactured.

For example, as the initial airworthiness certification specifications did not require three-point Upper Torso Restraints (UTRs) for front seats until 1969 (FAR/JAR/CS 23.785), point (a)(4) of NCO.IDE.A.140 requires single-point release UTRs to be retrofitted for flight crew seats for aeroplanes manufactured on or after 25 August 2016 and certified under the old standards.

The above-mentioned alleviations in the air operations regulation for passenger seats at the front of the aeroplane, and for flight crew seats for aeroplanes which were manufactured before 25 August 2016 and certified under the old standards, take into account the principles behind the General Aviation (GA) Road Map which is part of EASA Vision 2020 as published on the EASA web site, which aims towards a proportional, flexible and proactive regulatory system for GA in Europe.

However, there have been many new GA aeroplane designs which have been certified since 1969 and many GA aeroplanes which have been manufactured under the certification specifications which require three-point UTRs for front seats.

Nevertheless, the Agency is considering taking an action to promote, to NCO operators, the safety benefits of installing a single-point release UTR on each flight crew seat and any seat alongside a pilot's seat, if they were not required when the aeroplane was manufactured, depending on the certification basis. The Agency is currently finalising the

Safety Promotion Plan for 2019, and is anticipating inclusion of this safety issue under the safety promotion activities in the General Aviation domain.

Status: Open

Safety Recommendation BELG-2018-003 (AAIU-BE):

It is recommended that EASA either amends the Part-NCO regulation or at least sensitizes the pilot community to extend the requirement of having secured the passengers restraints to any flight phase at low heights (below 2000 ft agl or even higher if deemed more appropriate).

Reply No 1 sent on 30/10/2018:

According to implementing rule NCO.OP.150 of Part-NCO (non-commercial operations with other than complex motor powered aircraft) of Commission Regulation (EU) No 965/2012 on air operations, the pilot-in-command shall ensure that, prior to and during taxiing, take-off and landing, and whenever deemed necessary in the interest of safety, each passenger on board occupies a seat or berth and has his/her safety belt or restraint device properly secured. This should include flight phases at low heights if deemed necessary by the pilot-in command. The Agency therefore considers that the safety issue is already addressed appropriately through the existing regulatory framework. This is in line the principles behind the General Aviation (GA) Road Map which is part of EASA Vision 2020 as published on the EASA web site, which aims towards a proportional, flexible and proactive regulatory system for GA in Europe.

Nevertheless, the Agency is considering taking an action to promote, to the NCO pilot community, the safety benefits of ensuring that all passenger’s restraints are secured during all phases of flight, emphasising, in particular the heightened risk during any flight phase at low heights (for example, below 2000 ft above ground level). The Agency is currently finalising the Safety Promotion Plan for 2019, and is anticipating inclusion of this safety issue under the safety promotion activities in the General Aviation domain.

Status: Open

Safety Recommendation BELG-2018-004 (AAIU-BE):

It is recommended that EASA, in order to improve the survivability of aircraft type certified to older specifications (only lap belt or 2-point restraint required), encourages the general aviation community to improve the existing restraint systems to incorporate at least a shoulder harness (3-point restraint). EASA should effectively support the owners wishing to improve the restraint systems of their aircraft by publishing specific guidance, including a database of existing shoulder harness kits and acceptable methods for installation

Reply No 1 sent on 30/10/2018:

The objective of implementing rule NCO.IDE.A.140 of Part-NCO (non-commercial operations with other than complex motor powered aircraft) of Commission Regulation (EU) No 965/2012 (on air operations) is to raise, where deemed necessary, the level of occupants' protection provided by the certification basis for each aeroplane manufactured.

For example, as the initial airworthiness certification specifications did not require three-point Upper Torso Restraints (UTRs) for front seats until 1969 (FAR/JAR/CS 23.785), point (a)(4) of NCO.IDE.A.140 requires single-point release UTRs to be retrofitted for flight crew seats for aeroplanes manufactured on or after 25 August 2016 and certified under the old standards.

The above-mentioned alleviations in the air operations regulation for passenger seats at the front of the aeroplane and for aeroplanes which were manufactured before 25 August 2016 and certified under the old standards, take into account the principles behind the General Aviation (GA) Road Map which is part of EASA Vision 2020 as published on the EASA web site, which aims towards a proportional, flexible and proactive regulatory system for GA in Europe.

However, there have been many new GA aeroplane designs which have been certified since 1969 and many GA aeroplanes which have been manufactured under the certification specifications which require three-point UTRs for front seats.

Nevertheless, the Agency is considering taking an action to promote, to NCO operators, the safety benefits of installing a single-point release UTR on each flight crew seat and any seat alongside a pilot's seat, if they were not required when the aeroplane was manufactured, depending on the certification basis. The Agency is currently finalising the Safety Promotion Plan for 2019, and is anticipating inclusion of this safety issue under the safety promotion activities in the General Aviation domain. Consideration will also be given to including, in the safety promotion material, information on existing shoulder harness kits and acceptable methods for installation.

Status: Open

Canada

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

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

Safety Recommendation CAND-1999-003 (TSB):
As of 01 January 2005, for all aircraft equipped with CVRs having a recording capacity of at least two hours, a dedicated independent power supply be required to be installed adjacent or integral to the CVR, to power the CVR and the cockpit area microphone for a period of 10 minutes whenever normal aircraft power sources to the CVR are interrupted. (A99-03)

Reply No 6 sent on 09/05/2018:
This safety recommendation has been taken into account within the framework of EASA rulemaking task RMT.0249 entitled "Recorders installation and maintenance thereof - certification aspects".

The Notice of Proposed Amendment (NPA) 2018-03 was published on 27 March 2018 and it includes the following elements related to large aeroplanes' CVR power supply.

Among others, it proposes to:
- amend Commission Regulation (EU) No 965/2012, Annex IV (Part-CAT), CAT.IDE.A.185 Cockpit voice recorder, to require that aeroplanes with an Maximum Certified Take-Off Mass (MCTOM) of over 27 000 kg and first issued with an individual Certificate of Airworthiness (CofA) on or after [date of publication + 3 years] shall be equipped with an alternate power source to which the CVR and cockpit-mounted area microphone are switched automatically in the event that all other power to the recorder is interrupted;

- amend Acceptable Mans of Compliance (AMC) and Guidance Material (GM) to Part-CAT, AMC1 CAT.IDE.A.185 Cockpit voice recorder, to mention that, if required to be installed, the alternate power source should provide electrical power to operate both the CVR and the cockpit area microphone for at least 9 minutes . If the cockpit voice recorder has a recording duration of less than 25 hours, the alternate power source should not provide electrical power for more than 30 minutes.

The Opinion to the European Commission proposing an amendment of Regulation (EU) No 965/2012 is planned to be issued by 4Q2018.

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

Canada

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

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

Safety Recommendation CAND-2011-001 (TSB):
The Board recommends that The Federal Aviation Administration, Transport Canada and the European Aviation Safety Agency remove the "extremely remote" provision from the rule requiring 30 minutes of safe operation following the loss of main gearbox lubricant for all newly constructed Category A transport helicopters and, after a phase-in period, for all existing ones.

Reply No 6 sent on 28/08/2018:
Rulemaking Task RMT.0608 'Rotorcraft gearbox loss of lubrication' started on 22 May 2014 with the publication of its terms of reference (ToR) and group composition (which includes TCCA and FAA) on the EASA website. A reference to this safety recommendation and the accident that generated it are included in the ToR.

Notice of Proposed Amendment (NPA) 2017-07 was published on 31 May 2017 on the EASA website to propose an amendment of CS-29.
Subsequently, CS-29 has been amended on 25 June 2018 by Executive Director Decision 2018/007/R.

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

This objective is achieved by improving the safety assessment of pressurised lubrication systems, and by improving the certification and development testing specifications for the ‘loss of lubrication’ condition in order to substantiate a maximum period of continued operation which can be included in the rotorcraft flight manual (RFM) emergency procedures. More specifically, CS 29.917(a) has been amended to include the gearbox lubrication systems and oil coolers in the definition of the rotor drive system. This means that these systems will be considered to be within the scope of the design assessment of CS 29.917(b). AMC 29.917(b) for design assessment has also been amended to consider the risk of single hazardous and catastrophic failures in the domain of lubrication systems to complement the Federal Aviation Administration (FAA) Advisory Circular (AC) 29-2C.

CS 29.927(c) on ‘lubrication system failure’ has been completely revised and replaced by a more objective-based specification that requires substantiation of the gearbox ability to continue safe operation (for at least 30 minutes) after a loss of lubrication to be followed by a safe landing; the ‘unless such failures are extremely remote’ provision has been removed. This is supported by substantial changes to the associated acceptable means of compliance (AMC). Finally, CS 29.1585 has also been amended to require that the Rotorcraft Flight Manual (RFM) furnishes the maximum duration of operation after a failure resulting in a loss of lubrication of a rotor drive system gearbox and that it must not exceed the maximum period substantiated in accordance with CS 29.927(c); an associated oil pressure warning is also required.

Regarding existing Category A transport helicopters certified in accordance with the former CS 29.927(c) specifications, a review has shown that most types complied without using the ‘extremely remote’ rationale to exclude particular lubrication system failure modes. For helicopter types where potential lubrication system failure modes were excluded from the ‘loss of lubrication’ test on the basis of extremely remote likelihood of occurrence, additional actions, as described above, have been taken to ensure that an acceptable level of safety is maintained.

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

Czech Republic

Registration	Aircraft Type	Location	Date of event	Event Type
OE-FDN	SHORT SC7	LKKT : Klatovy	08/04/2015	Serious incident

Synopsis of the event:
On 8 April 2015, while the foreign operator's Skyvan was flying from the Landsberg aerodrome to the Klatovy aerodrome, approximately when crossing the national border of the Czech Republic, the crew overheard a bang coming from the right side of the aircraft. It was accompanied with RPM, torque and oil pressure drop in the right engine. Simultaneously, smoke was blowing from the rear part of the right engine. Shortly afterwards, the cockpit smelt of fuel and continuous depletion of the amount of fuel in the right tank was observed. Upon emergence of the critical event, the instructor took over control, applied single-engine flight procedures and completed the flight at LKKT. Landing was successful. While the aircraft was taxiing to the stand, ground became contaminated with leaking fuel.

Safety Recommendation CZCH-2018-001 (UZPLN):
It is recommended to the FAA and EASA in coordination with the engine manufacturer consider the necessary actions in order to ensure the quality and timely detection of TPE 331 engine turbine wheel disks by a non-destructive FPI test.

Reply No 1 sent on 11/09/2018:
In order to obtain the information necessary to support the Agency decision about the safety recommendation, the EASA has contacted the Federal Aviation Administration (FAA), the primary certification authority of the engine.

Status: Open

Denmark

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

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

Safety Recommendation DENM-2010-003 (AIB):
It is recommended that the authorities evaluate possible technical solutions for the observation of and warning against migratory birds in darkness and in reduced visibility. This includes the option of installing and using radar equipment for this purpose.

Reply No 5 sent on 16/01/2018:
The Agency is considering this safety recommendation under RMT.0591 'Regular update of aerodrome rules', which is expected to be finalised by the end of 2019. In the meantime, EASA is planning to organise workshops related to wildlife strikes prevention, to raise awareness and address the issue.

Status: Open

Finland

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

Synopsis of the event:
A Reims F406 Caravan II aircraft (OH-OTL), operated by the Finnish company Lapin Tilauslento Oy, departed for a routine cargo flight from Rovaniemi Airport to Oulu on 3 October 2016.
The aircraft had a two-pilot crew and carried 347 kg of mail. There were no other persons on board besides the crew.
Flight preparation, aircraft loading and taxiing from the stand to take-off position were uneventful.
Taxiing distance was about 800 m. The aircraft took off on runway 03 at 19:30 – all times in this report are Finnish local time. The weather was good and it was starting to become dark at that time in the evening. When the landing gear was retracted, the GEAR UNLOCKED warning light and the HYD PRESS ON indicator for the hydraulic system remained on. At the pilot- in-command's request, the co-pilot selected gear back down, and the three green lights indicating that the gear was down and locked illuminated normally. The HYD PRESS ON indicator and GEAR UNLOCKED warning were also extinguished as usual.
The pilot-in-command continued flying towards Oulu, and the co-pilot searched the emergency checklists for suitable instructions for the situation. Any instructions directly applicable to this malfunction were not found, but the pilots decided to follow the instructions for cases where the HYD PRESS ON light remained on continuously. The instructions helped to locate the fault in the landing gear system, but the exact nature of the malfunction was not clear. The pilots took the actions as instructed, except that the point "landing gear switch - rapidly recycle" was omitted, since the gear was already extended and the indicator lights showed that it was down and locked.
The pilot-in-command decided to fly to Oulu with the gear down, as the instructions did not call for landing as soon as possible and the weather was good. Approach and landing at Oulu were performed in darkness at 20:05. The aircraft landed early on the runway, and the landing run was normal at first. When the plane had decelerated to a speed of about 60 kt1, the pilot-in-command started braking, at which time the right landing gear collapsed and the aircraft tilted to the right. The pilot-in-command told that he had managed to keep the plane on the runway using nose wheel steering, braking hard on the left side and applying reverse thrust in the left engine. The aircraft stopped quickly after the landing gear had collapsed, within a distance of about 80 m.
The aircraft came to a stop on the right edge of runway 30, remaining well on the paved surface.
The engines were running until the plane stopped and were then turned off. The pilot-in-command reported the incident to the ATC and asked for a tow vehicle. Power was switched off. ATC alerted the rescue services, and the pilots exited the plane uninjured.
Rescue services moved the aircraft off the runway using pneumatic lifting pads and a transport platform.
The runway was closed for about three hours, until 23:00. A NOTAM2 was issued at 20:42 to notify other aircraft of this. One airliner turned back to its departure airport, Helsinki, and at least two scheduled flights were waiting in Helsinki for the runway to be opened again. No other effects on air traffic have been reported.

Safety Recommendation FINL-2017-026 (SIA):

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

Reply No 2 sent on 22/03/2018: The Type Certificate Holder (ASI Aviation) has issued Temporary Revision n° D2536-5-13 TR5 (dated 5th February 2018) to their maintenance instructions, including the improvements required to address the safety recommendation.

Status: Closed – **Category:** Agreement

Finland

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

Synopsis of the event:
The accident occurred on Saturday, 24 September 2016 to a Cessna 172N aircraft, registration OH-COV. Prior to the accident flight the pilot flew the aircraft from Eura aerodrome in Kauttua to Tuulikki-Vampula aerodrome in Huittinen. The pilot had to hand-start the engine by swinging the propeller before departing from Kauttua. During the engine start process the pilot took a 15 minute break and then took off for the flight at 11.47. The flight lasted approximately 15 minutes.
At 12.21 the pilot took off from Tuulikki-Vampula aerodrome for a local flight with two passengers. During the flight the pilot reported that he would land earlier than planned because he did not feel well. During the landing, a little before reaching runway 28, the aircraft almost collided with a trench. The passenger warned the pilot of this and the pilot quickly corrected the situation. Following this, the aircraft drifted to the right and off the runway (Figure 1). The right wing collided with a light fixture at the side of the runway. The pilot again steered the aircraft back towards the runway and applied the brakes. At the taxiway intersection the pilot failed to sufficiently turn the aircraft; as a result the aircraft went diagonally across the taxiway into a ditch at low speed. This happened at 12.36.
Almost immediately after deplaning the pilot collapsed to the ground. The passenger called 112 (the emergency number) at 12.38. The doctor that arrived in the ambulance pronounced the pilot dead at 13.36.

Safety Recommendation FINL-2017-035 (SIA):
The European Aviation Safety Agency (EASA) improve AME risk assessment competency through safety promotion, competency based recurrent training and specific training on the national procedures for referral and consultation as well as for the use of limitations. [2017-S35]

Reply No 2 sent on 08/02/2018:
EASA Opinion No 09/2016 updating PART-MED of Annex IV of Commission Regulation (EU) No 1178/2011 published on 11 August 2016 proposes new requirements for Aeromedical Examiners (AMEs) to demonstrate maintenance of aero-medical competency in order to revalidate/renew their certificate.

The proposal reinforces the checking of fitness for applicants and come together with guidance regarding the risk assessment for fitness. The Opinion mentioned above sets new learning objectives to reinforce risk management and decision-making principles, and the number of hours for training is increased to give more time for subjects related to risk assessment, such as acceptable aero-medical risk of incapacitation, types of incapacitation, operational aspects and basic principles in assessment of fitness for aviation.

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

In addition, the Agency has issued a Safety Promotion leaflet on “AME – working relations” that further explains the process of medical certification, including consultation and referral as well as obligations of the AMEs towards the applicants and their licensing authority. It also encourages the AMEs to maintain their qualification by attending recurrent training in aviation medicine as well as Continuing Medical Education (CME) activities. The objective is to support AMEs with low exposure to aero-medical assessment.

Status: Closed – **Category:** Agreement

Finland

Registration	Aircraft Type	Location	Date of event	Event Type
LN-NHF	BOEING 737	Helsinki	11/07/2017	Serious incident

Synopsis of the event:
At 1523 h UTC1 on Tuesday July 11, 2017, flight NAX4287 operated by Norwegian departed from Arlanda Airport, Stockholm, on a service to Helsinki. The captain was pilot flying.
The en-route portion of the flight was normal. The aircraft left the cruise altitude at 1546 h to commence approach to Helsinki-Vantaa airport. The initial approach to runway 04L was normal. Rain clouds were present in the area and winds were moderate.
The touchdown was light and slightly beyond the optimum touchdown point at an airspeed that was almost right for the prevailing conditions. The captain selected reverse thrust at the moment of the touchdown, and reverse thrust became effective three seconds after the touchdown. The speedbrakes (spoilers) had been armed, but due to the light touchdown they did not deploy automatically. The captain deployed the spoilers manually one second after the touchdown. The autobrake system had also been armed and began to decelerate the aircraft normally upon spoiler deployment.
During the approach, the pilots had planned to vacate the runway via high-speed turn-off WK.
Due to the high speed, the captain elected to pass turn-off WK and vacate the runway via a taxiway at runway end. He canceled reverse thrust, and moments later stowed the spoilers and deselected the autobrake system, which resulted in a marked reduction in the rate of deceleration.
As the aircraft approached taxiway WH with approximately 300 m of runway remaining, the captain reselected reverse thrust and applied heavy wheel braking. At this point, the aircraft was traveling at 64 kt (119 km/h). Because the captain had stowed the spoilers previously they did not deploy automatically. The captain attempted to steer the aircraft onto taxiway WD, which is the last taxiway at runway end. He canceled reverse thrust when the aircraft was traveling at approximately 25 kt (46 km/h), but due to excessive speed was unable to turn the aircraft onto the taxiway. The first officer called "brace"2 via the passenger address system.
The tires impacted the runway light fixtures by the time aircraft heading had diverged approximately 20 degrees from runway 04L heading. Both nosewheels and three mainwheels came to rest on the grass while the fourth mainwheel remained on the paved area.
The captain elected to not evacuate the aircraft. The air traffic control declared a local standby phase, and aerodrome rescue service units secured the aircraft. The aircraft was moved off the grass by a pushback tractor and towed to a position in front of the terminal building.
In accordance with regulations, airport maintenance units inspected the runway after the incident. The runway remained closed for about one hour.

Safety Recommendation FINL-2018-001 (SIA):
The Safety Investigation Authority, Finland recommends that EASA investigates how CRM training for ground operations can be enhanced. [2018-S33]

Reply No 1 sent on 28/08/2018:
Annex 1 (Part-FCL) of Commission Regulation (EU) No 1178/2011 on Aircrew requires initial multi-crew cooperation (MCC) training (FCL.735.A). The MCC course remains generic by nature but the performance indicators are measured all along practical

exercises that follows the flight phases (including take-off and rejected take-off as described in AMC1 FCL.735.A).

The operator shall define the crew composition (ORO.FC.100 100 of Annex III (Part-ORO) to Commission Regulation (EU) No 965/2012) and provide Crew Resource Management (CRM) training appropriate to the flight crew member's role, as specified in the operations manual (ORO.FC.115 (a)).

CRM is a major contributor to safety, and therefore the Agency significantly extended and modernised the existing CRM training provisions with ED Decision 2015/022/R, which entered into force on 01 October 2016. Elements of CRM training are required to be included in the aircraft type training and recurrent training as well as in the command course (ORO.FC.115 (b)). The extent of the training in line with the roles is further described in AMC1 ORO.FC.115. An in-depth training in effective communication and coordination inside and outside the flight crew compartment is specifically required for command course. CRM principles are generic by nature and are not bound to a specific flight phase compared to skill-based manoeuvres that are practiced to develop and maintain proficiency of the crew.

To support air operators in CRM training, the Agency has published a Safety Promotion document on "CRM training implementation". This document, available on the EASA website, shares recommended practices and information on CRM and promotes the development of CRM training for both Air Operators having CRM training responsibilities, and Competent Authorities having oversight responsibilities.

In line with the recommendation, the assessment of CRM skills should be made in the operational environment and serve to identify additional training when required. AMC1 ORO.FC.115(h) provides further elements for the assessment of CRM training. One important aspect to consider is the criteria in use by the operator to evaluate CRM training effectiveness. The operators should have a methodology in place and be able demonstrate to its competent authority its application during practical sessions.

In addition, the CRM program and its evolution should be linked to the operator's Safety Management System. In this case, the operator is best placed to identify any safety risk and adjust its training under the oversight of its competent authority.

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

Safety Recommendation FINL-2018-002 (SIA):

The Safety Investigation Authority, Finland recommends that EASA investigates whether the current airline schedules are realistic or not, and also determine their possible negative effects on the procedures of commercial aviation and thence on flight safety. [2018-S34]

Reply No 1 sent on 21/09/2018:
Flight safety risks associated with EASA Member State commercial air transport operator's flight schedules should be addressed by the operator through its (safety) management system (See point (a)(2) of ORO.GEN.200 of Commission Regulation (EU) No 965/2012 on air operations). The operator should also conduct safety audits to assess the effectiveness of mitigation implemented (such as crew resource management training, threat and error management training, standard operating procedures (SOPs), and approved flight time specification schemes for operating crew) against the risks identified. Through this process, the operator should proactively promote best practices and enhance the organisation's underlying safety culture.

The operator's schedules need to be tailored to suit the operator's fleet, resourcing, business model etc, with appropriate contingencies built-in for delays. Furthermore, the operator's safety review board should assess the impact of operational changes on safety, including any changes to their routes/schedules (See point (d)(3) of GM2 ORO.GEN.200(a)(1) of Commission Regulation (EU) No 965/2012). In addition, the operator is required to establish and maintain a flight data monitoring programme, which shall be integrated in its (safety) management system, and should ensure the requisite safety/just culture (see ORO.AOC.130 of Commission Regulation (EU) No 965/2012 and associated GM). This should support the decision-making by the commander/pilot-in-command, who must have the authority to take any necessary actions as he/she is responsible for the safety of the flight (See points 1.c and 7.c of Annex IV to Regulation (EC) No 216/2008).

It is the competent authority's responsibility to oversee the airline operations including flight schedules as specified under the Air Operator Certificate (See point (a) of ARO.GEN.300 of Commission Regulation (EU) No 965/2012 on air operations). Through this oversight activity, the competent authority should establish whether the risks associated with the operator's flight schedules are suitably mitigated and ensure that any punctuality targets driven by economic pressures do not undermine the operator's ability to comply with the applicable legislation.

Any weaknesses in the competent authority's oversight effectiveness should be detected through EASA's standardisation inspection programme which is implemented in accordance with Commission Implementing Regulation (EU) No 628/2013.

In conclusion, EASA considers that it would not be appropriate or feasible for the Agency to propose prescriptive regulations on schedules, or to evaluate airline's schedules to assess whether they could undermine airline SOPs, and hence overall flight safety. The airlines and their competent authorities are best placed to conduct such assessments, as the schedules need to be tailored to suit the individual operator depending on their fleet and routes and destinations etc.

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

Finland

Registration	Aircraft Type	Location	Date of event	Event Type
OE-GKA	GULFSTREAM GULFSTREAM150	Kittilä airport	04/01/2018	Accident

Synopsis of the event:
OE-GKA, a Gulfstream G150 type business jet, arrived at Kittilä airport in the afternoon of Tuesday, 2 January 2018. The jet carried four passengers and a three-person crew. The aircraft was parked at the north end of the apron. Once the passengers had left, the flight crew put covers on the engines and external sensors.
The next planned flight was a positioning flight on Thursday evening, 4 January 2018, to Yekaterinburg, Russia, without passengers. The crew arrived at the airport to prepare for the flight at approximately 15:00[1]. Take-off, as per the flight plan, was to happen at 17:00.
The ground handling company transported them to the aircraft by bus at approximately 15:20. The captain opened the door at which time the cabin assistant entered the cabin. The captain and the co-pilot placed their flight bags behind the cockpit and went back outside. The co-pilot placed the aircrew's baggage into the rear baggage compartment which opens from the outside. The captain and the co-pilot removed the engine covers which they had put in place on the day of their arrival. These were put into their own storage bags and also placed in the baggage compartment.
Following this, the captain went into the cockpit and started the APU[2], which generates electricity for aircraft systems and bleed air for heating the cabin. The co-pilot began to brush off the snow that had fallen on the aircraft. A moment later the captain came out to help the co-pilot. At first, he worked with his bare hands. Due to the extremely cold conditions, however, he went back inside to fetch a pair of gloves. When he came back out, he closed the door.
A little later the cabin assistant inside the cabin felt strange pressure in her ears and chest.
She went into the cockpit and attempted to get the attention of the pilots working outside by knocking on the window. The pilots noticed the knocking and the captain went to open the door. According to the co-pilot's observations it was unusually difficult for the captain to get the door open. Then, the captain pulled harder on the door handle at which time the door blew open with explosive force, hitting the captain who was standing underneath the door and knocking him to the ground[3]. The pressure wave also knocked the co-pilot down, who had been standing approximately one metre from the left side of the door.
The co-pilot stood up and saw the captain lying on his back on the ground. Realising that the captain was unconscious, the co-pilot turned him on his side. Then he entered the cabin and saw the cabin assistant in a semi-seated position on the floor of the cabin. The co-pilot shook the assistant's shoulder and advised her to go outside.

The captain died as a result of the serious injuries he sustained at the site of the occurrence.
The emergency medical personnel also checked whether the co-pilot and the cabin assistant had sustained any injuries. Later in the evening they were taken to a private medical centre at Levi ski resort for a check-up. The co-pilot had not sustained any physical injuries. The cabin assistant had bruises on her right arm, continued to feel chest pain and was diagnosed with a mild concussion.

Safety Recommendation FINL-2018-003 (SIA):

The European Aviation Safety Agency (EASA) inform air operators, ground handling organisations and aerodrome rescue and fire fighting organisations of a safety threat which may be caused by aircraft pressurisation on the ground and consequent explosive door openings. The bulletin must include the actions with which the safety threat can be controlled, as well as a reminder to provide the associated training to all persons involved with handling aircraft on the ground. [2018-S42]

Reply No 1 sent on 11/12/2018:

The European Aviation Safety Agency intends to inform air operators, ground handling organisations and aerodrome rescue and firefighting organisations, about the safety threat which may be caused by aircraft pressurisation on the ground and the consequential risk of explosive door openings.

EASA is planning to remind the organisations about the importance of implementing the associated defences, which are provided through the existing European Union civil aviation regulations, in particular, those related to the aircraft manufacturers' procedures and the organisations' standard operating procedures, and the provision of training for all personnel involved in the handling of aircraft on the ground. This reminder is foreseen to be available by 2019 Q1.

Status: Open

France

Registration	Aircraft Type	Location	Date of event	Event Type
F-GABB	AVIONS ROBIN DR400	AD Le Touquet Paris-Plage (62), France	04/04/2011	Accident

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

Safety Recommendation FRAN-2012-031 (BEA):

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

Reply No 4 sent on 08/02/2018:
EASA has assessed the issue with the Type Certificate Holder (TCH) CEAPR and considering:

- the nature of the damage,
- the different designs available for the affected parts (upper and lower support plates) of the landing gear, and
- the corresponding service histories of the various aeroplane types affected by Airworthiness Directive (AD) EU-2010-0231 (DR253, DR300, DR400, HR100 and R1180),

The following actions have been taken:

- A new Service Bulletin (SB) BS_160403 has been issued in September 2017 by the TCH for the aeroplane types DR253, DR300, DR400 that provides revised inspection instructions and intervals and introduces a life limit for the affected parts.
- The new AD 2018-0018 has been issued on 26th January 2018 and it mandates such service bulletin and supersedes AD EU-2010-0231.
- A new service bulletin BS_160402 has been issued in September 2017 for the aeroplane types HR100 and R1180, which provides revised inspection instructions and intervals.
- AD 2018-0017 mandating the above-mentioned service bulletin has been issued on 26th January 2018.
- The associated Major Change 10064049 has been approved by EASA.

Status: Closed – **Category:** Agreement

France

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

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

Safety Recommendation FRAN-2012-045 (BEA):
The BEA recommends that EASA modify the basis of the regulations in order to ensure better fidelity for simulators in reproducing realistic scenarios of abnormal situations.

Reply No 6 sent on 28/08/2018:
Mitigating Loss of Control In-flight (LOC-I) is one of the European Aviation Safety Agency's (EASA's) highest priorities, and the Agency has published material on flight crew Upset Prevention and Recovery Training (UPRT) with the specific objective to ensure that flight crew acquire the necessary competencies to prevent and recover from developing or developed upsets.

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

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

AMC1 ORO.FC.220&230 on upset prevention training lists the elements to cover and includes manual handling skills and flight path management.

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

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

Last, the Agency published ED Decision 2018/006/R on 3 May 2018 which amends the CS-FSTD(A) with the objective to increase the fidelity of Flight Simulators Training Devices (FSTD) and to support the approach-to-stall and the upset prevention and recovery training (UPRT) as proposed by EASA Opinion No 06/2017. It also increases the fidelity of the simulation of the engine and airframe icing effects, and requires an instructor operating station (IOS) feedback tool.

Status: Closed – **Category:** Agreement

Safety Recommendation FRAN-2012-047 (BEA):

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

Reply No 3 sent on 28/09/2018:

EASA and Airbus have reviewed the flight director re-display and reconnection logic on all Airbus models:

- For the A318/A319/A320/A321 and A330/A340 models, there are two kind of cases of flight director (FD) disappearance:
  - Disappearance without disconnection, maintaining modes and targets (for example when exceeding 45 degrees of bank angle). In these cases the re-appearance of the FD bars (in same modes and targets) will remain automatic.
  - Disappearance with disconnection (for example two Air Data References (ADR) detected "failed" by the Auto Flight System). In these cases, Airbus will modify the Flight Augmentation Computer (FAC) and the Flight Management Guidance Computer (FMGC) on the A318/A319/A320/A321, and the Flight Management Guidance Envelope Computer (FMGEC) on A330/A340, in order that a crew action is required to re-engage the FD after a FD automatic disconnection and once parameters are back and consistent. The complete A318/A319/A320/A321 and A330/A340 fleet will be retrofitted. All design changes are certified. The targets for full retrofit are before the end of 2019 for A330/A340 and before the end of 2020 for A318/A319/A320/A321.
  - The A380 and the A350 models are already fitted with the above-mentioned logics.
  - The A300/A310 have a different architecture and the above mentioned improvement is not applicable.

Status: Closed – **Category:** Agreement

Safety Recommendation FRAN-2012-048 (BEA):

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

Reply No 3 sent on 28/09/2018:

EASA and Airbus have reviewed the flight director re-display and reconnection logic on all Airbus models.

- For the A318/A319/A320/A321, A330/A340 and A380 models, the Auto Flight System will be modified so that in flight control degraded law, the Flight Director (FD) disconnection will happen right after the stall warning is triggered. The A318/A319/A320/A321 Flight Augmentation Computer (FAC) and the Flight Management Guidance Computer (FMGC), the A330/A340 Flight Management Guidance Envelope Computer (FMGEC) and the A380 Primary Flight Control and Guidance Computer (PRIM) will be modified. All design changes are certified. The full fleets will be retrofitted. The target dates for retrofit are before the end of 2019 for A330/A340 and A380, before the end of 2020 for A318/A319/A320/A321.
- For the A350 model, the FD disconnection after stall warning is triggered, is already part of the design.
- The A300/A310 have a different architecture and the above mentioned improvement is not applicable.

Status: Closed – **Category:** Agreement

Safety Recommendation FRAN-2012-049 (BEA):
The BEA recommends that EASA study the relevance of having a dedicated warning provided to the crew when specific monitoring is triggered, in order to facilitate comprehension of the situation.

Reply No 3 sent on 31/01/2018:
With reference to the ongoing Airbus studies, conducted together with EASA, to evaluate the relevance of flagging the indicated airspeed in the cockpit when a system monitoring is triggered on Airbus Fly-by-Wire, an update is provided below:
In the A350, in case of detection of erroneous airspeed data, the switching to a valid source of airspeed data is automatically performed (New Air And Inertia Automatic Data Switching (NAIADS) function).
In the A380, a solution comparable to the A350 is under development. The certification target date for this design change is before the end of 2020.
In the A318/A319/A320/A321 and the A330/A340 the feasibility study with EASA involvement is still on going. EASA participated in a simulator session in June 2017.

Reply No 4 sent on 20/12/2018:
EASA conducted an assessment which focussed on erroneous airspeed indications, in particular those caused by pitot probes blockage, as highlighted in the BEA report as one of the main causes of the accident. However, a generic reassessment of the general philosophy of the information shown by Electronic Centralised Aircraft Monitor (ECAM) messages and of the cockpit warnings was not considered to be a proportionate exercise.

EASA and Airbus confirmed, through detailed reviews and simulator sessions, that the documented flight crew procedures related to unreliable airspeed indications are adequate.

Additional studies have been carried out to evaluate the relevance of flagging the speed in the cockpit when specific monitoring is triggered on Airbus Flight-by-Wire aircraft where, in case of detection of erroneous airspeed, the switching to the adequate displayed airspeed is automatically realised.

In the case of two pitot probes blockage leading to incorrect airspeed indications (or three pitot probes blockage provided they do not provide the same erroneous value), in all of the Airbus models, there are already ECAM messages showing reversion to alternate law and the Air Data Reference (ADR) discrepancy.

For the A318/A319/A320/A321 and A330/A340, a function which is already certified, provides the capability to display the back-up speed scale in a reversible manner. Nevertheless, a new function is expected to be certified as an improvement by the end of 2019. This function, in addition to providing the back-up speed, will include the identification of faulty speed with the speed scale being flagged on the Primary Flight Display (PFD). Another possible improvement consisting of the back-up speed computation using engine data, is also currently under consideration.

For the A350, after the aeroplane detection of erroneous airspeed data, the switching to a valid source of airspeed data is automatically performed by the NAIADS (New Air and Inertia Automatic Data Switching).

For the A380, a solution similar to the one for the A350 is under development (automatic switching by the NAIADS to a valid source of airspeed data when erroneous airspeed data is detected by the aeroplane). The target for certification of this design improvement is 2023.

All of the above-mentioned changes are considered to be design improvements, with no mandatory changes due to an 'unsafe condition' having been identified.

Therefore, as EASA has completed a study on the relevance of having a dedicated warning provided to the crew when specific monitoring is triggered, EASA considers the safety recommendation to be closed.

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

Safety Recommendation FRAN-2012-050 (BEA): The BEA recommends that EASA determine the conditions in which, on approach to stall, the presence of a dedicated visual indications, combined with an aural warning should be made mandatory.

Reply No 3 sent on 16/01/2018:
The Stall Warning is a combination of aural warning, Master Warning Light and an indication on speed tape as a red and black strip (VSW), when parameters are valid.
In order to reinforce the crew awareness in case of a stall situation, a visual warning alert "STALL STALL" will be displayed on Primary Flight Display (PFD) when the Stall Warning is triggered.

This design feature is already present in the A350 (since the initial certification), and has been retrofitted on all the A380 fleet.
For the A330/A340, the relevant modifications have been certified, and a retrofit of most of the fleet (except A330 Multi Role Tanker Transport - MRTT) is planned to be completed by mid-2019.
For the A318/A319/A320/A321, the relevant modifications are certified and the aeroplanes with Electronic Instrument System (EIS) standard 2 (approximately 2000 airplanes) will be retrofitted. This retrofit is expected to be finished by mid-2021.
On the A300/A310/A300-600 family program, the stick shaker feature is considered to be an adequate additional means to warn the flight crew and therefore adding a visual warning alert is not deemed necessary.

Status: Closed – **Category:** Agreement

Safety Recommendation FRAN-2012-051 (BEA):
The BEA recommends that EASA require a review of the conditions for the functioning of the stall warning in flight when speed measurements are very low.

Reply No 3 sent on 28/09/2018:
Following the BEA assessment of the previous EASA final reply dated 3 June 2014, EASA has performed further work with Airbus on the modification of the stall warning.
For the A350 model, the stall warning is already triggered even when the measured airspeed is very low.
For the A318/A319/A320/A321 models, the A330/A340 and in the A380 models, design changes have been certified to allow the stall warning to be triggered when the measured airspeed is very low. These design changes are applicable to aeroplanes with certain standards of Air Data Inertial Reference Unit (ADIRU).
Design changes as described above, are not feasible for the A300/A310 due to the related ADIRU standards.
The retrofit of the in-service fleets will cover all of the A380, most of the A330/A340 (approximately 150 airplanes not covered) and most of the A318/A319/A320/A321 (approximately 1500 airplanes not covered).
The target dates for the retrofits are before the end of 2019 for the A380 and the A318/A319/A320/A321, and by mid-2020 for the A330/A340.

Status: Closed – **Category:** Agreement

France

Registration	Aircraft Type	Location	Date of event	Event Type
ASAGA STUDY				

Synopsis of the event:

Study on Aeroplane State Awareness during Go-Around (ASAGA)
Towards the end of the 2000's, the BEA observed that a number of public air transport accidents or serious incidents were caused by a problem relating to "aeroplane state awareness during go-around" (ASAGA). Other events revealed inadequate management by the flight crew of the relationship between pitch attitude and thrust, with go-around mode not engaged, but with the aeroplane close to the ground and with the crew attempting to climb.
Moreover, these events seemed to have some common features, such as surprise, the phenomenon of excessive preoccupation by at least one member of the crew, poor communication between crew members and difficulties in managing the automatic systems.
A study was thus initiated with a view to:
Determining if this type of event is associated with a particular type of aircraft;
Listing and analysing the factors common to these events;
Suggesting strategies to prevent their recurrence.

The BEA is responsible for investigating all public transport accidents that occur in France. It also participates in investigations conducted into accidents outside France involving aircraft of French design and manufacture, notably Airbus aircraft, as State of Design and Manufacture.
In 2009 and 2010, the BEA thus participated in investigations into the following events:
- the fatal accident to an Airbus A310 on 29 June 2009 at Moroni (Comoros);
- the fatal accident to an Airbus A300 B4 on 13 April 2010 at Monterrey (Mexico);
- the fatal accident to an Airbus A330-200 on 12 May 2010 at Tripoli (Libya).

The first accident occurred during final approach in full thrust configuration and with a high nose-up attitude. The two other accidents occurred during go-around.
Prompted by these three accidents, the BEA decided to launch an overall study into aeroplane state awareness during go around (ASAGA).
The purpose of the study was to:
- determine if the ASAGA issue was uniquely associated with Airbus aircraft;
- list and study the ASAGA-type events that have occurred in public transport over the last 25 years;
- determine and analyse the common factors in these events;
- suggest strategies to prevent their recurrence.

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

Safety Recommendation FRAN-2013-025 (BEA):

The BEA recommends that EASA, in coordination with major non-European aviation authorities, amend the CS-25 provisions so that aircraft manufacturers add devices to limit thrust during a go-around and to adapt it to the flight conditions. [Recommendation FRAN-2013-025]

Reply No 5 sent on 26/06/2018:
The Agency launched rulemaking task RMT.0647 ('Loss of control or loss of flight path during go-around or other flight phases') with the publication of the Terms of Reference and Group Composition on 06/07/2015 (https://www.easa.europa.eu/document-library/terms-of-reference-and-group-compositions/tor-rmt0647).

A Notice of Proposed Amendment (NPA) 2017-06 was published on 11 May 2017 on the EASA website to propose an amendment to CS-25:
https://www.easa.europa.eu/document-library/notices-of-proposed-amendment/npa-2017-06

Based on this proposal and the comments received, the Agency issued on 27 March 2018 ED Decision 2018-005-R amending CS-25 (amendment 21):
https://www.easa.europa.eu/document-library/certification-specifications/cs-25-amendment-21

With this amendment, new provisions have been introduced (in CS 25.143 and AMC 25.143) to ensure that the design of large aeroplanes is such that a go-around procedure with all engines operating can be safely conducted by the flight crew without requiring exceptional piloting skill or alertness. The risk of excessive crew workload and the risk of a somatogravic illusion must be carefully evaluated, and design mitigation measures must be put in place if those risks are deemed too high.

Furthermore, a reduced go-around thrust or power function is considered as an acceptable means of mitigation of such identified excessive risk (see AMC 25.143(b)(4)).

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

Safety Recommendation FRAN-2013-026 (BEA):

The BEA recommends that EASA examine, according to type certificate, the possibility of retroactively extending this measure in the context of PART 26 / CS-26, to the most high-performance aircraft that have already been certified. [Recommendation FRAN-2013-026]

Reply No 5 sent on 26/06/2018:

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

A Notice of Proposed Amendment (NPA) 2017-06 was published on 11 May 2017 on the EASA website:
https://www.easa.europa.eu/document-library/notices-of-proposed-amendment/npa-2017-06

The regulatory impact assessment presented in the NPA considered options requiring already certified large aeroplanes, in particular, those deemed to have the highest risk (wing-mounted twin turbofan), to implement design changes to mitigate the risk of excessive workload and somatogravic illusion during go-around (G/A), such as a reduced G/A thrust function.

This assessment concluded that such options are not suitable, and that amending CS-25 is the best option.

The NPA consultation and the comments received supported this decision.

Status: Closed – **Category:** Disagreement

Safety Recommendation FRAN-2013-042 (BEA):
The BEA recommends that EASA, in cooperation with the major non-European certification authorities, make mandatory the implementation of means to make crews aware of a low speed value and, where necessary, prevent an unusual nose-up trim position from occurring or being maintained.
[Recommendation FRAN-2013-042]

Reply No 5 sent on 26/06/2018:
1) Low speed awareness:
The current Certification Specifications for Large Aeroplanes (CS-25) contain provisions to protect the aircraft against low speed.

CS 25.1329(h) (amended in December 2007, at amendment 4 of CS-25) requires, when the Flight Guidance System (FGS) is in use (like Autopilot engaged), a means to avoid excursions beyond an acceptable margin from the speed range of the normal flight envelope. Such means can be either an automatic control or guidance from the FGS, or the implementation of an alert to increase flight crew's awareness of a potential airspeed excursion.

AMC N°1 to CS 25.1329 provides guidance on FGS alerting functions. In chapter 9.3 it is reminded that alerting information should follow the provisions of CS 25.1322 (Flight Crew Alerting) and its associated advisory material. In addition, chapter 9.3.1 is dedicated to Alerting for Speed protection:
"To assure crew awareness, an alert should be provided when a sustained speed protection condition is detected. This is in addition to any annunciations associated with mode reversions that occur as a consequence of invoking speed protection (see Section 10.4, Speed Protection). Low speed protection alerting should include both an aural and a visual component.[…]"

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

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

Furthermore, concerning in-service aeroplanes, the review of accidents conducted by the Avionics System Harmonization Working Group (ASHWG) did not provide enough safety evidence to justify mandating a costly retroactive design change for incorporation of a low speed or low energy alerting system.

2) Unusual nose-up trim position
The Agency conducted rulemaking task RMT.0647 ('Loss of control or loss of flight path during go-around or other flight phases'). The Terms of Reference and Group Composition were published on 06/07/2015 (https://www.easa.europa.eu/document-library/terms-of-reference-and-group-compositions/tor-rmt0647).

A Notice of Proposed Amendment (NPA) 2017-06 was published on 11 May 2017 on the EASA website to propose an amendment to CS-25:

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

The regulatory impact assessment presented (RIA) in the NPA evaluated options requiring to upgrade the demonstration of adequate longitudinal controllability and authority during go-around and other flight phases; one option considered to mandate this requirement for new designs only (amendment of CS-25), and another option considered to also mandate design changes to existing designs. Overall, the analysis of the impacts associated concluded that the estimated safety benefit from an improvement of the pitch trim position control in the occurrences reviewed is very limited. On the other side, costs and complexity involved in the investigation and modification of the aeroplane pitch controllability, its auto trim function, or its alerting system are deemed to be very high. Furthermore, other actions have been performed to improve safety (RMT.0581 on flight crew training, Airbus design improvements). Therefore, the RIA concluded that improving CS-25 is suitable, but that mandating retroactive design changes on existing aeroplanes is not justified.

Based on this NPA and the comments received, the Agency issued on 27 March 2018 ED Decision 2018-005-R amending CS-25 (amendment 21):
https://www.easa.europa.eu/document-library/certification-specifications/cs-25-amendment-21

With this amendment, new provisions have been introduced (in CS 25.145 and AMC 25.145) to better ensure that the design of large aeroplanes provides adequate longitudinal controllability and authority during go-arounds (G/A) and in other flight phases (focusing on low-speed situations).

AMC 25.145(a) addresses specifically the case of aeroplanes equipped with an automatic pitch trim function (either in manual control or automatic mode):
"the nose-up pitch trim travel should be limited before or at stall warning activation (or stall buffet onset, or before reaching the angle-of-attack (AOA) limit if a high AOA limiting function is installed), in order to prevent an excessive nose-up pitch trim position and ensure that it is possible to command a prompt pitch down of the aeroplane to recover control.
The applicant should demonstrate this feature during flight testing or by using a validated simulator."

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

Safety Recommendation FRAN-2013-045 (BEA):
The BEA recommends that EASA, without waiting, in coordination with Eurocontrol and national civil aviation authorities, implement regulatory measures limiting modifications to published missed-approach procedures. [Recommendation FRAN-2013-045]

Reply No 4 sent on 26/06/2018:
On 22 May 2018 EASA published Opinion No 03/2018 as a product of RMT.0464 'Requirements for Air Traffic Services (ATS)'. The Opinion proposes a broad set of organisation and technical requirements addressing the provision of ATS – Air Traffic Control Service, Flight Information Service, Alerting Service – to be included in Annex IV to Regulation (EU) No 2017/373 'the ATM/ANS Common Requirements', with the objective to harmonise the safe provision of such services throughout the EASA Member States. The proposed rules are transposed mainly from the relevant ICAO ATS provisions, in particular those in Annex 11 and Doc 4444 'PANS ATM', and are adapted to the EU regulatory framework and service provision context.

The documents published with the Opinion contain draft AMC21 ATS.TR.210(a)(3) 'Operation of ATC service - MISSED APPROACHES INSTRUCTIONS', which is intended to address this Safety Recommendation and reads as follows:
'When issuing instructions for a missed approach to flight conducting an instrument approach procedure, the ATCO should adhere to the published missed approach procedure. The ATCO should issue modifications to the published missed approach procedure only in presence of safety reasons'.

Status: Closed – **Category:** Agreement

France

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

Synopsis of the event:
L'équipage décolle de Bordeaux vers 14 h 20, à destination de Paris CDG. Le pilote en fonction (PF) indique qu'au départ, lors du roulage, le SEC1 est déclaré en panne. L'équipage consulte la procédure associée indiquée sur l'ECAM. Elle prévoit de ne pas utiliser les aérofreins durant le vol.
Lors de l'arrivée, sous guidage radar, le pilote automatique n° 1, l'auto-poussée et les directeurs de vol (AP1, A/THR et les FD) sont engagés. L'avion est en configuration lisse. L'équipage effectue la descente à la vitesse de 250 kt en mode OPEN DES.
En descente du FL90 vers le FL60, le contrôleur demande à l'équipage « Sortie assez courte, poursuivez la descente vers 4000 ft et stable 4 000 ft d'ici 18 à 20 NM maxi ».
A cet instant, la configuration de l'avion permet de respecter cette contrainte sans modification du plan de descente. Cependant, le PF décide « d'expédier la descente ». Les aérofreins ne pouvant pas être utilisés, il place les manettes sur IDLE et déconnecte ainsi l'A/THR. Le PF ne se souvient pas avoir annoncé cette action et le PM indique qu'il n'a pas eu conscience de cette déconnexion.

Safety Recommendation FRAN-2014-003 (BEA):

[French] l'AESA, en coordination avec le constructeur, reconsidère la logique de fonctionnement ou d'affichage du directeur de vol afin qu'il disparaisse ou donne des indications pertinentes lorsque le pilote automatique se déconnecte de manière involontaire. [Recommandation FRAN-2014-003]

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

Reply No 2 sent on 22/03/2018:
EASA, in coordination with Airbus, has reviewed the advantages and disadvantages of modifying the Flight Director (FD) display logic under the event of an Autopilot (AP) inadvertent disengagement. The different Airbus flight control laws have also been taken into account in this review.

The disconnection of the AP can have different causes, many of which do not affect the FD relevant computation and display.

It is acknowledged that the FD could provide inappropriate guidance to the pilot in certain high angle-of-attack (AoA) situations, and this has been mitigated by removing indications in "high-AOA situations" for flight control laws other than the Normal Law.

Following an AP disconnection in presence of high AoA in Normal Law, as in the A321 F-GTAN incident, the crew must be able to benefit from the full capacity of the aircraft to reach and maintain, if desired, the target selected before the AP disconnected. In cases like this, the AoA protection will be activated if the AoA reaches a certain threshold.

In addition, an inadvertent AP disconnection could occur in many scenarios, most of them not related to a high AoA situation (for example, after a speed increase due to wind gradient, or after an involuntary movement of the stick during approach).

In the above-mentioned scenarios, the disappearance of the FD would deprive the crew from valuable information.

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

France

Registration	Aircraft Type	Location	Date of event	Event Type
F-GBFG	CESSNA F172	Le Hebriers	25/10/2012	Serious incident

Synopsis of the event:
The pilot, accompanied by a photographer, took off from Lyon Bron (69) airport at about 11h08 for an aerial photography flight. The planned flight represented a distance of 400 to 450 NM corresponding to the maximum flight in an F172M of about 4h30. The pilot had planned to land at Niort (79) aerodrome to refuel. The flight took place without any particular problem according to the following vertical profile as indicated by the pilot:

At about 16h15, after photographs had been taken of places in the commune of Herbiers, the pilot decided to refuel at Cholet (49), which was closer than Niort. He told the AFIS agent of his intention. A few minutes later, he noticed the engine misfiring, followed by loss of power. He undertook some fault-finding, and then looked for a field to land in. He explained that, during the descent, the engine was still running but was not delivering power. The landing took place after five hours and thirty minutes of flight, less than 15 NM from Cholet aerodrome. Once on the ground, the engine stopped.

Safety Recommendation FRAN-2014-013 (BEA):
EASA modify airworthiness regulations CS-23 and CS-VLA to make mandatory the installation of totalising fuel flowmeter indicators or equivalents or low fuel level warnings independent of the main gauge systems in all relevant aircraft. [Recommendation FRAN-2014-013]

Reply No 3 sent on 22/03/2018:
The Agency considers that a Totalising Fuel Flow Meter Indicator (TFFMI) is a valuable tool to support the pilot when monitoring the fuel consumption and fuel quantity. However, using a TFFMI does not provide protection against all fuel exhaustion scenarios.

A low fuel level alerting function is considered to be a more effective source of safety improvement against the risk of fuel exhaustion for CS-23 and CS-VLA aeroplanes. Such system provides an alert allowing time to find a suitable landing place in a majority of the operational scenarios. Furthermore, the alert is not put at risk by an eventual error from the pilot. Various recent aircraft designs are now equipped with such a function.

Therefore, the Agency supports the recommendation to create a new requirement for a low fuel level alerting function in the certification specifications for CS-23 and CS-VLA aeroplanes.

A standard for a low fuel level annunciation means, required for aeroplanes using combustion based engines (i.e. reciprocating and turbine engines), will be incorporated in the next revision of ASTM standard F3064 (Standard Specification for Control, Operational Characteristics and Installation of Instruments and Sensors of Propulsion Systems). The revision of this standard is planned 1Q2018 and will be introduced in the next issue of the AMC/GM to CS-23 planned 1Q2019.

In addition, the Agency is promoting the installation of low fuel level alerting systems on already certified aircraft with the introduction of a standard change CS-SC205a in CS-STAN issue 2 dated 30 March 2017. The availability of this standard change intends to simplify the process and limit the cost for the aircraft owners.

Reply No 4 sent on 28/08/2018:
The Agency considers that a Totalising Fuel Flow Meter Indicator (TFFMI) is a valuable tool to support the pilot when monitoring the fuel consumption and fuel quantity. However, using a TFFMI does not provide protection against all fuel exhaustion scenarios.

A low fuel level alerting function is considered as a more promising source of safety improvement against the risk of fuel exhaustion for general aviation aeroplanes. Such system provides an alert allowing time to find a suitable landing place in a majority of the operational scenarios. Furthermore, the alert is not put at risk by an eventual error from the pilot. Various recent aircraft designs are now equipped with such a function.

Therefore the Agency supports the recommendation to create a new requirement for a low fuel level alerting function in the certification specifications for CS-23 and CS-VLA aeroplanes.

EASA rulemaking task RMT.0498 'Reorganisation of Part 23 and CS-23' delivered a re-organised CS-23 which provides a single set of certification specifications for aeroplanes covered by CS-VLA and CS-23. CS-23 amendment 5 was published on 31 March 2017. It contains specifications based on proportionate performance, complexity, and type of operation. These specifications are less susceptible to changes as a result of technological developments or new compliance-showing methods by defining design-independent safety objectives.
The certification specifications are complemented by acceptable means of compliance and guidance material (AMC/GM) which are mainly based on consensus standards (developed by ASTM F44 Committee) that contain the detailed technical requirements to meet the safety objectives set by the certification specifications. AMC/GM to CS-23 Issue 1 was published on 20 December 2017.

A standard for a low fuel level annunciation means, required for aeroplanes using combustion based engines (i.e. reciprocating and turbine engines), has been incorporated in revision 18a of ASTM standard F3064 (Standard Specification for Control, Operational Characteristics and Installation of Instruments and Sensors of Propulsion Systems) dated 1 February 2018. The standard does not specify a requirement for an independency from the fuel quantity indication system. The ASTM committee decided to issue this standard based on the positive service experience gathered with aeroplanes that were voluntarily equipped with a low fuel level annunciation means, showing a dramatic reduction in accidents caused by fuel mismanagement. This positive experience includes aeroplanes with fuel level annunciation means that are not independent from the fuel quantity indication system, such as the Cessna 172.
The revision of this standard will be introduced in the next issue of the AMC/GM to CS-23 planned 1Q2019.
In the meantime, EASA has issued a Special Condition to require this function.

In addition, the Agency promotes the installation of low fuel level alerting systems on already certified aircraft with the introduction of a standard change CS-SC205a in CS-STAN issue 2 dated 30 March 2017. The implementation of this standard change implies the installation of a system independent from the fuel quantity indication system. The availability of this standard change will simplify the process and limit the cost for the aircraft owners.

Status: Open

France

Registration	Aircraft Type	Location	Date of event	Event Type
N823GA	GULFSTREAM GIV	Castellet Airport	13/07/2012	Accident

Synopsis of the event:
During a visual approach to land on runway 13 at Le Castellet aerodrome, the crew omitted to arm the ground spoilers. During touchdown, the latter did not deploy.
The crew applied a nose-down input which resulted, for a short period of less than one second, in unusually heavy loading of the nose gear. The aeroplane exited the runway to the left, hit some trees and caught fire.
The runway excursion was the result of an orientation to the left of the nose gear and the inability of the crew to recover from a situation for which it had not been trained.
The investigation revealed inadequate pre-flight preparation, checklists that were not carried out fully and in an appropriate manner. A possible link between the high load on the nose gear and its orientation to the left was not demonstrated.

Safety Recommendation FRAN-2015-043 (BEA):
FAA and EASA ensure that G-IV operators and Gulfstream set up procedures conducive to verifying the activation of the ground spoilers during landing, similar to that used for thrust reversers. [Recommendation 2015-043]

Reply No 2 sent on 28/08/2018:
Following the assessment of the Safety Recommendation carried out together with the FAA (primary certifying authority) and the aircraft manufacturer, EASA concurs with the FAA position, which is as follows:

"Gulfstream G-IV Airplane Flight Manual (AFM) Revision 51, G300 and G400 AFM Revision 19, all include a new revision to the Before Landing Checklist (20-05-50) requiring that ground spoiler be armed before checking Crew Alerting System (CAS) messaging, rather than after checking the CAS messages. The FAA [and EASA] determined that changing this checklist order will remind the crew to arm the spoilers for landing, as a "GND SPLR UNARMED" CAS message will appear if the ground spoilers are not armed. This change enhances the probability of a crew seeing the spoilers not armed and arming them accordingly."

EASA Member State Gulfstream G-IV operators are required to amend their checklists to take the latest revisions to the AFM into account (Point (h) of ORO.GEN.110 of Commission Regulation (EU) No 965/2012 on air operations).

Status: Closed – **Category:** Agreement

Safety Recommendation FRAN-2015-044 (BEA):
EASA in coordination with FAA assess the compliance of the G-IV with the certification requirements relating to the indication of the position of the ground spoilers.
[Recommendation 2015-044]

Reply No 2 sent on 27/11/2018:
The Gulfstream GIV was certified by the Federal Aviation Administration (FAA) in 1987 and validated by the Joint Aviation Authorities (JAA) in 2001.

The EASA Type Certificate Data Sheet (TCDS) No. EASA.IM.A.070 for Gulfstream GII, GIII, GIV & GV, issue 9, states as follows:

"EASA/JAA Certification Basis: The same as the FAA Certification Basis (EASA/JAA certification was by means of the "catch-up" procedure)".

This means for the Gulfstream GIV, that EASA adopted the 1987 FAA certification basis as the EASA certification basis.

Furthermore, the EASA assessment related to the spoilers position indication resulted in no unsafe condition for the Gulfstream GIV design.
Accordingly, no mandatory action will be taken concerning this design feature.

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

Safety Recommendation FRAN-2015-046 (BEA):
EASA and FAA ensure that the Certification Specifications (article 25-699 of the CS 25 / FAR 25 regulations) require that information on the position of the ground spoilers be available on landing. [Recommendation 2015-046]

Reply No 2 sent on 27/11/2018:
EASA confirms that Certification Specification CS 25.699(a) requires information on the position of the ground spoilers to be available on landing.

EASA's interpretation of JAR/CS 25.699(a), which differs from the FAA's one, is recorded in the document titled "EASA Large Aeroplanes Safety Emphasis Items list" revision 1, that is referred to by the EASA/FAA Technical Implementation Procedures (TIP) for Airworthiness and Environmental Certification to the EU-USA Bilateral Aviation Safety Agreement, and is published on the EASA website (https://www.easa.europa.eu/sites/default/files/dfu/EASA%20Large%20Aeroplanes%20Safety%20Emphasis%20Items%20List.pdf) as follows:

"The FAA requirement is the same as CS 25.699(a), following an accident investigation, turned out that the FAA accepts the Lift/Drag Lever position in the flight deck as means of compliance. This interpretation differ to the EASA interpretation, where receiving the actual device position feedback is required to meet the requirement. Only observing the control/selector position providing the position command is judged not to be acceptable."

Status: Closed – **Category:** Agreement

France

Registration	Aircraft Type	Location	Date of event	Event Type
F-GGQF	AVIONS ROBIN DR400	Vitry-En-Artois Airport	13/07/2012	Accident

Synopsis of the event:
Le pilote décolle à 15 h 25 de la piste 03 de l'aérodrome de Lens Bénifontaine pour aller chercher trois amis à Vitry-en-Artois et réaliser un vol d'agrément. Après une dizaine de minutes de vol, il atterrit sur la piste 30 de l'aérodrome de Vitry-en-Artois. Il décolle vers 16 h 00 de la même piste accompagné des trois passagers et prévoit de survoler la côte et d'atterrir à Dieppe pour y faire une pause avant de rentrer à Vitry-en-Artois. Au cours du vol, approchant de Dieppe, il constate une dégradation des conditions de visibilité et rentre directement à Vitry-en-Artois. Le pilote indique qu'à l'arrivée, il survole la manche à air à deux reprises mais qu'il a des difficultés à apprécier la direction du vent. Il estime que l'intensité du vent est d'environ 15 km/h (environ 8 kt) pour une direction comprise entre 250° et 300°. Il s'intègre en vent arrière main gauche pour la piste 12. Il indique qu'en dernier virage il a senti « une rafale de vent le plaquer au sol ». L'avion s'est enfoncé, incliné à gauche et en piqué. Le pilote a réduit la puissance, remis les ailes à l'horizontale et cabré fortement l'avion avant la collision avec le sol.

Safety Recommendation FRAN-2015-055 (BEA):
[French] - L'AESA complète les dispositions du règlement (EU) n° 965/2012 concernant les vols non commerciaux sur un aéronef non complexe (NCO) par un AMC/GM indiquant taux d'alcoolémie au-delà duquel l'altération du jugement et des performances qu'il entraîne risqué d'affecter la sécurité des vols. [Recommandation FRAN-2015-055]

Reply No 2 sent on 09/05/2018:
Paragraph 7.g. of Annex IV to Regulation (EC) No 216/2008 states that a crew member must not perform allocated duties on board an aircraft when under the influence of psychoactive substances or alcohol or when unfit due to injury, fatigue, medication, sickness or other similar causes.
Non-Commercial operations with other than complex motor-powered aircraft (NCO) are addressed in Annex VII (Part-NCO) to Commission Regulation (EU) No 965/2012, and have been applicable since 25 August 2016.

According to NCO.GEN.105 (a)(5), the pilot-in-command shall not commence a flight if he/she is incapacitated from performing duties by any cause such as injury, sickness, fatigue or the effects of any psychoactive substance.

In addition, the pilot-in-command shall comply with the laws, regulations and procedures of those States where operations are conducted [NCO.GEN.110 (a)]. National legislation already exists in some EASA Member States which stipulates maximum limits for blood alcohol concentration (BAC) levels for people involved in aviation activities.

The effects of alcohol on a pilot's performance are also included in the syllabus of theoretical knowledge for the Private Pilot Licence (AMC1 FCL.210; FCL.215 in Decision No

2011/016/R of the Executive Director of the EASA on Acceptable Means of Compliance and Guidance Material to Annex I (Part-FCL) to Commission Regulation (EU) No 1178/2011).

It is the responsibility of licence holders not to exercise the privileges of their licence at any time when they are aware of any decrease in their medical fitness which might render them unable to safely exercise those privileges. This includes the effects of alcohol on performance (MED.A.020 'Decrease in medical fitness' of Annex IV (Part-MED) to Commission Regulation (EU) No 1178/2011).

In addition, the competent authority shall limit, suspend or revoke the pilot's licence if the pilot is exercising the privileges of his or her licence when adversely affected by alcohol or drugs (ARA.FCL.250 (a)(4) of Annex I (Part-FCL) to Commission Regulation (EU) No 1178/2011).

However, the existing provisions for general aviation pilots do not include guidelines to support the pilot in ensuring that his/her BAC level will not be such that it affects his or her performance when exercising the privileges of his/her licence.

The Agency has therefore published a Safety Information Bulletin (SIB) to provide the EASA Member States' competent authorities and the GA community with guidelines on BAC levels above which performance is likely to be degraded to an unacceptable level of safety (see EASA SIB No. 2018-07 on 'Blood Alcohol Concentration Limits for General Aviation Pilots' published on 12 April 2018).

In addition to publication on the EASA SIB web page, the Agency has published a link to the SIB on the dedicated EASA General Aviation web page for ease of access by the GA community. Furthermore, the Agency promoted the SIB to the General Aviation community in occasion at the AERO Friedrichshafen air show (18-21 April 2018).

The Agency therefore considers that the safety issue referred to in the safety recommendation has been adequately addressed through the above-mentioned actions.

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

France

Registration	Aircraft Type	Location	Date of event	Event Type
HB-JFN	DASSAULT FALCON7X	Kuala Lumpur Airport	24/05/2011	Serious incident

Synopsis of the event:
On 24 May 2011 at 08 h 10, the crew of the Falcon 7X registered HB-JFN took off from Nuremberg (Germany) bound for Kuala Lumpur (Subang Airport) for a repositioning flight. The co-pilot was PF.
During the descent, the autopilot (AP) and auto-throttle were engaged and the calibrated airspeed was 300 kt. At approximately 19 h 55, the PF reduced the rate of descent on approaching the cleared altitude (11,000 ft). He selected a rate of descent of 1,300 ft / min and activated vertical mode VS2. A few seconds later, when the aeroplane had passed below 13,000 ft, the horizontal stabilizer (THS3) went from neutral to maximum nose-up position (12 degrees) in fifteen seconds.
The AP remained engaged for the first eight seconds of THS deployment. The flight control laws counteracted the nose-up movement of the THS by a nose-down action on the elevators, which reached approximately two-thirds of their maximum travel before AP was disconnected. The THS continued its nose-up movement. The aeroplane's pitch attitude and load factor increased. The PF applied maximum nose-down input on the side stick and placed the throttle levers in Take-Off position. The auto-throttle disconnected. The PF's nose-down input did not stop the nose-up movement of the THS, which reached its limit seven seconds after AP was switched off. The FCS displayed "TRIM LIMIT" on the PDU. Between disconnection of the AP and when the THS reached its stop, the calibrated airspeed dropped from 297 to 220 kt. The increased pitch attitude during THS runaway was combined with a slight bank to the right and increased altitude. The PF made a leftwards input on the side stick, causing the aircraft to bank 15 degrees to the left. The pitch attitude reached 25 degrees nose-up. Feeling that his pitch input was ineffective, the PF made a full rightwards input. He explained that he was trying to bank enough to decrease the pitch attitude, increase speed and regain pitch control. During the manoeuvre, the bank angle reached 98 degrees to the right. Meanwhile, the Captain (PNF) made nose-down inputs and roll inputs contrary to those of the PF. These simultaneous inputs decreased the bank input of the PF and increased the pitch attitude, load factor and angle of attack once again. These simultaneous inputs triggered the "DUAL INPUT" alarm. The PF stated that he therefore asked the PNF to stop making inputs on his side stick. He also took over priority of the controls by pressing the appropriate push-button on his side stick for six seconds. The PF maintained the bank angle at 40 to 80 degrees to the right for about twenty seconds. After reaching 42 degrees nose-up, the pitch attitude gradually decreased to 10 degrees. The angle of attack and load factor fell quickly, from 22 to 5 degrees and from 4.5g to between 1.25 and 1.5g respectively. Meanwhile, the calibrated airspeed dropped from 300 kt to 150 kt. The PF then made leftwards roll inputs until the bank angle was stabilised at about 50 degrees. The THS remained in full nose-up position, and the pitch attitude and calibrated airspeed remained stable for around forty seconds, at 10 degrees nose-up and 200 kt respectively. The PNF stated that he attempted to use the manual pitch trim and reengage the flight controls by pressing the "FCS ENGAGE" push-button on the upper panel. Noticing no improvement, the PNF made roll inputs on his side stick, in the opposite direction to those made by the PF, as well as full nose-down inputs. The simultaneous roll inputs of the two pilots gradually brought the bank angle to zero, which caused the pitch angle to increase once again to approximately 30 degrees, and the calibrated airspeed to drop to 125 kt. The crew stated that they heard the "INCREASE SPEED" alarm. This second dual input phase lasted approximately twelve seconds. The

Captain then took over the controls. The attitude began to decrease and the altitude reached a maximum of 22,500 ft. When the attitude reached 5 degrees nose-down, the Captain made nose-up inputs. The attitude increased again and the Captain resumed making full nose-down inputs.
For a reason unknown to the crew, the THS began to move towards a level position, going from twelve degrees to one degree nose-up in fifteen seconds. The aeroplane pitch was once again able to be controlled via inputs on the side stick. The crew made the decision to continue in manual flight mode. The approach and landing took place with no any further incidents. 2 minutes and 36 seconds passed between the start of THS nose-up movement and its return to balanced position. During this time: the load factor reached 4.6g; altitude increased from 13,000 to 22,500 ft; the calibrated airspeed went from 300 to 125 kts; the pitch attitude reached 41 degrees. Following this serious incident, the Falcon 7X fleet was temporarily grounded5. It returned to service on 16 June 2011.

Safety Recommendation FRAN-2016-004 (BEA):

EASA, in coordination with FAA, SAE and EUROCAE, develop means or methods that make it possible to consolidate, during safety analyses, checks on the independence of system control and the monitoring of said system. [Recommendation 2016-004]

Reply No 2 sent on 04/04/2018:

Since JAR 25 change 16 (used by Dassault Aviation to comply to paragraph JAR25.1309), the JAR/CS 25.1309 requires explicitly that catastrophic failure conditions must not result from a single failure. A System architecture with independent control and monitoring is only one of the available means to comply with this requirement.

The AMC 25.1309 clarifies that a single failure includes any set of failures, which cannot be shown to be independent from each other. The AMC drives the applicant to the different existing types of common cause analyses (CCAs) to be conducted in order to ensure that independence is maintained. The industry standard SAE ARP4761 “Guidelines and methods for conducting the safety assessment process on civil airborne systems and equipment”, referenced in the AMC 25.1309 and published in 1996, details how to perform these CCAs (Particular Risk Analysis, Common Mode Analysis (CMA), and Zonal Safety Analysis). In particular, the Common Mode Analysis is “based on analysing design and implementation for elements that may defeat the redundancy or independence of functions within the design”. When required redundancy or independence is compromised, justification for the acceptability or elimination of the compromise is required.

The SAE ARP4761 is currently being revised under the responsibility of the Working Groups (WG) EUROCAE WG-63 and SAE S-18.
Draft revision A of the SAE ARP4761 which is planned to be published in November 2018, improves particularly the CMA appendix, and its role in the safety assessments at each stage of the development process (i.e. Preliminary Aircraft Safety Assessment (PASA), Preliminary System Safety Assessments (PSSAs), System Safety Assessments (SSAs), and Aircraft Safety Assessment (ASA)). The draft revision A puts emphasis on the identification of independence principles in the aircraft and system architectures, on the generation of the associated independence requirements, and on the validation and implementation verification of these requirements.

The CMA is considered by the Agency to be the actual “means or methods” supporting the (P)ASA and (P)SSAs to identify and justify possible lack of independence between control and monitoring functions.
In addition, the Agency is applying since 2012 a “generic” Certification Review Item “Common Mode Failures and Errors in Flight Control Functions” to enforce the CMA early in

the development process and provide specific guidance to the applicant in order to ensure that common mode failures and errors, including related mitigation means, are duly considered in Flight Control Functions.

Status: Open

France

Registration	Aircraft Type	Location	Date of event	Event Type
I-MLVT	FOKKER F27	AD Paris Charles de Gaulle	25/10/2013	Accident

Synopsis of the event:
L'équipage décolle à 01 h 22 de la piste 09R de l'aérodrome de Paris-Charles de Gaulle pour un vol de cargo postal à destination de l'aérodrome de Dole Tavaux. À une hauteur d'environ 1 300 ft, il entend un bruit d'explosion provenant de l'espace cargo. Simultanément, il constate l'allumage du voyant « feu moteur » gauche et le déclenchement de l'alarme sonore associée. L'équipage se déclare en détresse et applique la procédure feu moteur mais observe que la commande de passage en position drapeau est bloquée. Le commandant de bord regarde par la fenêtre et constate que l'incendie s'est arrêté et que le moteur gauche est partiellement manquant. L'avion restant pilotable, l'équipage fait demi-tour et atterrit sans autre problème à Paris-Charles de Gaulle. La partie avant du moteur gauche ainsi que l'hélice en plusieurs fragments sont retrouvées dans un champ sous l'axe de montée initiale de la piste 09R.

Safety Recommendation FRAN-2018-001 (BEA):

[French] L'EASA modifie la part 145 (et la part M comme nécessaire) pour imposer que l'organisme d'entretien, ou l'opérateur, conserve une copie de tous les enregistrements d'entretien détaillés et de toutes les données d'entretien associées jusqu'à ce que ces informations soient remplacées par de nouvelles informations équivalentes, ou sur une durée suffisamment longue pour réduire le risque de perte d'information utile. [Recommandation FRAN-2018-001]

[courtesy translation provided by BEA]
EASA modifies Part 145 (and Part M as necessary) to require the maintenance organisation or the operator to keep a copy of all the detailed maintenance records and all the associated maintenance data until this data is superseded by equivalent new data, or for a sufficiently long period to reduce the risk of useful data being lost.[Recommendation FRAN-2018-001]

Reply No 1 sent on 22/03/2018:
According to M.A.305 of Commission Regulation (EU) No 1321/2014,the maintenance organisation (in this case a Part-145 approved organisation) is required to retain the records necessary to prove that all requirements have been met for the issue of the certificate of release to service. On the other hand, the owner or continuing airworthiness management organisation (CAMO) shall retain the records necessary to establish the airworthiness status of the aircraft.

The Part-145 approved organisation shall retain all detailed maintenance records and any associated maintenance data for 3 years from the date the aircraft or component to which the work relates was released from the organisation. For additional information, this period exceeds what is established in ICAO Annex 6, of 1 year after the signing of the maintenance release.

Regarding the continuing airworthiness records to be retained by the owner or CAMO, the current regulation already provides comprehensive details of the records to be maintained and for how long. In particular, all detailed maintenance records in respect of the aircraft and any service life-limited component fitted thereto, shall be retained until such time as the information contained therein is superseded by new information equivalent in scope and detail but not less than 36 months after the aircraft or component has been released to service.

These details have recently been reconsidered under rulemaking task RMT.0276 on technical records. As a result of this activity, the Agency issued Opinion 13/2016, which clarifies some aspects of the continuing airworthiness. The specific record-keeping periods relevant to this safety recommendation are considered to be adequate and are not proposed to be amended.

In addition, according to M.A.614 (c) (3) of Commission Regulation (EU) No 1321/2014, when a maintenance organisation or an owner or continuing airworthiness management organisation terminates its operation, all appropriate records shall be properly transferred to the next organisation or owner.

In conclusion, the regulation now provides comprehensive details covering the intention of the safety recommendation and no further action is deemed necessary.

Status: Open

France

Registration	Aircraft Type	Location	Date of event	Event Type
TC-OBZ	AIRBUS A321	Deauville - Normandy	26/09/2013	Serious incident

Synopsis of the event:
L'équipage du vol charter OHY 1985 (vol IFR commercial non régulier) s'apprête à débuter la descente à destination de Deauville en conditions VMC. L'aéronef évolue en espace aérien contrôlé. L'équipage se prépare à une approche ILS pour un atterrissage en piste 30. Le CdB est aux commandes, il s'agit de son premier vol vers cet aérodrome.
Au premier contact avec l'approche de Deauville, l'équipage est informé que la piste en service a changé et qu'un autre avion se prépare à décoller face à eux. Plusieurs options sont possibles pour se poser en piste 12 : une approche GNSS, une approche ILS 30 suivie d'une MVL ou enfin une approche à vue.
L'équipage annonce à la fréquence une approche à vue mais se prépare à une procédure MVL. Au moment où le contrôleur demande de rappeler en début de vent arrière, le PF interprète ce message comme un ordre de virer à droite. À partir de cet instant, l'équipage ne suit plus de procédure standard mais mélange la procédure de MVL et l'approche à vue. Il descend jusqu'à la MDA (1 100 ft AAL) pendant la branche de vent arrière puis poursuit la descente en dernier virage sous le plan de la finale. L'altitude minimale enregistrée est de 528 ft (soit 49 ft au-dessus de l'aérodrome) à une distance de 3 NM du seuil de piste.
Les contrôleurs n'observaient pas la trajectoire de l'avion en finale. La réaction de l'équipage face à l'apparition des alarmes TAWS a probablement permis de prévenir une collision de l'aéronef avec la côte.

Safety Recommendation FRAN-2018-003 (BEA):
[French] - L'AESA fasse la promotion auprès des compagnies aériennes de la nécessité de prendre en compte dans leur cartographie des risques les compétences qui pourraient être requises en pratique lors des approches à vue, en fonction des aéroports qu'elles desservent. [Recommandation 2018-003]

Reply No 1 sent on 08/06/2018:
EASA Member State commercial air transport operators are governed by Commission Regulation (EU) No 965/2012 on air operations, which has been applicable since 28 October 2014 (more than a year after the subject incident). Examples of the current provisions which address the safety issue are as follows:

- Operator's initial and recurrent familiarisation training for the commander on the aerodromes to be used [ORO.FC.105 (c)].

- Prior to operating to a category B aerodrome (such as Deauville-Normandy Airport for the subject operator), the commander should be briefed on the category B aerodrome(s) concerned before departure of a flight involving category B aerodrome(s) as destination or alternate aerodromes [(c) (1) of AMC1 ORO.FC.105(b)(2);(c)].

- The Operations Manual should contain the normal procedures and duties assigned to the crew, the appropriate checklists, the system for their use and a statement covering the necessary coordination procedures between flight and cabin crew members. The normal procedures and duties should include approach, landing preparation and briefing, and visual approach and circling [(g) and (j) of AMC3 ORO.MLR.100 (a) (B) (2)].

- Operator’s conversion and recurrent training and checking (ORO.FC.220 and ORO.FC.230), should include Operator Proficiency Checks (OPCs), line-oriented flight training with emphasis on crew resource management (including threat and error management/decision-making), line flying under supervision, and upset prevention and recovery training on manual handling skills for visual approach (AMC1 ORO.FC.220&230). The associated guidance material covers specific training for multi-crew pilot licence holders [GM1 ORO.FC.220 (c)] and evidence-based visual approach flight simulator training for OPCs and Licence Proficiency Checks with a cross-reference to ICAO Doc. 9995 ‘Manual of Evidence-Based Training’ [GM1 ORO.FC.230(a);(b);(f)].

- The operator shall establish, implement and maintain a management system that includes the identification of aviation safety hazards entailed by the activities of the operator, their evaluation and the management of associated risks, including taking actions to mitigate the risk and verify their effectiveness [(a) (3) of ORO.GEN.200].

- The competent authority shall verify continued compliance with the applicable requirements of organisations it has certified [(a) (2) of ARO.GEN.300].

The safety issue described in the recommendation has already been identified by EASA and is highlighted in the European Plan for Aviation Safety (EPAS) 2018-2022 under section 5.3.6. ‘terrain conflict’. This risk area includes the controlled flight into terrain together with undershoot or overshoot of the runway during approach and landing phases. It comprises those situations where the aircraft collides or nearly collides with terrain while the flight crew has control of the aircraft. It also includes occurrences which are the direct precursors of a fatal outcome, such as descending below weather minima, undue clearance below radar minima, etc. The Agency is committed to continuously monitoring the safety issues identified in the Commercial Air Transport Fixed Wing Portfolio (ref: EASA Annual Safety Review 2017) for this particular risk area. In addition, the EPAS includes Member State Task MST.006 for member states to address controlled flight into terrain in their national state safety programmes, which should include, as a minimum, agreeing a set of actions and measuring their effectiveness on a continuous monitoring basis.

In addition, on 19 February 2018, the Agency published Safety Information Bulletin SIB 2018-06 on approaches and landings. The SIB was initiated in response to multiple reported incorrect airfield approaches and landings, to raise awareness about the safety issue and to highlight relevant operational considerations. Although the SIB was initiated from a different perspective, it contains some recommendations which are valid in the context of this safety recommendation. Best practice guidance is provided to mitigate the related threats, which are also related to the visual approaches safety issue. Guidance is included on situational awareness, monitored approaches, and approach planning and briefing. The SIB is applicable to aeroplane operators, Approved Training Organisations (ATOs) providing relevant flight training, Air Navigation Service Providers (ANSPs), Air Traffic Controllers (ATCOs) and EASA Member States’ competent authorities. Reference is also made to Federal Aviation Administration (FAA) Safety Advisory for Operators (SAFO) 17010, dated 18 August 2017 on the same issue.

With the above-mentioned mitigation and actions, the Agency considers that, for EASA Member State operators, the safety issue is appropriately addressed through the existing EU regulatory framework and associated safety risk management systems.

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

France

Registration	Aircraft Type	Location	Date of event	Event Type
F-HCCG	OTHER Not mapped (Schroeder Fire Balloons G50/24)	Cazes Mondenard (82)	05/10/2014	Accident

Synopsis of the event:
Near the end of cruise, the balloon was flying in a convective atmosphere generating wind variations. The pilot made the decision to land. In accordance with his instructions, the passengers adopted the safety position. During the descent, the vertical speed became high despite burner inputs by the pilot. Near the ground, the balloon's flight path turned to the left by several dozen degrees. The pilot activated the turning vents to position the long side of the rectangular basket perpendicular to the flight path and then activated the rapid deflation system. The pilot lights were on. The balloon struck the ground hard, then regained height. On the second impact, the basket turned over completely. A fire broke out during the evacuation of the occupants.

Safety Recommendation FRAN-2018-004 (BEA):
BEA recommends that:
EASA ensures that the flight manuals are updated to underline the need for pilot lights to be shut down before contact, whatever the landing conditions may be. [Recommendation 2018-004]

Reply No 1 sent on 28/09/2018:
EASA has reviewed the Aircraft Flight Manuals (AFMs) of the main EU balloon manufacturers and can confirm that they already contain instructions to turn off pilot lights before contact. The AFM of the balloon involved in the accident subject to this safety recommendation contained this instruction in the normal and in the emergency procedures sections. However, EASA supports the current practice to include, in new or revised AFMs, the requirement to extinguish the pilot lights when the pilot is satisfied that no further burner operation will be required.

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

Safety Recommendation FRAN-2018-006 (BEA):

BEA recommends that:
EASA, working with balloon manufacturers and pilot representatives, studies the possibilities of an emergency fire-prevention shut-off and protection of burner control system that could be required in public transport, and possibly in general aviation.
[Recommendation 2018-006]

Reply No 1 sent on 30/10/2018:
EASA has conducted a survey with the main balloon manufacturers on emergency gas supply shut-off design solutions to ensure the system enables easy closure of the gas supply valve in an emergency, but prevents unintended movement of the control of the gas supply valve.

Taking into account feedback received from the survey, EASA published Safety Information Bulletin No. 2018-14 on 06 September 2018 recommending the use of quarter-turn valves (which are already available on the market) on liquid gas cylinders for commercial and non-commercial balloon operations. These valves do not add complexity and provide for a quick and unambiguous operation to shut off the gas in case of leaks or fire. They also have an accepatable level of protection from involuntary control inputs.

In the SIB, EASA also recommends operators to include the emergency use of these valves in the pre-flight briefing of passengers.

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

Safety Recommendation FRAN-2018-007 (BEA):

BEA recommends that:
EASA, working with the competent authorities and commercial passenger ballooning professionals, clarifies the position of CPB in the hierarchy of acceptable risks defined by the European General Aviation Safety Strategy document. [Recommendation 2018-007]

Reply No 1 sent on 30/10/2018:
The document 'European General Aviation Safety Strategy', published on the EASA web site on 30 August 2012, Chapter 2 'Risk based approach – a proposed acceptable risk hierarchy' contains a description of the proposed methodology for the General Aviation regulatory structural design, which takes into account the fact that different stakeholders may demand and deserve a different approach to risk management. A sort of hierarchy is proposed in descending order of "risk averseness", whereby Commercial Air Transport (CAT) is positioned second after "uninvolved third parties", and private pilots on non-commercial flights are positioned last. CAT in this context covers all aircraft types, including Commercial Passenger Ballooning (CPB), which is defined in Commission Regulation (EU) 2018/395 (hereinafter referred to as the balloon regulation), as a form of commercial air transport operation with a balloon whereby passengers are carried on sightseeing or experience flights for remuneration or other valuable consideration (see point 21 of Annex I 'Definitions' of the balloon regulation). It should be noted that the balloon regulation is applicable from 09 April 2019, and, in the meantime, balloon operations are governed by national legislation. Competent authorities and general aviation associations were represented on the working group which was tasked with making these proposals for a European General Aviation Safety Strategy.

In addition, competent authorities and commercial balloon transport professionals were consulted within the framework of EASA rulemaking task RMT.0674 'Revision of the European operational rules for balloons'. The aim of the resulting dedicated balloon regulation is to maintain the target safety levels set for balloon operations by Commission Regulation (EU) No 965/2012 on air operations, while reducing the regulatory burden for balloon operators (see the explanatory note to EASA Opinion No 01/2016).

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

Safety Recommendation FRAN-2018-008 (BEA):
BEA recommends that:
EASA carries out a targeted assessment of the effects of the European regulation for commercial passenger ballooning on the safety level, once it has become applicable, with specific attention paid to the oversight procedures expected of the competent authorities. [Recommendation 2018-008]

Reply No 1 sent on 30/10/2018:
The European Plan for Aviation Safety (EPAS) includes evaluation tasks which are planned over a five-year period.

Once enough time has passed to obtain sufficient data after the applicability date of 09 April 2019 of the Commission Regulation (EU) No 2018/395 laying down detailed rules for the operation of balloons, consideration will be given to conducting an ex-post evaluation of the regulations, in accordance with the criteria provided in chapter 2 of the EPAS 2019-2023 (expected to be published in December 2018). The evaluations routinely include the provisions on competent authority oversight of balloon operators.

This is a systematic approach which is embedded in the established Agency's Safety Risk Management Process. Through this process, EASA monitors the safety performance of all aviation domains, including Balloon operations and takes the appropriate action depending on the risks identified.

Status: Closed – **Category:** Agreement

Safety Recommendation FRAN-2018-009 (BEA):

BEA recommends that:
EASA uses the results of the assessment specified by the previous recommendation and ensures that the CPB oversight methods are commensurate with the targeted risk level and the ability of operators to reach this risk level. [Recommendation 2018-009]

Reply No 1 sent on 30/10/2018:

If an ex-post evaluation of the EU regulations on balloon operations identifies any weaknesses, actions to close safety gaps will be considered for inclusion in a subsequent European Plan for Aviation Safety. This will include an assessment of whether the Commercial Passenger Balloon operators' monitoring methods, the level of risk and their ability to meet this level of risk, are matched.

In the meantime, in addition to the required oversight by the competent authorities, the Agency takes a proactive approach by continually monitoring safety performance through data collection and analysis with the support of the established EASA Balloon Collaborative Analysis Group (see page 10 of the EASA Annual Safety Review 2018). Should any weaknesses be identified, the Agency will take appropriate and timely action.

This is a systematic approach which is embedded in the established Agency's Safety Risk Management Process.

Status: Closed – **Category:** Agreement

Germany

Registration	Aircraft Type	Location	Date of event	Event Type
	FOKKER F28	Germany	20/01/2015	Accident

Synopsis of the event:
The Auxiliary Power Unit (APU) ingested de-icing fluid during the de-icing procedure on the apron. Subsequently turbine speed increased strongly and the APU ruptured.
As a result the aft pressure bulkhead of the airplane was punctured by debris.

Safety Recommendation GERF-2018-002 (BFU):

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

Reply No 1 sent on 27/04/2018:
The Agency in view of the adoption of the new Basic Regulation will develop a ground handling roadmap. This roadmap shall address amongst other issues, aircraft de-icing. The roadmap is expected to be delivered by Q2/2019.

Status: Open

Germany

Registration	Aircraft Type	Location	Date of event	Event Type
	SCHLEICHER KA6	Braunschweig - Waggum	11/08/2018	Accident

Synopsis of the event:
On 11 August 2018 an air accident occurred with the glider type Ka 6 CR where the pilot, a student pilot, was fatally injured.
On the day of the accident he had been made familiar with the type. It was his first flight with the Ka 6 CR.
In the morning of the day of the accident the glider had been rigged and a flight instructor had checked it. Until the accident three flights had been conducted with the glider.
After the winch launching the student pilot had performed two right-hand turns into the glider training area. According to witnesses statements he reported "Ruder klemmt (rudder jammed)" via radio. The flight instructor instructed him to bail out.
The student pilot did as he was instructed. According to witnesses statements he left the glider in an estimated height of 100-120 m. According to the current state of knowledge the used emergency parachute, which has to be operated manually, was not activated.
At impact the pilot was fatally injured.

Safety Recommendation GERF-2018-008 (BFU):
The European Aviation Safety Agency (EASA) should ensure that aircraft type certificate holders specify procedures for the connection of rudders and flaps so that manual function checks of the safety devices of rudder and flap connections are included as well.

Reply No 1 sent on 06/11/2018:
EASA is reviewing the procedures specified by the manufacturers for the connection of control surfaces in the sailplanes subject to rigging.
Depending on the results of the review, EASA will take appropriate actions.

Status: Open

Hungary

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

Synopsis of the event:
The ATR42-500 aircaft (registration YR-ATG, operated by TAROM) took off from runway 31L of Budapest Liszt Ferenc International Airport for Bucharest (as flight ROT234) at 17:21 UTC on 17 June 2011. The flight crew noticed the failure, flameout and fire of RH engine 11 seconds after rotation. The flight crew acted in accordance with the emergency checklist and declared MAYDAY while making a turn with the intention to land. The passengers panicked when they noticed the smoke in the cabin and the flaming engine through the window. The pilots received clearance for the tower and landed on runway 13L, 3 minutes after takeoff. The engine fire was put off in flight. The aircraft exited the runway and stopped on a taxiway where the captain ordered emergency evacuation of the aircraft. One passenger had medical problems due to the emergency situation and required medical assistance. The aircraft was checked by the fire brigade and then towed to the apron.
The affected engine was removed from the aircraft and shipped to an authorised engine repair facility for disassembly. The power turbine disk assemblies were taken to the engine manufacturer for analysis. The inspections revealed that the engine failure was caused by a broken turbine blade. The blade defect itself was a consequence of microshrinkage porosity and subsequent fatigue crack. The remaining damages were consequential.
In the course of the investigation the IC received information on two other occurrences similar in nature and conditions – aircraft type, engine type, occurrence – that took place in 2011 and one more from 2013. ANSV, AIB Denmark and TSB HU issued five immediate safety recommendations – with agreed text – concerning turbine blade inspections during manufacturing and on-board documentation related to in-flight emergency situations. The IC recommends to issue a safety recommendation – upon closure of the investigation - on training and equipment modification with regard to the Passenger Address system of the affected aircraft type.

Safety Recommendation HUNG-2016-006 (TSB):

TSB recommends to EASA to consider a modification of the Passenger Address system on ATR aircraft and all other aircraft equipped with similar passenger address systems that it allows release of „EMER” blocking with the PA button (situated next to the „EMER” button) or in other suitable way.
As a temporary measure until the above recommendation is implemented, TSB recommends to EASA to apply changes in the Cabin Crew Operating Manuals of the affected aircraft types in order to direct the attention of cabin crew members with more emphasis to the possibility of PA blocking release by replacing the handset back to its holder.

Reply No 2 sent on 22/03/2018:
The assessment of the safety issue carried out by EASA (related to Passenger Address Systems (PAs) being blocked after a certain PA selection until the PA handset is replaced back in the holder) is going to be finalised soon; actually only the feedback from one Type Certificate Holder (TCH) is missing from the identified batch of affected EASA TCHs.

The preliminary results show that some of the TCHs have a design which is not affected by this safety issue, for example: BAE, Dornier, Fokker, Airbus Defence and Space - DS, Airbus SAS (excluding Wide Body - WB family A300/A310) Boeing and MD models, and Embraer.

Some affected TCHs are modifying their cabin crew operating manuals to improve clarity (Airbus SAS for the WB family and ATR).

For some other affected TCHs, their crew manuals were assessed as being sufficiently clear on this safety issue (Short Brothers, Bombardier, Sukhoi).

Reply No 3 sent on 28/08/2018:

EASA, in cooperation with Type Certificate Holders (TCHs), analysed the characteristics of Passenger Address (PA) systems in order to check if the system could be blocked after a certain PA selection until the PA handset is placed back to its holder.

It was found that some PA system designs, including those on ATR aeroplanes, are indeed affected by this phenomenon. Cabin crew operating manuals (CCOM) were then reviewed and, when needed, amended to ensure that clear information and instructions are available to emphasise and manage the possibility of the blocking of the PA.

EASA considers that the current design of the PA system does not need modifications, provided that the CCOMs are clear on this issue.

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

Iceland

Registration	Aircraft Type	Location	Date of event	Event Type
TF-FIJ	BOEING 757	SSE London Gatwick Airport	04/06/2009	Serious incident

Synopsis of the event:
Icelandair B757-200, TF-FIJ, departed Paris Charles de Gaulle airport (LFPG) France at 11:39 UTC (13:39 local time) on June 4th 2009 for its flight to Keflavik airport (BIKF) Iceland.

Seventeen minutes into the flight the flight crew noticed white smoke entering the flight deck. The smoke intensified rapidly to such an extent that the flight crew could barely see their instruments. Shortly after, smoke also entered the whole cabin section and intensified rapidly. The commander noticed engine #1 surging and shut it down. Shortly thereafter the smoke started to decrease. The airplane diverted and made an emergency landing at London Gatwick airport (EGKK) United Kingdom.

The investigation revealed that the low pressure fuel pump installed on engine #1 had failed due to extensive internal wear damages. This allowed fuel to leak into the engine's oil system. Fuel/oil mixture entered the engine's main bearing chambers, where the seals could not contain it. The fuel/oil mixture then leaked into the compressor section of the engine. Inside the compressor the fuel/oil mixture generated smoke. The smoke propagated to the engine's HP2 port and from there entered the engine's bleed air system. Once in the bleed air system the smoke entered the left air conditioning pack and from there was distributed to the flight deck and the cabin.

The investigation revealed that the low pressure fuel pump had never undergone inspection, repair or overhaul.

The manufacturer of the low pressure fuel pump, as well as the manufacturer of the engine, had issued maintenance requirements for the low pressure fuel pump. The investigation revealed that the operator of the airplane had not implemented into its maintenance program tasks that would individually monitor the low pressure fuel pump utilizations and ensure its required maintenance was being performed.

Safety Recommendation ICLD-2013-001 (ITSB):
EASA and ICAO: Set guiding rule for airframe and engine manufacturers such that Maintenance Planning Document (MPD) and Engine Maintenance Manual (EMM) clearly include recommended maintenance information from subcomponent Component Maintenance Manuals (CMM).

Reply No 4 sent on 22/03/2018:
This safety recommendation has been evaluated by the sub-group 1 of EASA rulemaking task MDM.056 (RMT.0252) 'Instructions for Continued Airworthiness'. The current position of this sub-group is summarised below.

The determination of applicable instructions for continued airworthiness (ICA) and maintenance instructions of a product, especially those to be performed on the aircraft, is under the responsibility of the Design Approval Holder (DAH) of this product. This includes appliances which are part of the certified product.

For that purpose, the DAH may consider maintenance instructions provided by suppliers if considered applicable and effective. Those maintenance instructions may be then incorporated either by reference or may be copied (with or without changes) directly into the ICA and maintenance instructions of the DAH.

On the other hand this also means that the DAH may decide not to endorse maintenance instructions provided by suppliers if considered either not applicable or not effective.

Therefore it is not appropriate to enforce on airframe and engine manufacturers that "Maintenance Planning Document (MPD) and Engine Maintenance Manual (EMM) clearly include recommended maintenance information from subcomponent Component Maintenance Manuals (CMM)."

The sub-group 1 proposed guidance material stating that DAH should systematically review initial maintenance recommendations provided by suppliers and consider them if applicable and effective. This review should include ETSO articles where certain maintenance instructions may be even required to be picked up by the DAH to ensure that the ETSO article continues to satisfy the terms of its ETSO authorisation after installation.

This position is reflected in the proposal of NPA 2018-01 'Instructions for continued airworthiness' which has been published on 29 January 2018 on the EASA Website: https://www.easa.europa.eu/document-library/notices-of-proposed-amendment/npa-2018-01
It includes a proposal for guidance material as indicated above (refer to page 14, GM N°2 to 21.A.7(a) 'Determination of which supplier's data are part of ICA').

The next step of this rulemaking task will be an Opinion to the European Commission (EC) by end of 2018, proposing an amendment of Part-21 (Annex I to Commission Regulation (EU) No 748/2012). The EASA ED Decision amending the corresponding AMC/GM to Part-21 will be issued once the associated amending regulation to Part-21 is published.

Status: Open

Ireland

Registration	Aircraft Type	Location	Date of event	Event Type
EI-ENB	BOEING 737	Kerry Airport (EIKY), Co. Kerry	21/12/2010	Incident

Synopsis of the event:
Shortly after landing, smoke was observed in both the cockpit and cabin. The aircraft was stopped, the engines were shut down and an evacuation was carried out. No technical defect was found during the subsequent examination. It is probable that the smoke was caused by the engines ingesting granular urea, which had been used to de-ice the runway during a very cold weather period.

Safety Recommendation IRLD-2012-003 (AAIU):
European Aviation Safety Agency (EASA) should introduce a requirement that the CVR should continue to record in the event of power failure.

Reply No 4 sent on 09/05/2018:
This safety recommendation has been taken into account within the framework of EASA rulemaking task RMT.0249 entitled "Recorders installation and maintenance thereof - certification aspects".

The Notice of Proposed Amendment (NPA) 2018-03 was published on 27 March 2018 and it includes the following proposals:

- amend Commission Regulation (EU) No 965/2012, Annex IV (Part-CAT), CAT.IDE.A.185 Cockpit voice recorder, to require that aeroplanes with an Maximum Certified Take-Off Mass (MCTOM) of over 27 000 kg and first issued with an individual Certificate of Airworthiness (CofA) on or after [date of publication + 3 years] shall be equipped with an alternate power source to which the CVR and cockpit-mounted area microphone are switched automatically in the event that all other power to the recorder is interrupted;

- amend CS-25 (Certification Specifications for large aeroplanes), and CS-29 (Certification specifications for large rotorcraft), to require that CVRs have an alternate power source to which the recorder and cockpit-mounted area microphone are switched automatically in the event that all other power to the recorder is interrupted either by a normal shutdown or by any other loss of power from the electrical power bus.

The Opinion to the European Commission proposing an amendment of Regulation (EU) No 965/2012, and the ED Decisions to amend CS-25 and CS-29 are planned to be issued by 4Q2018.

Status: Open

Ireland

Registration	Aircraft Type	Location	Date of event	Event Type
G-SKYE	CESSNA TU206	1,6 NM west of Abbeyshrule airfield (EIAB)	21/06/2014	Accident

Synopsis of the event:
The aircraft, a Cessna TU206G, was being used for parachuting/skydiving activities at Abbeyshrule (EIAB) on the day of the accident. Shortly after take-off, the Pilot felt what was described as a "knock" following which the engine lost power. This resulted in the Pilot making a forced landing in a nearby field. There were five people on board the aircraft – the Pilot and four skydivers. The skydivers comprised of two tandem pairs, with each pair being made up of a qualified skydiver and a person skydiving for charity secured to him. Following the forced landing, all occupants successfully evacuated the aircraft, which sustained substantial damage. The Pilot and qualified skydivers reported no injuries at the scene. The two charity skydivers attended a local hospital, but were released a short time later. The Investigation found that the cause of the engine power loss was a failure of the crankshaft.

Safety Recommendation IRLD-2015-002 (AAIU):
The European Aviation Safety Agency should conduct a safety study in relation to the most effective method of occupant restraint in aircraft engaged in parachute operations and consider whether the applicable EU Regulations and Certification Specifications adequately address the safety restraint of parachutists (IRLD2015012).

Reply No 3 sent on 06/11/2018:
EASA has performed a study on the effectiveness of restraint systems provided for parachutists, starting with the operating requirements (as defined in Commission Regulation (EU) No 965/2012) and the technical requirements (as defined in the Certification Specifications CS-23 and Special Condition 'Use of aeroplanes for parachuting activities', doc. No. SC-023-div-01) for their selection and installation.

The study included:
- a review of the current regulatory framework;
- an analysis of occurrence data in the last 11.5 years covering parachute operations with aircraft registered in EASA member states;
- a survey with a sample of European parachute associations;
- an assessment of different type of restraint systems including the advantages and the disadvantages; and
- a review of the available research material for parachutists' restraint systems;

The conclusions of the study are summarised as follows:

The restraint systems are primarily aimed to keep the parachutists in place during critical phases of flight before jumping, in order to maintain the centre of gravity (CG) within the envelope. It is highlighted that the CG envelope can also be protected with alternative means (e.g. handles for parachutists using the aeroplane floor as a station). The restraint systems also provide protection in case of an emergency landing with parachutists still on board, or an aborted take-off or in-flight turbulence. However, there are disadvantages in the use of restraint systems, due to the potential for snagging and other interference with the parachutist's harness), depending on the aircraft model and configuration.

The available methods of restraint systems can be more or less effective depending on factors, such as the parachutists' positions (e.g. aft or forward facing) and aircraft size etc. For example, the most effective method (from a crashworthiness protection point of view) uses restraint systems with dual attachment points. On the other hand, such a solution presents the disadvantage that it takes longer to unfasten, and it may create an impediment on the aircraft floor during the jumping phase and in case of emergency evacuation on the ground after landing. A single attachment point can provide, in some cases (e.g. in light aircraft) a better solution, considering also the fact that it provides a faster single point release.

EASA has concluded that the use of restraint systems for parachutists has advantages and disadvantages, and the current regulatory framework, according to which the selection of the most appropriate type of restraint systems (and the decision to install them or to use a means to hold or strap on instead, for parachutists using the aeroplane floor as a station) is part of the risk assessment by the operator (as required by SPO.OP.230 of Part-SPO (Specialised Operations) of Commission Regulation (EU) No 965/2012), is appropriate.

As a result of the study, EASA has taken the following actions:

EASA Safety Information Bulletin SIB 2018-18 has been issued providing guidance on restraint systems for parachutists, and supporting operators and designers in the installation and use of restraint systems, and in the selection of the most appropriate type of restraint systems.

Special Condition SC-O23-div-01 "Use of aeroplanes for parachuting activities" has been revised to clarify the installation requirements for restraint systems.

The review of occurrence data and the service experience data from the parachute associations does not warrant further actions. In particular the review has shown that in the occurrences analysed (96 occurrences including accidents and serious incidents) in the last 11.5 years, no fatality of parachutists has occurred in those accidents that are classified as survivable, and that the use of restraint system would have increased the survivability rate. An important aspect is that in 68% of the total number of occurrences, the parachutists had jumped out and avoided the consequence of the contact (or impact) with the ground.

Status: Closed – **Category:** Agreement

Italy

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

Synopsis of the event:
At 18.08 UTC, during final approach for runway 07 with adverse meteorological conditions on Palermo airport, aircraft collided with terrain immediately before the beginning of the runway (figure 1), hit the opposite RWY localiser antenna, slid on the wet runway with main gear collapsed for about 900 meters before stopping out of the left side of the runway. Passengers evacuation was performed. Aircraft was severely damaged, very minor injuries to persons onboard.

Safety Recommendation ITAL-2014-008 (ANSV):

[Italian] - Destinatari: EASA, FAA.
considerati gli aspetti relativi alla sopravvivenza dell'assistente di volo seduto sulla posizione 2L in occasione di un atterraggio di emergenza a causa della presenza dell'armadietto contenitore della sedia a rotelle (wheelchair) e tenuto conto di quanto previsto dalla normativa di riferimento (CS25.785 e FAR25.785), l'ANSV raccomanda di rivedere la posizione del suddetto armadietto contenitore della sedia a rotelle, al fine di evitare condizioni non sicure. (ANSV-8/18).

Reply No 2 sent on 08/02/2018:
EASA has contacted the FAA to ask for the references of the 8110-3 referred to in the Final Report. The following answer has been received:

- The 8110-3, dated March 21, 2005, has the following note on it, "This approval is valid for Airbus Model No. A319-100 airplane S/N 2424 and is issued in support of a major alteration of the subject airplane." This note is added when a 8110-3 is issued in support of a field approval.
- The 8110-3 form, approves a wheel chair stowage installation that is installed on the RH side of the aircraft, immediately forward of the AFT lavatory, while the investigation report shows the wheel chair stowage unit installed at an emergency exit. It does not match the location shown on the drawing that was approved via the 8110-3.
- The 8110-3 form lists drawing 25200426-1 at revision 1. FAA couldn't find a copy of revision 1.
- The STC lists one of the Engineering Authorizations (EA) that was also listed on the 8110-3 form. However it is at a later revision than the EA listed on the 8110-3. In addition the STC refers only to "only one" EA for the wheel chair stowage while the 8110-3 lists two EAs and two drawings. FAA has no copy of EA at the revision (D) listed on the STC but only a copy of revision B. This revision refers to drawing 25200426-1 which shows the wheel chair stowage unit installed on the right hand side on the aircraft, immediately forward of the AFT lavatory (which is a different position from the one found on the accident aircraft). We cannot exclude that revision D of this drawing installs the wheel chair stowage unit at the emergency exit, as depicted in the subject Safety Recommendation, but a copy of the correct revision of the EA is needed to determine that.

EASA has then contacted back ANSV and the Italian National Aviation Authority (ENAC), since the aircraft was operated by an Italian Operator with Italian Air Operator Certificate (AOC).

Both of them answered confirming that the additional documents required are hold by the Operator that in the meantime suspended its activity.
Since there is no way to collect the additional information needed, EASA cannot further assess the Safety Recommendation.

Status: Closed – **Category:** More information required

Italy

Registration	Aircraft Type	Location	Date of event	Event Type
EI-EIB	AIRBUS A320	Fiumicino Airport	29/09/2013	Accident

Synopsis of the event:
On September 29th 2013, at 18.11 UTC, the aircraft A320-200 registration marks EI-EIB, flight AZ063, while approaching the final destination of Rome Fiumicino (LIRF) airport at the end of a flight departed from Madrid airport with 151 passengers and 6 crew on board, experienced a technical problem during the landing gear normal extension. This circumstance was notified to the crew by the Master Warning and the triggering of the ECAM message "L/G GEAR NOT DOWNLOCKED".
During missed approach standard procedure and following holding on Campagnano VOR, the crew carried out a g-force manoeuvre (maximum value of 1.75g – FDR data) with LG lever down, then a LG recycle and later on performed LG gravity extension, but all measures were unsuccessful.
Consequentially, the crew requested an emergency landing to Rome Fiumicino airport (LIRF).
Approaching Rome Fiumicino airport RWY 16L, the aircraft touched down on the runway at 19.00 UTC with the right LG only partially extracted (picture 1). At landing, the mass of aircraft was 58.864 kg (FDR data).
The flight crew shutoff both engines just before touchdown. The aircraft came to rest after scraping the right engine just few meters off the runway (RH side); the subsequent evacuation was uneventful and no injuries were suffered.

Safety Recommendation ITAL-2016-003 (ANSV):
[Italian] - l'ANSV raccomanda di introdurre un requisito che assicuri il funzionamento dei registratori di volo (FDR/CVR) anche nel caso di "power failure" e, relativamente all'A320 family, nel caso di velocità insufficiente al funzionamento della RAT.

Reply No 2 sent on 09/05/2018:
The introduction of a new requirement for a CVR backup power source has been considered in the scope of EASA Rulemaking task RMT.0249 ('Recorders installation and maintenance thereof – certification aspects').

NPA 2018-03 was published on 27 March 2018. It proposes, among others, to amend Commission Regulation (EU) No 965/2012, Annex IV (Part-CAT), CAT.IDE.A.185 Cockpit voice recorder (CVR), to require that aeroplanes with an Maximum Certified Take-off Mass (MCTOM) of over 27 000 kg and first issued with an individual Certificate of Airworthiness (CofA) on or after [date of publication + 3 years] shall be equipped with an alternate power source to which the CVR and cockpit-mounted area microphone are switched automatically in the event that all other power to the recorder is interrupted.

Further to that, the Agency has assessed the pros and cons of a Flight Data Recorder (FDR) backup power, based on an analysis performed by the European Flight Recorders Partnership Group (EFRPG) and on subsequent discussions within an ICAO flight recorder specific working group (FLIREC-SWG), where the Agency brought this topic.

A power backup for the FDR was considered. Significant power is required to backup not only the FDR, but also the sensors and the acquisition of flight parameters. In addition, the benefit of a FDR backup power for investigation would probably be very limited: indeed, the available electrical power from a backup source would only permit the powering and recording of a subset of mandatory FDR parameters. Finally, this FDR power backup would only be needed for a very short duration and it would be useful in only a very small number of accidents and serious incidents.

Therefore, the Agency decided not to propose a rule mandating an FDR power backup.

The Opinion to the European Commission proposing an amendment of Regulation (EU) No 965/2012 (concerning the CVR) is planned to be issued by 4Q2018.

Status: Open

Italy

Registration	Aircraft Type	Location	Date of event	Event Type
I-BRXA	MBB BK117	Montichiari Airport	11/10/2017	Serious incident

Synopsis of the event:
On the 11th of October 2017 an HEMS operation departed from a Brescia helipad. On board the BK117D2 registration marks I-BRXA there were six people: pilot, co-pilot, HEMS crew member, Task Expert, doctor, nurse. After 4' 35" being airborne at about 6000 ft, the pilots received the warning light "fire eng02". According to the flight manual procedure the crew established OEI (One Engine Inoperative) condition and the fire extinguishing system was activated. The crew aborted the mission and diverted to the nearest airport, Montichiari (BS). While in descent toward the airport, the "low RPM" indication (referred to the main rotor speed, NR) and the associated audio message was triggered and displayed. The pilots reported not to be able to control the NR to turn off the "low RPM" indication. However, they managed to land safely.

Safety Recommendation ITAL-2017-003 (ANSV):
To verify the above explained data handling issue will be solved by means of a built-in design solution, applied to all the affected helicopters, allowing in every flight condition, including in OEI, the correct processing of the N2 Datum by all the involved avionic units. [ANSV-9/1605-17/1/I/17]

Reply No 1 sent on 16/01/2018:
The topic has been followed-up by EASA and Airbus Helicopters and a built-in design solution based on a Software change has been agreed as a corrective action.
EASA is considering making this Software change mandatory through an Airworthiness Directive.
As initial measures, Airbus Helicopters published a Safety Information Notice SIN 3202-S-31 on 16 November 2017 to inform the crews about the behaviour of low rotor RPM (audio and visual) indication and EASA published the Airworthiness Directive AD 2017-0238 on the 30 November 2017 requiring the amendment of the BK117D2 Rotorcraft Flight Manual in order to clarify how to deal with a low Revolutions Per Minute (RPM) indication during OEI condition.

Status: Open

Safety Recommendation ITAL-2017-004 (ANSV):

To verify that, in the meantime a design fix of the above explained data handling issue will be applied to all the affected helicopters, the crew operating the BK117D2 will be quickly informed that in OEI condition a misleading and false "low RPM" indication (audio and visual) can be received. [ANSV-10/1605-17/2/I/17]

Reply No 1 sent on 16/01/2018:

The Safety Information Notice SIN 3202-S-31 "Erroneous low rotor Revolutions Per Minute (RPM) indication during One Engine Inoperative (OEI)" was published on 16 November 2017 via the Airbus Helicopters Technical Publication Tool T.I.P.I., to inform the crews operating the BK117D2 about the behaviour of low rotor RPM (audio and visual) indication in OEI condition.

Status: Closed – **Category:** Agreement

Safety Recommendation ITAL-2017-005 (ANSV):
To verify that, in the meantime a design fix of the above explained data handling issue will be applied to all the affected helicopters, a detailed procedure will be quickly provided to the crew in order to clarify how to deal with a "low RPM" indication (audio and visual) during OEI condition. This procedure has to allow a rapid and reliable evaluation of the "low RPM" indication trustworthiness. [ANSV-11/1605-17/3/I/17]

Reply No 1 sent on 16/01/2018:
EASA published the Airworthiness Directive AD 2017-0238 on the 30 November 2017 requiring the amendment of the BK117D2 Rotorcraft Flight Manual in order to clarify how to deal with a "low Revolutions per Minute (RPM)" indication (audio and visual) during OEI condition.

Status: Closed – **Category:** Agreement

Italy

Registration	Aircraft Type	Location	Date of event	Event Type
EC-KJT	AGUSTA BELL AB139 (AW139)	Campo Felice (AQ)	24/01/2017	Accident

Synopsis of the event:
L'elicottero AW139 EC-KJT, appartenente a Babcock International Group, era decollato dall'aeroporto dell'Aquila Preturo alle 10:06 per effettuare una missione di trasporto sanitario di una persona infortunatasi all'interno del comprensorio sciistico di Campo Felice.
Atterrava in un'area a valle degli impianti di risalita e con il rotore in moto, veniva imbarcato l'infortunato già su barella e tutto il personale, ad eccezione del piota, trovava posto nel vano passeggeri.
Il decollo avveniva alle 10:23 alla volta dell'ospedale dell'Aquila.
Lo stesso elicottero alle 10:25 impattava contro il versante sud-ovest del Monte Cefalone, a circa 3,5 km dal punto da cui era decollato nel comprensorio sciistico di Campo Felice ed ad una quota di circa 1840m AMSL.
Nell'impatto l'elicottero si distruggeva e tutti i sei occupanti decedevano.
Occupanti ed elicottero venivano individuati dalle squadre di soccorso circa 1h dopo l'impatto, a causa delle condizioni di visibilità estremamente ridotta presenti localmente.

Safety Recommendation ITAL-2018-001 (ANSV):
[Italian] - l'ANSV raccomanda di valutare la possibilità di prevedere strumenti per gli operatori finalizzati a fornire un supporto all'attività decisionale del comandante e a svolgere una supervisione sull'operato degli equipaggi, sia in tempo reale, sia successivamente all'effettuazione della missione HEMS.

Reply No 1 sent on 19/07/2018:
EASA Member State Helicopter Emergency Medical Service (HEMS) operations are governed by Commission Regulation (EU) No 965/2012 on air operations. Means to support the commander's decision-making activities and to provide operational control should be provided through correct implementation of the existing provisions contained therein, such as:

- Operational control: Organisation and methods established to exercise operational control should be included in the Operations Manual (OM) and should cover at least a description of responsibilities concerning the initiation, continuation and termination or diversion of each flight [ORO.GEN.110 (c) and associated Acceptable Means of Compliance (AMC)].

- Personnel roles and competencies: The operator shall ensure that all personnel assigned to, or directly involved in, ground and flight operations are properly instructed, have demonstrated their abilities in their particular duties and are aware of their responsibilities and the relationship of such duties to the operation as a whole [ORO.GEN.110 (e)]. This includes personnel providing operational control.

- HEMS operating base facilities: At each operating base the pilots shall be provided with facilities for obtaining current and forecast weather information and shall be provided with satisfactory communications with the appropriate air traffic services (ATS) unit. Adequate facilities shall be available for the planning of all tasks [SPA.HEMS.145 (b)].

- Operational flight plan: An operational flight plan shall be completed for each intended flight based on considerations of aircraft performance, other operating limitations and relevant expected conditions on the route to be followed and at the aerodromes/operating sites concerned (CAT.OP.MPA.175).

- Weather changes during visual flight rules operations: In the event that during the en-route phase the weather conditions fall below the prescribed cloud base or visibility minima, helicopters certified for flights only under Visual Meteorological Conditions (VMC) shall abandon the flight or return to base. Helicopters equipped and certified for instrument meteorological conditions operations may abandon the flight, return to base or convert in all respects to a flight conducted under instrument flight rules, provided the flight crew are suitably qualified (SPA.HEMS.120).

Additional barriers to mitigate the risks associated with HEMS operations are provided through the following:

- Specific approval for HEMS: Helicopters shall only be operated for the purpose of HEMS operations if the operator has been approved by the competent authority. To obtain such approval, the operator shall operate in Commercial Air Transport (CAT) and hold a CAT Air Operator Certificate in accordance with Annex III (Part-ORO) and demonstrate to the competent authority compliance with the HEMS requirements (SPA.HEMS.100).

- Management system: The operator shall establish, implement and maintain a management system that includes the identification of aviation safety hazards entailed by the activities of the operator, their evaluation and the management of associated risks, including taking actions to mitigate the risk and verify their effectiveness [ORO.GEN.200 (a) (3)]. This shall include a function to monitor compliance of the operator with the relevant requirements. Compliance monitoring shall include a feedback system of findings to the accountable manager to ensure effective implementation of corrective actions as necessary [ORO.GEN.200 (a) (6)]. Furthermore, helicopters with a maximum certified take-off mass of more than 3 175 kg and first issued with an individual certificate of airworthiness on or after 1 August 1999 shall be equipped with a flight data recorder (applies to the helicopter type involved in the subject accident investigation). Although flight data monitoring is not mandatory for helicopter operations, Member States should encourage the use of such monitoring (See Member State Task MST.003 under the European Plan for Aviation Safety 2018-2022).

- Standard operating procedures: The operator shall ensure that, as part of its risk analysis and management process, risks associated with the HEMS environment are minimised by specifying in the OM: selection, composition and training of crews; levels of equipment and dispatch criteria; and operating procedures and minima, such that normal and likely abnormal operations are described and adequately mitigated. The relevant extracts from the OM shall be made available to the organisation for which the HEMS is being provided. The OM should include procedures to be followed in case of inadvertent entry into cloud [SPA.HEMS.140 and associated Acceptable Means of Compliance (AMC)].

- Oversight by the competent authority: The competent authority shall verify continued compliance with the applicable requirements of organisations it has certified [ARO.GEN.300 (a) (2)]. The associated Guidance Material outlines the HEMS philosophy, which describes how risk has been addressed under SPA.HEMS to provide a system of safety to the appropriate standard. It also explains the difference between HEMS and air ambulance flights.

In addition, support is provided to HEMS operators through publication of safety promotion material on the EASA web site, such as:

• European Helicopter Safety Team (EHEST) leaflets, such as Leaflet HE4 "Single Pilot Decision-Making" (published on 01 June 2012), Leaflet HE8 "The Principles of Threat and Error Management for Helicopter Pilots, Instructors and Training Organisations" (published on 01 December 2014), and Leaflet HE 13 "Weather Threat for VMC Flights" (published on 01 August 2017). Leaflet HE 13 aims to reinforce to pilots the need to understand aviation weather, including the appropriate threat assessments and strategies to adopt in relation to pre-flight, in-flight and post-flight operations for a helicopter flight to be conducted under VMC.

• EHEST videos, such as EHEST Video "Decision-Making" (published on 01 November 2016), on the importance of decision-making for all kinds of helicopter operations, emphasising flight preparation and the benefit to revisit decisions during the flight; and EHEST Video "Degraded Visual Environment and Loss of Control" (published on 01 November 2011), to raise awareness on loss of control in flight, due to poor weather conditions where visual references may be lost, and explains how not to get caught in these conditions.

Furthermore, the Rotorcraft Committee, an Agency Stakeholder Advisory Body, of which the European HEMS and Air Ambulance Committee is a member, has endorsed the Helicopter Association International (HAI) "Land and LIVE" safety promotion campaign" (see http://landandlive.rotor.org/) and further promotes this campaign through the European Safety Promotion Network Rotorcraft (ESPN-R).

Tools for operators to provide support to the decision-making activity of the captain and allow the supervision of the conduct of the crew in real time are provided through the above-mentioned existing regulatory provisions, and best practise guidance is provided in safety promotion material. After the HEMS mission, the operator's management system is the correct tool for such support.

It is for the individual operator to decide which system/s to use (flight operations officers, flight dispatchers, visual flight rules flight-following contract with air traffic service providers, and electronic flight bags) depending on their type of operations, fleet, geographical area and the conclusions of their risk assessment.

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

Italy

Registration	Aircraft Type	Location	Date of event	Event Type
HA-FAX	BOEING 737	LIME - Bergamo / Orio Al Serio	05/08/2016	Accident

Synopsis of the event:
L'incidente è occorso il giorno 5 agosto 2016, alle ore 02.07', sull'aeroporto di Orio al Serio (in provincia di Bergamo), ed ha interessato l'aeromobile tipo Boeing 737-400 marche HA-FAX (nominativo radio Eurotrans 7332), operato dalla Airlines Hungary Kft., al termine di un volo cargo effettuato per conto della compagnia DHL, con partenza dall'aeroporto di Parigi Charles de Gaulle (LFPG/CDG) e destinazione Bergamo Orio Al Serio (LIME/BGY).
L'equipaggio aveva precedentemente effettuato due voli notturni con un altro aeromobile dello stesso tipo (marche HA-FAU) ed aveva effettuato un cambio programmato di velivolo sull'aeroporto di Parigi Charles de Gaulle, da dove era decollato alle ore 00.54'.
Durante la discesa verso Bergamo, l'ATC vettorava l'aeromobile per un avvicinamento di precisione ILS RWY 28; dopo che l'equipaggio aveva riportato di essere stabilizzato sull'ILS, la TWR rilasciava l'autorizzazione all'atterraggio, comunicando le ultime informazioni meteorologiche insistenti sull'aeroporto e che la pista era bagnata.
L'aeromobile sorvolava quindi la pista a pochi metri di altezza, atterrando a circa 2/3 della sua lunghezza; non riuscendo a decelerare, l'aeromobile usciva dal sedime aeroportuale lungo il prolungamento dell'asse pista, fermandosi dopo circa 520 m dal termine della stessa (foto 1).
Il B737, a seguito del contatto con il terreno e con gli ostacoli presenti esternamente al sedime aeroportuale, subiva consistenti danni strutturali.
I due piloti, che costituivano le uniche persone presenti a bordo, uscivano autonomamente dall'aeromobile, azionando lo scivolo di emergenza della porta anteriore destra e venivano ricoverati in ospedale, con una prognosi, per entrambi, di 90 giorni, per frattura chiusa della colonna vertebrale e contusioni varie.
L'aeroporto veniva immediatamente chiuso al traffico e venivano sospese le operazioni di volo. L'aeromobile che era in sequenza di avvicinamento, con nominativo radio "White Star 6402", riportava la perdita del segnale del localizzatore ILS e veniva istruito alla procedura di mancato avvicinamento.

Safety Recommendation ITAL-2018-006 (ANSV):
[Italian] - Destinataria: EASA.
l'ANSV raccomanda di valutare la possibilità di introdurre nella normativa FTL un coefficiente di correzione per limitare ulteriormente il servizio di volo, qualora vengano espletate funzioni addizionali da parte dell'equipaggio, quali, ad esempio, quelle addestrative.

Reply No 1 sent on 30/10/2018:
Operators should build into their Individual Flight Time Specification Schemes (IFTSSs), any correction coefficients which may be necessary for specific scenarios, such as line training flights, in line with the following provisions under ORO.FTL (Organisation Requirements for Operations - Flight Time Limitations) of Commission Regulation (EU) No 965/2012):

- ORO.FTL.125 Flight time specification schemes

(a) Operators shall establish, implement and maintain flight time specification schemes that are appropriate for the type(s) of operation performed […]

- ORO.FTL.110 Operator Responsibilities

An operator shall:
[…]
(b) ensure that flight duty periods are planned in a way that enables crew members to remain sufficiently free from fatigue so that they can operate to a satisfactory level of safety under all circumstances;
[…]
(d) take into account the relationship between the frequency and pattern of flight duty periods and rest periods and give consideration to the cumulative effects of undertaking long duty hours combined with minimum rest periods.

ORO.FTL.205 Flight duty period (FDP)
(a) The operator shall:
[…]
(2) establish procedures specifying how the commander shall, in case of special circumstances which could lead to severe fatigue, and after consultation with the crew members concerned, reduce the actual FDP and/or increase the rest period in order to eliminate any detrimental effect on flight safety.

ORO.FTL.105 Definitions
For the purpose of this Subpart, the following definitions shall apply:

(10) 'duty' means any task that a crew member performs for the operator, including flight duty, administrative work, giving or receiving training and checking, positioning, and some elements of standby.

Furthermore, in case of unforeseen circumstances which could lead to severe fatigue, the commander shall reduce the actual flight duty period and/or increase the rest period in order to eliminate any detrimental effect on flight safety (see (f)(2) of ORO.FTL.205).

GM1 ORO.FTL.120 and GM1 ARO.OPS.235(b);(c) refer to guidance on Fatigue Risk Management (FRM) processes, appropriate fatigue management, the underlying scientific principles and operational knowledge, which may be found in ICAO Doc 9966 (Manual for the Oversight of Fatigue Management Approaches).

Operators should also monitor the effectiveness of their IFTSSs through their management system processes (see ORO.GEN.200).

In addition, the competent authority is required to check compliance with the applicable rules during the approval process for the IFTSSs, and to check continued compliance during their oversight activities (see ARO.OPS.235 and ARO.GEN.300).

EASA has launched various initiatives to support industry and authorities in their implementation of the FTL and FRM (Fatigue Risk Management) rules. For example, a (third) dedicated workshop was organised by EASA on 24 May 2018, which enabled the sharing of information, best practices and tools, as well as the sharing of experience with the implementation of fatigue risk management solutions.

EASA is committed to providing support for the implementation of the FTL rules and, as such, has established a dedicated FTL/FRM expert group of national authority inspectors to further share good practices and promote a common understanding of the FTL/FRM framework. In addition, EASA will continue to focus on FTL issues during its standardisation activities of EASA Member States in accordance with Commission Implementing Regulation (EU) No 628/2013.

EASA considers that it is not appropriate or feasible for the Agency to introduce specific correction coefficients to take account of multiple operational factors, such as line training flights, as the airlines and their competent authorities are best placed to consider this in the IFTSSs which need to be tailored to suit each operation, taking into account the experience of individual pilots, the flight crew composition, as well as the aircraft type, route, destination, planned flight times, weather etc.

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

Safety Recommendation ITAL-2018-007 (ANSV):

[Italian] - Destinataria: EASA.
l'ANSV raccomanda di:
☐ riesaminare le attuali limitazioni al servizio di volo per l'attività che ricada all'interno del ciclo circadiano inferiore (WOCL);
☐ valutare la possibilità di introdurre un metodo sistematico e scientifico per la determinazione del grado di affaticamento degli equipaggi;
☐ valutare la possibilità di introdurre un monitoraggio continuo della fatica durante il periodo del servizio di volo.

Reply No 1 sent on 30/10/2018:

The European Commission (DG MOVE), together with European Aviation Safety Agency (EASA), has launched a research study to review the effectiveness of the flight and duty time limitations and rest requirements (see Article 9a of the cover regulation to Commission Regulation (EU) No 83/2014 amending Commission Regulation (EU) No 965/2012). Should any deficiencies be identified in the current flight time limitations (FTL) rules for Flight Duty Periods (FDPs) that fall within the Window Of Circadian Low (WOCL), recommendations for changes to the rules will be proposed. A first report on the results of this review is expected to be ready by 18 February 2019.

In the meantime, any weaknesses in the Individual Flight Time Specification Schemes (IFTSSs) should be identified by operators through their management system processes (see ORO.GEN.200), and by the competent authorities through their oversight activities (see ARO.GEN.300).

Regarding methods for determining the crew fatigue during 'real-time' fatigue monitoring, GM1 ORO.FTL.120 and GM1 ARO.OPS.235(b);(c) of Commission Regulation (EU) No 965/2012 refer to ICAO Doc 9966 (Manual for the Oversight of Fatigue Management Approaches), which includes, under Appendix B, guidance on the methodology for measuring the degree of fatigue in operating pilots. As stated in the ICAO Doc 9966:

"FRM processes and FRMS safety assurance processes (Chapter 5) will sometimes require the measurement of an individual's fatigue, sleep, performance or workload. For most of these concepts there is no single "right" or "gold standard" measurement method. Because fatigue-related impairment affects many skills and has multiple causes a broad range of measures are often used in scientific research to provide a more comprehensive picture of fatigue. When considering whether a measure is appropriate for use the following should be taken into account:

1. The measure has been shown to be sensitive for measuring what it claims to measure (that is, it has been scientifically validated).
2. The measure does not jeopardize an individual's ability to perform their operational duties; and
3. The measure has previously been used in aviation, so data can be compared between different types of operations.

New ways to measure fatigue, sleep, performance or workload are always being developed and some will become valuable tools to add to the list below, once they have been validated for use in aviation operations. Meanwhile, in an FRMS (Fatigue Risk Management System) it is important to use measures that are accepted by States, Service Providers, operational personnel and scientists as being meaningful and reliable. This avoids the unnecessary cost and inconvenience of collecting data that is of doubtful value.

Measurement tools can range from being subjective (based entirely on an individual's recall or perceptions) to objective (such as performance tests and different types of physiological monitoring). Each type of measure has strengths and weaknesses. To decide which types of data to collect, the most important consideration should be the expected level of fatigue risk. For example, if the risk of fatigue is expected to be low then simpler, less invasive and less costly measures may be adequate, whereas if the fatigue risk is thought to be high then the measures chosen for use might need to be more comprehensive and consequently they may also be more labour intensive and costly."

Therefore, operators should apply their preferred method for determining the degree of fatigue of their operating pilots.

EASA considers that it is not appropriate or feasible for the Agency to require continuous fatigue monitoring for the reasons explained in ICAO Doc 9966 (Appendix B).

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

Mali

Registration	Aircraft Type	Location	Date of event	Event Type
EC-LTV	DOUGLAS DC9	Gossi	24/07/2014	Accident

Synopsis of the event:
L'avion décolle de nuit de l'aéroport de Ouagadougou vers 1 h 15 à destination d'Alger. Lors de la montée, l'équipage fait plusieurs altérations de cap pour éviter une zone orageuse avant d'atteindre le niveau de croisière FL 310. Quelques minutes plus tard, la vitesse de l'avion, pilotée par l'auto-manette, décroît en raison de l'obstruction des capteurs de pression situés sur le cône de nez des moteurs, vraisemblablement par des cristaux de glace. Le pilote automatique augmente alors progressivement l'assiette de l'avion pour maintenir l'altitude et ce jusqu'au décrochage de l'avion. Le décrochage de l'avion n'est pas récupéré.
L'avion conserve jusqu'au sol une assiette à piquer et une inclinaison à gauche alors que, les gouvernes restent majoritairement braquées à cabrer et dans le sens d'une inclinaison à droite. L'avion heurte le sol avec une grande vitesse.

Safety Recommendation MALI-2016-005 (AIB):
[French] - La Commission d'Enquête sur les Accidents et Incidents d'Aviation Civile du Mali et le BEA recommandent que la FAA et l'AESA imposent que ces particularités des avions de type MD80 soient enseignées lors des qualifications de type et des entraînements récurrents des équipages.

Reply No 2 sent on 20/12/2018:
EASA understands that the 'specific features' referred to in the recommendation refer to the features of a stall in cruise on MD-80 type aeroplanes which are linked to the late appearance of buffet, of the stick shaker and of the stall warning, and with the non-automatic disengagement of the autopilot after the stall warning.

EASA published Airworthiness Directive AD No. 2015-0179 on 27 August 2015. This AD mandates the inclusion of a procedure in the Aircraft Flight Manual (AFM) for unreliable engine pressure ratio (EPR) indications for specified aircraft types (including the MD-80 family) and a warning to flight crew about the possible consequential stall conditions. The existing EU regulatory framework provides the foundation to ensure that operating pilots receive training in accordance with the original equipment manufacturer's documentation, including, for example, amendments to the AFM.

In addition, Commission Regulation (EU) No 965/2012 (Regulation Air Operations) contains provisions directed to the operator on recurrent training, including proficiency checks on normal, abnormal and emergency procedures.

Upset Prevention and Recovery Training (UPRT), as mitigation for Loss of Control In-flight (LOC-I), is one of EASA's highest priorities, and the Agency has published provisions (AMC and GM) in Executive Director Decision EDD 2015/012/R on UPRT, with the specific objective to ensure that flight crew acquire the necessary competencies to prevent and recover from developing or developed upsets.

Furthermore, EASA published Opinion No 06/2017 on “loss of control prevention and recovery training” on 29 June 2017, as an outcome of rulemaking task RMT.0581.

This Opinion proposes to introduce mandatory UPRT at various stages:

- Basic UPRT to be integrated into CPL, ATP integrated and MPL training courses.

- Advanced UPRT course (new FCL.745.A in Annex I (Part-FCL) of Commission Regulation (EU) No 1178/2011) for the ATP integrated and MPL training courses and as a prerequisite for training courses for single-pilot aeroplanes operated in multi-pilot operation, single-pilot high-performance complex aeroplanes and multi-pilot aeroplanes (amendments to FCL.720.A).

- Type-specific UPRT, meaning inclusion of UPRT elements considering the specificities of the particular class or type during the relevant class or type rating training courses (amendments to FCL.725.A and Appendix 9 in Annex I (Part-FCL) of Commission Regulation (EU) No 1178/2011), related to single-pilot aeroplanes operated in multi-pilot operations, single-pilot high-performance complex aeroplanes and multi-pilot type rating training courses.

The Agency anticipates entry into force of an amending regulation, containing the amendments from the afore-mentioned Opinion, by January 2019 with applicability by January 2020.

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

Netherlands

Registration	Aircraft Type	Location	Date of event	Event Type
	BOEING 737	Groningen Airport Eelde, EHGG	18/09/2014	Serious incident

Synopsis of the event:
On September 18, 2014 a Boeing 737-800 started its take-off at Groningen Airport Eelde for a flight to Rotterdam The Hague Airport. During the take-off roll the pilots became aware that the acceleration was less than expected. The take-off was continued. The take-off weight used for the performance calculation was 10 tonnes too low due to a miscalculation of the take-off weight on the take-off data card (bugcard) by the flight crew. As a consequence the selected take-off thrust was lower than required. Approximately 60 metres before the end of the runway the aircraft became airborne.

Registration	Aircraft Type	Location	Date of event	Event Type
	BOEING 737	Lisbon Airport, LPPT	03/12/2015	Serious incident

Synopsis of the event:
On December 3, 2015, a Boeing 737-800 departed from Lisbon Airport to Amsterdam Airport Schiphol. The pilots noticed that the remaining runway length was less than expected during the take-off roll, shortly prior to rotation. The take-off was continued. Approximately 430 metres before the end of the runway the aircraft became airborne. The take-off performance in Lisbon was calculated for an incorrect runway/take-off position combination due to an EFB input error, which was possible due to unclear naming of take-off positions at Lisbon Airport. As a consequence the available runway length was 1,120 metres less than calculated.

Safety Recommendation NETH-2018-001 (DSB):
To prioritise the development of specifications and the establishment of requirements for Onboard Weight and Balance Systems (OWBS) (RMT.0116).

Reply No 1 sent on 08/06/2018:
The European Organization for Civil Aviation Equipment (EUROCAE) working group (WG-88) was requested to perform a review of the currently available technology to evaluate the feasibility of developing standards for On-Board Weight and Balance Systems (OBWBS).

During the first phase, WG-88 (with participation of the Agency) concluded that standardisation of specifications is feasible and recommended use of OBWBS. However, the associated report also mentions that some operators of such systems had reported discrepancies between on-board measured results and flight crew primary weight and balance computations, which led some operators to deactivate the system.

Nevertheless, it is recognised that OBWBS technologies have evolved, and, although some are promising in terms of accuracy and reliability, they are still not fully mature.

WG-88 deemed it feasible to develop a Minimum Operational and Performance Specification (MOPS) for OBWBS as far as it may be developed without being technology-specific.

In 2016, WG-88 started to work on a second phase with the drafting of a MOPS. The Agency is still involved in this group. The direction currently being taken by WG-88 for fixed-wing applications is a MOPS for a secondary OBWBS, i.e. a system that displays information on the mass and the centre of gravity and which the flight crew can use to check the values used for the computation of the take-off performance parameters (thrust/power and reference speeds). The final MOPS is expected to be issued by the end of 2018.

The Agency has included a rulemaking task RMT.0116 entitled 'Real weight and balance of an aircraft' in the European Plan for Aviation Safety (EPAS) 2018-2022. The objective of this task is to consider requiring commercial air transport aeroplanes to be equipped with an OBWBS. The WG-88 work, including the MOPS will be taken into account, and a regulatory impact assessment will be performed to compare the expected safety benefits brought by an OBWBS against its costs and other potential impacts.

Status: Open

Safety Recommendation NETH-2018-002 (DSB):
To, in cooperation with other regulatory authorities, standardisation bodies, the aviation industry and airline operators, start the development of specifications and the establishment of requirements for Take-off Performance Monitoring Systems without further delay.

Reply No 1 sent on 08/06/2018:
A EUROCAE Working Group (WG-94) was convened in 2012, at the request of, and with the participation of EASA, with the aim to undertake preparative work to establish the feasibility of the development of EUROCAE standard(s) defining the requirements for a Take-Off Performance Monitoring System (TOPMS) that will provide a timely alert to flight crew when the achieved take off performance is inadequate for the given aircraft configuration and aerodrome conditions. WG-94 issued their report in February 2015, concluding that the development of standards to define performance requirements and operational conditions for TOPMS is not currently feasible. This was due to a multitude of factors, including the maturity of the technology, a lack of real-time data (e.g. environmental parameters, runway conditions, airport databases, etc) and/or suitable aeroplane performance models, a lack of consensus in design criteria and testing methods.

Although it is recognised that the industry continues investigating technical solutions and, for example, since 2015, some progress has been made in the domain of airport data availability and associated applications, the Agency considers that the overall feasibility of TOPMS has still not been demonstrated, and no specifications can be developed at this stage.

Status: Closed – **Category:** Disagreement

Netherlands

Registration	Aircraft Type	Location	Date of event	Event Type
D-IROL	DORNIER 228		01/08/2015	Serious incident

Synopsis of the event:
On 1 August 2015 a twin-engine turboprop aircraft, conducting a non-scheduled commercial air (passenger) transport flight from Texel Airport to Lelystad Airport, and a microlight aircraft (MLA, or microlight) nearly collided in mid-air near Lelystad Airport. Both flights were operating under visual flight rules (VFR) and in total 20 persons were onboard these aircraft. The microlight returned from a local flight on its way to runway 05 (grass runway) of Lelystad Airport. The twin-engine turboprop was approaching the main runway 05 (asphalt). It was not until a late stage of conflict that the pilot of the microlight could make an evasive action. The crew of the turboprop aircraft had not seen the microlight at all. The investigation showed the limitation of the 'see-and-avoid' principle for air safety during VFR operations explaining the direct cause of the event.

Safety Recommendation NETH-2018-003 (DSB):
It is recommended to EASA to:
Introduce, as a matter of priority, requirements for commercial air transport aircraft other than with a MCTOM in excess of 5,700 kg or a MOPSC in excess of 19 seats to be equipped with aircraft collision avoidance systems.

Reply No 1 sent on 11/12/2018:
EASA intends, through rulemaking task RMT.0376 'Anti-collision systems on aircraft other than aeroplanes in excess of 5 700 kg or 19 pax', to set-up a framework for reducing the risk of mid-air collisions.

The task will include a thorough impact assessment aimed at evaluating the impact of mandating the above mentioned equipment.

As foreseen in the draft European Plan for Aviation Safety (EPAS) 2019-2023, EASA intends to launch RMT.0376 during 2019, while the issuance of the resulting Opinion is planned during Q3 2022 .

Status: Open

Norway

Registration	Aircraft Type	Location	Date of event	Event Type
LN-DYM	BOEING 737	Kittilä Airport (EFKT)	26/12/2012	Serious incident

Synopsis of the event:
During approach to Kittilä (EFKT) in Finland on 26 December 2012, LN-DYM, a Boeing 737-800 NG on Norwegian Air Shuttle's (NAS') air service NAX5630 from Helsinki airport (EFHK), came close to stalling. The outcome of a stall would most likely have been catastrophic, primarily because the elevator system at that time did not function normally. The elevator system worked only at a ratio of 1:250.
De-icing was carried out prior to departure in order to remove about 25 cm of snow that had settled on the aircraft. The departure and flight en route to the destination were normal. During the approach to Kittilä, the aircraft was established on the localizer at 4 421 ft (AMSL) with flaps 5 configuration, and the autopilot as well as autothrottle were engaged. As the aircraft was in the process of intercepting the glide slope, the elevator trim started to pitch the nose up. This trim continued for 12 seconds. At the same time, the aircraft started to unintentionally ascend while the autothrottle commanded full engine thrust. Both pilots eventually pushed the elevator control column with full force, but the aircraft’s nose continued to pitch up to an angle of +38.5° before slowly decreasing. The aircraft's speed dropped to 118 kt (Calibrated Airspeed, CAS) and the Angle of Attack (AOA) reached a maximum of approximately 25°. The aircraft was thus close to stalling. The aircraft's autopilot was disengaged just after the aircraft's nose angle was at its highest.
Control over the aircraft was slowly regained. A new approach was carried out without additional problems.

Safety Recommendation NORW-2015-003 (AIBN):
AIBN recommends EASA to ensure that the aircraft manufacturer Boeing conduct a new safety assessment of the Boeing 737 aircraft type as regards blockage of the aircraft type's elevator system, and that the analysis result and established measures satisfy the requirements in EASA CS-25 §25.671.

Reply No 2 sent on 09/05/2018:
EASA has received the results of the safety assessment performed by Boeing and FAA regarding the blockage of the B737's elevator system due to de-icing fluid surface contamination. A number of enhancements were carefully evaluated, including additional shielding for the PCU’s input mechanisms, providing a fluid guard over the opening, redesigning the PCU inputs, and repositioning the stabilizer to minimize the opening size during de-ice operations. Due to the very limited space available, and the fact that any design changes would require modifications in this limited area, Boeing determined that any design modifications would create an additional risk for Foreign Object Damage (FOD) in the elevator control system which was determined to create an unacceptable risk. Therefore, Boeing determined that providing new procedures for positioning the stabilizer trim in the recommended take-off position during de-icing (as opposed to Full Airplane Nose Down) was the most appropriate solution to mitigate the safety issue.
EASA concurs with the FAA and Boeing assessment and has adopted the FAA SAIB NM-16-21 on 05 March 2018 which advised the B737 owners and operators of Boeing's procedural changes for horizontal stabilizer position settings during de-icing.

Status: Closed – **Category:** Agreement

Norway

Registration	Aircraft Type	Location	Date of event	Event Type
LN-OJF	EUROCOPTER EC225	Turoy	29/04/2016	Accident

Synopsis of the event:
On 29 April 2016 the main rotor suddenly detached from an Airbus Helicopters EC 225 LP Super Puma, operated by CHC Helikopter Service AS. The helicopter transported oil workers for Statoil ASA and was en route from the Gullfaks B platform in the North Sea to Bergen Airport Flesland.
The helicopter had just descended from 3,000 ft and had been established in cruise at 140 kt at 2,000 ft for about one minute. The flight was normal and the crew received no warnings before the main rotor separated from the helicopter.
The helicopter impacted a small island near Turøy, northwest of Bergen. Wreckage parts were spread over a large area of about 180,000 m2 both at land and in the sea. The main rotor fell about 550 meters north of the crash site. The impact forces destroyed the helicopter, before most of the wreckage continued into the sea. Fuel from the helicopter ignited and caused a fire onshore. All 13 persons on board perished.

Safety Recommendation NORW-2018-001 (AIBN):
The Accident Investigation Board Norway recommends that the European Aviation Safety Agency (EASA) commission research into crack development in high-loaded case-hardened bearings in aircraft applications. An aim of the research should be the prediction of the reduction in service-life and fatigue strength as a consequence of small surface damage such as micro-pits, wear marks and roughness.

Reply No 1 sent on 28/09/2018: The Agency intends to commission a research project, the scope of which will include identification of rotor drive system critical parts and associated damage mechanisms, identification of significant design, operational and environmental parameters, identification and characterization of significant threats and recommendation of design standards to ensure flaw tolerant structural integrity. The research project is listed as RES.008 (Rotorcraft main gear box (MGB) design to guarantee integrity of critical parts and system architecture to prevent separation of the main rotor following any MGB failure.) in the draft European Plan for Aviation Safety 2019-2023, which is currently undergoing consultation with the Agency’s advisory bodies.

Status: Open

Safety Recommendation NORW-2018-002 (AIBN):

The Accident Investigation Board Norway recommends that the European Aviation Safety Agency (EASA) assess the need to amend the regulatory requirements with regard to procedures or Instructions for Continued Airworthiness (ICA) for critical parts on helicopters to maintain the design integrity after being subjected to any unusual event.

Reply No 1 sent on 28/09/2018:

EASA will conduct a Preliminary Impact Assessment (PIA) in order to assess the need to amend the certification specifications for large rotorcraft (CS-29) with regard to procedures or instructions for continued airworthiness for critical parts on helicopters to maintain the design integrity after being subjected to any unusual event. Once the PIA is mature, stakeholders will be consulted. Consultation is expected to take place in 02Q2019.

Depending on the outcome of the PIA, EASA will include an appropriate task in the European Plan for Aviation Safety.

Status: Open

Safety Recommendation NORW-2018-003 (AIBN):

The Accident Investigation Board Norway recommends that European Aviation Safety Agency (EASA) amend the Acceptable Means of Compliance (AMC) to the Certification Specifications for Large Rotorcraft (CS-29) in order to highlight the importance of different modes of component structural degradation and how these can affect crack initiation and propagation and hence fatigue life.

Reply No 1 sent on 28/09/2018:

EASA will conduct a preliminary impact assessment (PIA) to assess the need to amend the Acceptable Means of Compliance (AMC) to the Certification Specifications for Large Rotorcraft (CS-29) in order to highlight the importance of different modes of component structural degradation and how these can affect crack initiation and propagation and hence fatigue life. The aim of such AMC could be to add specific reference to modes of component structural degradation related to rolling contact fatigue and how these can affect crack initiation and propagation and, hence, fatigue life. Once the PIA is mature, stakeholders will be consulted. Consultation is expected to take place in 02Q2019.

Depending on the outcome of the PIA, EASA will include an appropriate task in the European Plan for Aviation Safety.

In the meantime, EASA is already raising the issue during certification projects via a dedicated Certification Review Item (CRI) providing Interpretative Material to better assess the effect of rolling contact fatigue.

Status: Open

Safety Recommendation NORW-2018-004 (AIBN):

The Accident Investigation Board Norway recommends that the European Aviation Safety Agency (EASA) revise the Certification Specifications for Large Rotorcraft (CS-29) to introduce requirements for MGB chip detection system performance.

Reply No 1 sent on 28/09/2018:

EASA has recognised the need to improve certification specifications in CS-27 (small rotorcraft) and CS-29 (large rotorcraft) relating to Main Gear Box (MGB) chip detectors.

The current CS 27/29.1305(a)(23) and CS 27/29.1337(e) require chip detectors to provide a warning to the flight crew when particles of a sufficient size (or accumulation) are detected and are intended to allow the flight crew to check the correct operation of the relevant elements of the drive system.

EASA has conducted a Preliminary Impact Assessment (PIA) on the possible actions to improve the likelihood of detecting chips or particles in gearbox oil. The outcome of the PIA was the inclusion of a dedicated Rulemaking Task (RMT) 0725 in the draft European Plan for Aviation Safety (EPAS) 2019-2023 which is currently undergoing consultation with the Agency’s advisory bodies.

The planned RMT.0725 will consider an amendment of the current certification specifications and their associated acceptable means of compliance for demonstrating that the chip detectors perform their intended function.

Status: Open

Safety Recommendation NORW-2018-005 (AIBN):

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

Reply No 1 sent on 28/09/2018:

The Agency understands that the objective of this Safety Recommendation is that future rotor drive system design requirements will ensure that "no failure of internal MGB components should lead to a catastrophic failure." However, such designs would be so radically different from existing transmission systems that their feasibility needs to be assessed.

EASA considers that the number of potentially catastrophic failure modes should be minimised. Accordingly, any component, the failure of which has a potentially catastrophic failure effect, should not be acceptable if the failure hazard severity can be mitigated to a reduced level and where such measures are considered to be technically feasible and economically justifiable.
It is clear that design choices regarding rotor drive system architecture and individual gearbox design will influence the number of potentially critical parts.

In order to better understand the significance of these design choices, research is planned within the scope of project RES.008 (Rotorcraft main gear box (MGB) design to guarantee integrity of critical parts and system architecture to prevent separation of the main rotor following any MGB failure) in the draft European Plan for Aviation Safety (EPAS) 2019-2023, which is currently under consultation with stakeholders.

Status: Open

Safety Recommendation NORW-2018-006 (AIBN):

The Accident Investigation Board Norway recommends that the European Aviation Safety Agency (EASA) develop regulations for engine and helicopter operational reliability systems, which could be applied to helicopters which carry out offshore and similar operations to improve safety outcomes.

Reply No 1 sent on 28/09/2018:

EASA previously evaluated the suitability of the concept proposed in this safety recommendation, i.e. applying the ETOPS principles to helicopters conducting offshore operations, following the receipt of a safety recommendation from the CAA UK. At the end of 2015, EASA concluded that rulemaking was not deemed justified, owing to the differences in term of designs and operating conditions between helicopters and aeroplanes flying ETOPS.

EASA will re-evaluate its conclusion in the light of this safety recommendation. Depending on the results of the review of the concept, a preliminary impact assessment (PIA) may be prepared if deemed appropriate; the PIA would then review possible actions, including rulemaking, and a consultation of stakeholders would be performed.

Status: Open

Safety Recommendation NORW-2018-007 (AIBN):

The Accident Investigation Board Norway recommends that European Aviation Safety Agency (EASA) make sure that helicopter manufacturers review their Continuing Airworthiness Programme to ensure that critical components, which are found to be beyond serviceable limits, are examined so that the full nature of any damage and its effect on continued airworthiness is understood, either resulting in changes to the maintenance programme, or design as necessary, or driving a mitigation plan to prevent or minimise such damage in the future.

Reply No 1 sent on 28/09/2018:

EASA will consider amending the Acceptable Means of Compliance (AMC) and Guidance Material (GM) to point 21.A.3A of Annex I (Part-21) to Commission Regulation (EU) No 748/2012, in order to clarify the obligations of Type Certificate Holders to ensure compliance with the requirement of "collecting, investigating and analysing reports of and information related to failures, malfunctions, defects or other occurrences which cause or might cause adverse effects on the continuing airworthiness of the product(…)".
This will be performed within the frame of rulemaking task RMT.0031 dealing with the regular update of AMC/GM to Part-21. The next NPA is planned to be published 02Q2019.

Status: Open

Safety Recommendation NORW-2018-008 (AIBN):

The Accident Investigation Board Norway recommends that the European Aviation Safety Agency (EASA) review and improve the existing provisions and procedures applicable to critical parts on helicopters in order to ensure design assumptions are correct throughout its service life.

Reply No 1 sent on 29/09/2018:

EASA issued Certification Memorandum (CM) CM-S-007 in 2015. The purpose of this CM was to supplement the existing guidance for compliance with CS 27/29.602 (Critical Parts), detailing the need for post certification actions to verify the continued integrity of Critical Parts. These actions should ensure that critical parts are controlled throughout their service life in order to maintain the critical characteristics on which certification is based. In addition, the effectiveness of any associated design, maintenance and monitoring provisions, which either help ensure the continued integrity or provide advance indication of impending failure of critical parts, should be assessed.

EASA will conduct a Preliminary Impact Assessment (PIA) in order to assess the potential safety benefit and economic impact of a number of changes to improve the Guidance Material applicable to CS 29.602. Consideration will also be made to include the provisions of CM-S-007 within the Acceptable Means of Compliance of CS-29 'Book 2'. Consultation is expected to take place in 02Q2020.

Status: Open

Safety Recommendation NORW-2018-009 (AIBN):

The Accident Investigation Board Norway recommends that the European Aviation Safety Agency (EASA) research methods for improving the detection of component degradation in helicopter epicyclic planet gear bearings.

Reply No 1 sent on 28/09/2018:

The Agency intends to commission a research project into rotorcraft gearbox health monitoring. The purpose of this research will be to investigate the use of new technologies, including both hardware and methods of analysis, to improve prognostic health monitoring capability for tilt rotor, helicopter and hybrid aircraft gearbox failures.

The scope of this research will include health monitoring of epicyclic gearbox components. This project is listed as RES.011 (Helicopter, tilt rotor and hybrid aircraft Gearbox health monitoring - In-situ failure detection) in the draft European Plan for Aviation Safety 2019-2023 which is currently undergoing consultation with the Agency’s advisory bodies.

Status: Open

Portugal

Registration	Aircraft Type	Location	Date of event	Event Type
G-STEP	SCHWEIZER 269C	near Ponte de Sor airport, Tramaga	20/11/2015	Accident

Synopsis of the event:
On the November 20th, 2015 at 11:00 UTC, a flying student of ATO EAA with its base of operations in Ponte de Sor Aerodrome, flying a SCHWEITZER 269C helicopter, registration G-STEP, took-off for a solo flight training performed the taxi at a low height above the terrain, according to the instructions received from the tower, after departure, climbed to 1.300′ turning right toward GALVE work area situated not far at East of Aerodrome.
When reaching working area, the student performed some maneuvers, but few minutes after, she decided to return to the airfield, allegedly due to have felt something that coming loose from the CYCLIC control.
The air traffic services on duty said: ”702 proceed to Ponte de Sor bridge and report on right downwind of runway 03 for landing in the heliport NORTH”. Already on down wind, suddenly, she yells by radio shown to have entered in panic and didn’t answer to control tower further more.
The student, at downwind, started an abrupt descend without being aware of 3 electrical cables bellow her flying path, that she collided and crash few meters ahead.
The helicopter was destroyed but the student pilot was able to come out from the wreckage, by herself.
The local weather in Ponte de Sor, at the time of the accident, was sky clear, visibility more than 10 kms, wind calm and QNH 1013 hPa.

Safety Recommendation PORT-2018-001 (GPIAA):
It is recommended that the European Aviation Safety Agency (EASA) analyze and study in detail the possibility of mandatory implementation by the ATOs of a psycho-technical assessment, also known as intelligence and aptitude tests, during the candidates application process to became a student pilot on professional licenses CPL(A)/(H).

Reply No 1 sent on 19/07/2018:
EASA reviewed the implementation of a psychological testing of pilots in the frame of the EASA-led Germanwings Task Force. It was clarified that the intent of a psychological assessment is to identify psychological attributes and suitability of the flight crew in respect of the work environment of the operator and to reduce the likelihood of negative interference with the safe operation of the aircraft.

This Task Force analysed the implementation of this psychological assessment and reviewed various options, whether at the air operator entry or at the Air Training Organisation (ATO) entry, before publishing Opinion No 14/2016.

The ATO should already ensure that the student pilot goes through a thorough permanent evaluation of his/her progression made in accordance with the training objectives and goals all along the training programme with a skill test at the end. The instructor might decide for additional training in case of lack of progress. The organisation in place follows this logic from Commission Regulation (EU) 1178/2011:
- The Head of Training is supervising the progress of individual students (ORA.ATO.110)

- Flight Instructors shall be properly qualified as described in Annex I (Part-FCL) to Commission Regulation (EU) No 1178/2011) (see AMC1 FCL.930.FI) and be competent to evaluate the progress and ability of his student all along the training course. If the student needs additional training, the system provides this flexibility and the supervision in place aims at recording difficulties or lack of progress.
- The ATO shall maintain detailed and regular progress reports from instructors including assessments, and regular progress flight tests and ground examinations (ORA.ATO.120)
- The training manual shall state the standards, objectives and training goals for each phase of training that the students are required to comply with and shall address the following subjects (ORA.ATO.230):
  - training plan,
  - briefing and air exercises,
  - flight training in an Flight Simulation Training Device (FSTD), if applicable,
  - theoretical knowledge instruction.

The task force concluded in EASA Opinion 14/2016 that, for a specific operator, the selection and psychological evaluation performed by a pilot training organisation would only be meaningful if the process includes the operator-specific requirements and selection criteria. During a psychological evaluation, operators typically assess personality traits and social abilities with regard to anticipated work conditions, particularly the stress factors and the challenges stemming from their operational environment. Air operators can monitor their selection system and improve their programmes over time, while training organisations are much less effective in anticipating the operational environment of a specific airline.

The opinion also clarifies that the psychological evaluation performed before commencing airline line flying is intended to select, based on their attributes, the best suitable pilots for a specific operator. The screening for possible or evident risks related to pathology is performed at initial class 1 medical examination.

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

Portugal

Registration	Aircraft Type	Location	Date of event	Event Type
CS-DEH	SOCATA TB200	Monte da Pereira, 2.5 km for RWY 01, Evora a/p LPEV, Portugal	05/09/2012	Accident

Synopsis of the event:
On September 5th, 2012, by 10:55 UTC, Socata TB-200 aircraft, s/n 2068, Portuguese registration CS-DEH, suffered a fatal accident, turning final for landing at Évora aerodrome. It was a local solo training flight (call sign Diana-315) with a student pilot on board.
After performing some flight manoeuvres, the pilot returned to the field for full stop landing. Contacted the tower and being informed that runway 01 was in use and should join the landing pattern in accordance with Standard Arrival Procedures, as established.
After reporting on "down wind" leg and being instructed to report on "final", there was no more contact with tower, by "Diana-315".
The aircraft crashed in an open farm field, free of vegetation, very close to the Évora aerodrome no more than 2.400 meters (1,3NM) from threshold of the runway 01.
The accident caused the death of the student pilot and the destruction of the aircraft.

Safety Recommendation PORT-2018-003 (GPIAA):

The GPIAAF recommends that the EASA (European Aviation Safety Agency) develop with the industry, technical solutions for the development and fully implement of simplified flight data recording and monitoring systems for all operators engaged in professional activities, namely pilot training organizations (ATOs).

Reply No 1 sent on 11/09/2018:
EUROCAE document ED-155 dated 2009, contains industry specifications for a lightweight flight recording system. European technical standard order (ETSO) 2C197 'Information Collection and Monitoring System' provides specifications for approving such a system. This ETSO relies on ED-155. Several models of lightweight flight recording systems are already commercially available (refer to NPA 2017-03, Appendix J). Therefore, there is no need for EASA to develop technical solutions since they already exist.

In addition, voluntary installation is facilitated through issue 2 of Certification Specifications for Standard Changes and Standard Repairs (CS-STAN) which was published on 31 March 2017. According to CS-SC104a 'Installation of lightweight in-flight recording systems', a lightweight flight recording system can be installed on a non-complex aeroplane by a qualified maintenance engineer without requiring a change approval. Since CS-SC104a does not include performance specifications on the recording equipment, it is also anticipated that less expensive recording equipment may be installed.

With regards to mandating flight data recording for light aircraft, an in-depth evaluation was performed through Rulemaking Task RMT.0271 'In-flight recording for light aircraft'. The associated Notice of Proposed Amendment, NPA 2017-03, was published on 03 April 2017. It contained proposals to mandate installation of flight recorders for newly manufactured aeroplanes operated for commercial air transport and commercial specialised operations, which are either turbine-engined with a Maximum Certified Take-Off Mass of 2250 kg or more, or have a Maximum Operational Seating Configuration of more than nine. This was the outcome of the impact assessment presented in NPA 2017-03 Chapter 4, which also concluded that voluntary installation (through safety promotion channels) of in-flight recording systems is the most appropriate way forward for all other cases.

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

Portugal

Registration	Aircraft Type	Location	Date of event	Event Type
D-FSCB	PILATUS PC6 (B2-H4)	Canhestros	19/06/2016	Accident

Synopsis of the event:
The PILATUS PC-6, registration D-FSCB, took off from Figueira de Cavaleiros Aerodrome (LPFC), Canhestros, Beja, for a local skydiver instruction and training flight with 1 pilot and 7 skydivers on board.
The Pilatus took off and started a climb to an altitude of 14.500 ft. During the initial climb at a rate of 1.000 feet per minute, when crossing 7.000 feet above mean sea level, according to some of the skydivers in the group, a sound similar to the cracking/ripping of a metal structure was heard, and simultaneously the aircraft pitched up to a high nose-up attitude while yawing to the right, causing a severe flight instability. Suddenly, the entire rear fuselage structure disintegrated.
According to the report, some occupants were pushed against the structure of the aircraft before they were thrown out of the aircraft. During the following seconds the skydivers who did not suffer serious injuries, managed to jump out of the plane and triggered their parachutes. Two of them were seriously injured before leaving the aircraft, subsequently their emergency parachute was deployed by the barometric opening mechanism.
As a result, the disintegration of the remaining aircraft parts continued until the impact with the ground. Fragments of the aircraft parts were found over a length of approximately 1.500 meters and a width of about 500 meters and were widely dispersed, with an alignment with the direction of flight from west to east.
The pilot was thrown out of the remains of the cockpit and hit the ground at about 400 meters from the impact site of the cabin. He did not trigger its parachute and it was not, nor is it a procedure to be equipped with an emergency parachute with an automatic barometric opening mechanism.

Safety Recommendation PORT-2018-005 (GPIAA):
It is recommended that the European Aviation Safety Agency, EASA, urgently issue/revise the Airworthiness Directive (AD 2016-0202-E) to Pilatus PC-6 airplanes type to introduce a life limit or a threshold for a technical effective inspection followed by repetitive inspections to the horizontal stabilizer lower trim attachment fitting.

Reply No 1 sent on 21/09/2018:
EASA is working with the type certificate holder in the development of a safety bulletin that will include a repetitive inspection and a life limit on the horizontal stabilizer lower trim attachment fitting, and will mandate it through an amendment to airworthiness directive (AD) 2016-0202-E or a new AD.

Status: Open

Portugal

Registration	Aircraft Type	Location	Date of event	Event Type
HB-LTI	PIPER PA31T (Cheyenne II)	Cascais	17/04/2017	Accident

Synopsis of the event:
On April 17th, 2017, about 11:04 UTC, a Piper PA- 31T, serial number 31T-8020091, Swiss registration HB-LTI, took off from Cascais (LPCS) aerodrome for a private flight under IFR to Marseille LFML (France). The airplane, after a loss of control during initial climb from runway 17, impacted a logistics dock of a local supermarket, southeast of the airfield. The airplane was completely destroyed by the impact followed by fire.

All four occupants and one person on the ground were fatally injured. A house adjacent to the impact site was partially destroyed.

Safety Recommendation PORT-2018-007 (GPIAA):

It is recommended that the European Aviation Safety Agency EASA, evaluates the possibility of developing a specific training program for complex high performance single-pilot aeroplanes for which there isn't an adequate flight simulator. EASA should reinforce the content of training programmes integrating manoeuvre exercises of asymmetrical thrust management during takeoff. [Safety Recommendation Nº 07/2018]

Reply No 1 sent on 06/11/2018:
Commission Regulation (EU) No 1178/2011 on Flight Crew Licensing (FCL) and Medical (MED) Requirements stipulates that it is the responsibility of the Aviation Training Organisation to develop a training programme for each type of course offered (ORA.ATO.125 Training programme).

EASA Opinion 05/2017 proposes new definitions under FCL.010 for 'available FSTD' and 'accessible' in the context of flight simulation training devices (FSTDs). The objective is to clarify when an FSTD, and, in particular, when a full-flight simulator (FFS) must be used, especially in the context of single-pilot high performance complex aeroplanes. Both definitions are to be used in conjunction with the changes made to the assessment of competence in FCL.935, and type rating training, testing and checking in Appendix 9. The objective is to provide more flexibility in the selection of adequate training devices.

The use of a specific FSTD (FNPT II, MCC, FTD2) were replaced with the generic FSTD term in the training, testing and checking programme for class and type ratings contained in Appendix 9. In addition, Appendix 9, section 6 on 'Multi-pilot aeroplanes and single-pilot high-performance complex aeroplanes, paragraph (e) is complemented to enable to use other FSTDs for aeroplanes for which no simulator exists.

Status: Closed – **Category:** Agreement

Romania

Registration	Aircraft Type	Location	Date of event	Event Type
YR-BNP	BRITTEN NORMAN BN2A	In the vicinity of Horea village, Alba County	20/01/2014	Accident

Synopsis of the event:
On 20.01.2014, the Civil Aviation Safety Investigation and Analysis Center (CIAS) was notified indirectly by phone about the accident. Subsequently CIAS received an „Air Safety Report" (ASR), from the operator representing the written communication of the accident in which it was involved a BN-2A-27 aircraft, registered YR-BNP.

BN-2A-27 aicraft, radio call indicative "RFT 111", performed a flight from Bucharest – Băneasa Airport to Oradea Airport, having on board a crew of two pilots and 5 passengers. The flight was performed based on an IFR flight plan, the aircraft took off at 13.38 LT. The last radio communication between the aircraft and the air traffic agencies was made at 15.34.51 LT, at the distance of approximately 52 NM from the point ROŞIA (air radio reporting point). At 15.47 LT a passenger of the aircraft informed by phone that the aircraft crashed, but without being able to communicate their exact location. The wreckage of the aircraft was located after almost 5 hours from receiving the information, in the vicinity of Horea commune, Petreasa village, Alba County.

As a consequence of the accident, the aircraft was destroyed, five of the persons on board were injured and two died.

Safety Recommendation ROMN-2015-053 (CIAS):
EASA should consider to establish some requirements for the air traffic service providers on the management of unintentional situations, such as possible infringements of the routes provided in the flight plan, of the minimum flight levels, of the minimum navigation requirements, and so on, determined by problems such as weather conditions, technical ones, determined by the aircraft performances and/or by other factors through which the air traffic controllers would require these crews confirmation on the flight rules they followed.

Reply No 4 sent on 26/06/2018:
EASA is of the opinion that the main topic of this Safety Recommendation is already addressed by the following existing provisions of Regulation (EU) No 923/2012:
- SERA.8020 'Adherence to flight plan', and
- SERA.11013 'Degraded aircraft performance'

Furthermore, on 22 May 2018 EASA published Opinion No 03/2018 as a product of RMT.0464 'Requirements for Air Traffic Services (ATS)'. The Opinion proposes a broad set of organisation and technical requirements addressing the provision of ATS – Air Traffic Control Service, Flight Information Service, Alerting Service – to be included in Annex IV to Regulation (EU) No 2017/373 'the ATM/ANS Common Requirements', with the objective to harmonise the safe provision of such services throughout the EASA Member States. The proposed rules are transposed mainly from the relevant ICAO ATS provisions, in particular those in Annex 11 and Doc 4444 'PANS ATM', and are adapted to the EU regulatory framework and service provision context.

The documents published with the Opinion contain draft AMC1 ATS.TR.155(a) 'ATS surveillance services - FUNCTIONS OF THE ATS SURVEILLANCE SYSTEMS IN ATS', stipulating the use of ATS surveillance by ATS. This includes, inter alia, flight path monitoring.

However, EASA disagrees on the last part of the recommendation referring to the request of the confirmation of the flight rules since it contradicts to the principle established in SERA.5015 'Instrument flight rules (IFR) — Rules applicable to all IFR flights' stipulating: 'No invitation to change from IFR flight to VFR flight shall be made by ATS either directly or by inference'.

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

Russian Federation

Registration	Aircraft Type	Location	Date of event	Event Type
EY-623	AIRBUS A320	Kulob Airport (TJU)	02/02/2014	Accident

Synopsis of the event:
02.02.2014г. экипаж самолёта А320-231 EY-623 ЗАО «Ист Эйр» Республики Таджикистан выполнял регулярный рейс ETJ 704 с целью перевозки 187 пассажиров по маршруту Домодедово – Куляб.
Через 2с после приземления самолет колесами правой основной стойки шасси столкнулся со снежным бруствером и продолжил движение к боковой границе ВПП. Колеса правой стойки шасси пересекли боковую границу ВПП на удалении ~ 520м от торца ВПП и самолет продолжил движение вдоль боковой границы ВПП, при этом колеса левой основной стойки шасси оставались на ВПП.
Через 480м пробега (710м от торца ВПП) произошло самовыключение обоих двигателей из-за попадания в них большого количества снега и разрушение передней стойки шасси. Дальнейшее движение самолета происходило сначала с возвращением самолета на ВПП, а затем с выходом за боковую границу ВПП вправо. Самолет остановился на спланированной части летной полосы на удалении 1190м от входного торца ВПП и правее границы ВПП 20м.
Пожара на самолете не было. После остановки ВС экипаж эвакуировал пассажиров. Пострадавших среди членов экипажа и пассажиров нет.

(Unofficial English Translation)
02.02.2014 The crew of the A320-231 EY-623 aircraft operated the regular flight ETJ 704 to transport 187 passengers on the Domodedovo - Kulyab route.
After landing, the aircraft wheels of the right main landing gear collided with a snow parapet and continued movement to the lateral border of the runway. The wheels of the right landing gear crossed the lateral border of the runway at a distance of ~ 520 m from the runway end and the aircraft continued to move along the lateral border of the runway, while the wheels of the left main landing gear remained on the runway.
After 480m of run (710m from the runway end), both engines were self-deactivated due to the ingress of large amounts of snow and destruction of the front landing gear. Further movement of the aircraft took place first with the return of the aircraft to the runway, and then with the exit beyond the lateral border of the runway to the right. The plane stopped at the planned part of the runway at a distance of 1190m from the runway inlet and to the right of the runway border 20m.
There was no fire on the plane. After stopping, the crew guided the passengers to evacuate the aircraft. There were no injured among the crew members and passengers.

Safety Recommendation RUSF-2015-001 (AIB):

[Russian] - В целях исключения потери полётной информации, записываемой бортовыми регистраторами, при перебое в их электропитании от основной электрической шины в случаях, связанных с отказами или выключениями силовых установок и прочими отказами в полёте, предусмотреть применение на самолётах систем или устройств бесперебойного питания, обеспечивающих непрерывную работоспособность бортовых регистраторов, систем сбора и передачи полётной информации в течение установленного интервала времени после прекращения питания от основной электрической шины.

(Unofficial English Translation)
To prevent the loss of recording flight data in case of power supply interruptions from the main bus due to power plant failure or shutdown or other in-flight failure, to consider the usage of uninterruptible power supply systems or units on board that could provide the continuous availability of flight data recorders, flight information acquisition and communication systems with a defined time interval after the failure of power supply from the main bus.

Reply No 2 sent on 09/05/2018:

The Agency has assessed the pros and cons of a Flight Data Recorder (FDR) backup power, based on an analysis performed by the European Flight Recorders Partnership Group (EFRPG) and on subsequent discussions within an ICAO flight recorder specific working group (FLIREC-SWG), where the Agency brought this topic.

A power backup for the FDR was considered . Significant power is required to backup not only the FDR, but also the sensors and the acquisition of flight parameters. In addition, the benefit of a FDR backup power for investigation would probably be very limited: indeed, the available electrical power from a backup source would only permit the powering and recording of a subset of mandatory FDR parameters. Finally, this FDR power backup would only be needed for a very short duration and it would be useful in only a very small number of accidents and serious incidents.

Therefore, the Agency decided not to propose a rule mandating an FDR power backup.

Status: Closed – **Category:** Disagreement

Singapore

Registration	Aircraft Type	Location	Date of event	Event Type
B-HLM	AIRBUS A330	South-East of Singapore	16/05/2011	Serious incident

Synopsis of the event:
At about 0112 hours (Local Time) on 16 May 2011, an Airbus A330-343 took off from Singapore Changi Airport on a scheduled flight to Jakarta. While climbing through 33,000 feet at 0129 hours, the No.2 engine stalled and a loud bang was heard and vibration was felt by the flight crew. The flight crew shut down the No.2 engine, following which the vibration reduced, but did not disappear. The flight crew declared an emergency to ATC and flew the aircraft back to Changi Airport. About 15 minutes after the initial No.2 engine problem, when the aircraft was at 10,500 feet and descending into Singapore, the No.2 engine fire warning indication appeared and the flight crew discharged an engine fire extinguishing bottle. The fire warning indication was cleared but re-appeared after 69 seconds. The flight crew discharged a second engine fire extinguishing bottle but was unsure if the fire had been extinguished as the fire warning light flickered intermittently. After the aircraft landed, the Airport Emergency Service saw fire at the No.2 engine as they approached the aircraft and proceeded to put it out. No one was injured in this incident.

The No.2 engine vibration was a result of the engine's rotating assembly becoming unbalanced following the loss of a 130 mm tip section of one of the engine fan blades. The failure of the fan blade could be attributed to its mechanical strength having been compromised as a result of the use of an incorrect gas during the manufacturing process. The interior of the No.2 engine fan case was damaged by the rubbing against it of the fan blades of the engine's unbalanced rotating assembly. The severe rubbing generated heat resulting in the ignition of the Kevlar wrap of the fan case and in fire damage to the accessories on the right side of the engine.

Safety Recommendation SING-2014-011 (AAIB):
The European Aviation Safety Agency require the engine manufacturer, as holder of the type certificate, to review the design of the engine to comply with the EASA requirement CS-E 810 (Compressor and Turbine Blade Failure) requirements such that no hazardous engine effect can arise as a result of other engine damage likely to occur before engine shut down following a blade failure. [AAIB Recommendation R-2014-011]

Reply No 2 sent on 16/01/2018:
The engine type certificate holder together with EASA have examined possible ways to address the hazardous effects identified during the event.
The first of a series of corrective actions to minimise the likelihood of fire has been certified and it is being introduced into the fleet. Further improvements are being developed.

Low pressure (LP) fuel pipe modification:
The hazard identified in the Singapore investigation report was an engine fire which could not be permanently extinguished.

A consequence of the higher vibrations experienced during the engine 41357 fan blade off event was that the LP fuel pipe cracked at its lower end and provided the fuel source for the fire. The fuel pipe was found intact following all other fan blade off events. The damage to the fuel pipe was limited to a crack that caused the fuel to spray into the zone but also retained fuel in the pipe, this contributed to the repeated fires that ignited as the fuel had not drained away after the pipe failure.

A revised LP fuel pipe is being introduced in the Trent 700 fleet via an EASA approved design change. Stress modelling of the modified standard of pipe was subjected to the same loading as a model of the pre-mod standard; this concluded that the peak stresses were found to be reduced by 20%.
The improved fuel pipe has been incorporated in new engine build and on all engines in overhaul since January 2016 and will continue to be incorporated at engine shop visit in compliance with EASA Airworthiness Directive AD2016-0120. Current Trent 700 fleet penetration is 441 engines (including original equipment engines) with current incorporation rate of about 200 engines a year and forecast 90% fleet penetration by 2024.

Engine Shut Down logic:
During all fan blade off events, the Low Pressure (LP) compressor speed probes are damaged resulting in the loss of LP compressor speed signal to the Electronic Engine Controller (EEC). The current EEC logic will command the engine to idle thrust following total loss of LP compressor speed signal. New EEC logic has been developed by the type certificate holder, which will reduce damage to the engine following a partial fan blade off event, by automatically shutting down the engine when a fan blade off event occurs. Incorporation of the revised shut down logic will be integral to a significant software and hardware change of the Trent 700 EEC requiring each and every Trent 700 EEC to be returned to the manufacturer for modification. Current estimates by the manufacturer indicate that incorporation of the suite of necessary modifications will commence in 2020 due to the nature and comprehensiveness of the greater modification package.

Additional radial restraint modification:
The type certificate holder is also analysing a design solution that may provide additional supplementary radial restraint at the fuse #1 location. During one of the past fan blade off events, the engine released approximately 25% of a fan blade resulting in a slow failure of the fuses, without LP shaft bending heating and bending. This is attributed to additional radial restraint presented by the LP bearing plate on this specific example.
Design solutions are still being considered which attempt to replicate the additional radial restraint that was present on that occasion. The EASA supports the activities performed by Rolls-Royce to address the issue, and will continue to work with the type certificate holder to enable these modifications into both new and fielded in-service engines at the earliest opportunity.

Status: Open

Singapore

Registration	Aircraft Type	Location	Date of event	Event Type
9V-OJF	BOEING 787	descent to WSSS - Singapore / Changi	26/11/2016	Incident

Synopsis of the event:
A B787 aircraft departed Sydney for Singapore on 26 November 2016. The Low Pressure (LP) section of the No. 2 (i.e. right-hand) engine experienced vibration during the climb and cruise phases. The flight crew continued with the flight and monitored the engine vibration level.
During the descent to Singapore, the flight crew heard a loud bang and noticed that the No. 2 engine had shut down automatically. The flight crew declared an emergency to the Singapore air traffic control. The aircraft subsequently landed at Changi Airport at 1842 hrs (Singapore Local Time).
The No. 2 engine was found to have sustained mechanical and internal fire damage. There were no injuries to any persons.

Safety Recommendation SING-2017-026 (AAIB):
The European Aviation Safety Agency require the engine manufacturer to review the design of the IP compressor blade to prevent the development of cracks.

Reply No 1 sent on 16/01/2018:
The Agency is in contact with the engine manufacturer to review the design of the intermediate pressure compressor (IPC) blade regarding the development of cracks in the reported occurrence.
In addition, the Agency has published on 13 December 2017 an airworthiness Directive (AD) No. 2017-0248, requiring repetitive inspections of the affected IPC Rotor blades and IPC shaft Stage 2 dovetail posts and, depending on findings, removal from service of the engine for corrective action.
EASA will provide an updated response of further actions.

Status: Open

Spain

Registration	Aircraft Type	Location	Date of event	Event Type
PH-XRZ	BOEING 737	approach to LEBL - Barcelona	17/04/2016	Incident

Synopsis of the event:

On Sunday, 17 April 2016, a Boeing 737-700 aircraft, registration PH-ZRX, after making an initial approach to runway 25R at the Barcelona Airport, conducted a go-around due to a sudden change in wind direction and intensity which excess the aircraft tailwind limitation.

This meteorological phenomenon forced several other aircraft making the same approach to runway 25R to also execute go-around manoeuvres, as a result of which ATC decided to place runway 07L/R in use, thus shifting from the WRL to the ELR configuration.

After the go-around, the crew of PH-XRZ declared a fuel emergency (MAYDAY), as a result of which they received landing priority. They landed without further incident on runway 07L.

When they reached the parking stand, they had a total of 1080 kg onboard, versus a stated final reserve of 1001 kg.

The situation created a traffic conflict when the flight paths of aircraft on final approach crossed.

The Transavia crew reported the fuel shortage as soon as they went around and requested priority. They were thus prompted by the controller to declare an emergency (MAYDAY) if required. Once the fuel emergency was declared, the crew received vectors to establish on final for runway 07L.

In the meantime, ATC arranged to remove two aircraft that were at the runway 25R localizer from the approach by ordering them to go around to the south of the airfield. The second aircraft in the approach sequence, a Ryanair airplane, was taken out at the localizer while an EasyJet airplane was kept on approach, the goal being to increase the separation between them.

On very short final, the EasyJet aircraft was instructed to go around and proceed south, but with no altitude restrictions. The crew began the go-around manoeuvre, but their proximity to the landing zone made the local arrivals controller for runway 25R think they were attempting to land, as a result of which he called the crew to clear the manoeuvre.

Eventually, due to the two conflicting clearances and to the adverse weather conditions, the EasyJet crew went around and was instructed to execute the standard go-around manoeuvre. At the same time, they were instructed to contact the approach sector, which at that time was handling the approach of the aircraft operated by Transavia.

This instruction directed the EasyJet aircraft in the opposite direction, toward the Transavia approaching on 07L.

Once in contact with the approach sector, the EasyJet aircraft was instructed to turn immediately to heading 130, which cleared the conflict.

Both aircraft reported having the other in sight. The minimum distance between the two was 2,2 NM and 500 ft, though this separation occurred after the EasyJet aircraft turned south and diverged from the flight path of the Transavia aircraft.

Safety Recommendation SPAN-2017-005 (CIAIAC):

Within the framework of the ongoing EASA rulemaking task RMT. 0573 on fuel management, EASA should consider providing guidance on "appropriate use of the" minimum fuel declaration by operating flight crew, as described in ICAO Doc.9976 "Flight Planning and Fuel Management (FPFM) Manual" through use of examples of various scenarios to illustrate how and when to use the term.

Reply No 1 sent on 16/01/2018:
The Agency considers that appropriate use of the minimum fuel declaration by operating flight crew is a significant risk barrier in an effective fuel management system.

In support of this, the Agency published Safety Information Bulletin (SIB) 2013-12, on 23 July 2013, to raise awareness of the global solution provided by International Civil Aviation Organization (ICAO) in amendment 36 to ICAO Annex 6 Part I and ICAO Doc.9976 'Flight Planning and Fuel Management (FPFM) Manual'. The SIB includes a recommendation for EASA Member State Air Operator Certificate holders to amend their procedures for in-flight fuel management and the fuel-related phraseology in accordance with the ICAO standards and to document those changes in their Operations Manuals accordingly. This includes the following fuel-related communication to be applied by the pilot-in-command/Commander:

- To request delay information from Air Traffic Control (ATC);
- To advise ATC of a minimum fuel state by declaring 'MINIMUM FUEL';
- To declare a situation of fuel emergency by broadcasting 'MAYDAY MAYDAY MAYDAY FUEL'.

Furthermore, rulemaking task RMT.0573, on fuel planning and management, was launched by the Agency to review the existing implementing rules on fuel management in Commission Regulation (EU) No 965/2012, and the associated Acceptable Means of Compliance (AMC) and Guidance Material (GM). The related Notice of Proposed Amendment NPA 2016-06, published on 15 July 2016, contains proposals to ensure that the fuel management provisions are up to date and that they provide an acceptable level of safety. The above-mentioned SIB content has been transposed into these proposals.

In the context of RMT.0573, EASA is considering providing GM with examples of various scenarios to illustrate how and when to use the minimum fuel declaration, as described in ICAO Doc.9976.

The next RMT.0573 deliverable, an EASA Opinion, is planned to be published in the 2nd quarter of 2018. Pending adoption of the Opinion and publication of the related amending regulation to Commission Regulation (EU) No 965/2012, an Executive Director's Decision containing the associated AMC and GM will also be published.

Reply No 2 sent on 28/08/2018:
The Agency published Safety Information Bulletin (SIB) 2013-12, on 23 July 2013, to raise awareness of the global solution on in-flight fuel management and the fuel-related phraseology provided by the International Civil Aviation Organization (ICAO) in amendment 36 to ICAO Annex 6 Part I and ICAO Doc.9976 'Flight Planning and Fuel Management (FPFM) Manual'.

Furthermore, on 08 May 2018, the Agency published SIB 2018-08 'In-Flight Fuel Management - Phraseology for Fuel-Related Messages between Pilots and Air Traffic Control', which provides updated regulatory references and clarification on appropriate use of the minimum fuel declaration. It is highlighted in the SIB that ICAO Doc.9976 chapter 6.10 contains examples of various scenarios illustrating how and when operating flight crew should use the minimum fuel declaration. Instead of copying these examples into the SIB, clarification has been provided on the meaning of the declaration of minimum fuel.

Through SIB 2018-08, operators and Air Traffic Service providers are recommended by the Agency to amend, as applicable, their procedures for in-flight fuel management and the fuel-related phraseology to comply with the related ICAO Standards and

Recommended Practices (applicable since November 2012) and Commission Implementing Regulation (EU) 923/2012 on the common rules of the air (relevant amendments by Commission Implementing Regulation (EU) 2016/1185 applicable since 12 October 2017). Any changes should be reflected in their Operations Manuals accordingly, and these procedures should be disseminated to and applied by the relevant personnel.

The Agency intends to transpose the content of SIB 2018-08, through EASA Rulemaking Task RMT.0573 'Fuel planning and management', into Commission Regulation (EU) No 965/2012 on air operations, and the associated Acceptable Means of Compliance and Guidance Material. However, as the relevant information has already been circulated through the SIB, the Agency considers the safety issue to be suitably addressed and the recommendation is therefore classified as closed.

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

Spain

Registration	Aircraft Type	Location	Date of event	Event Type
SP-SUC	PZL SWIDNIK W3	VILLA DE MAZO - SANTA CRUZ DE TENERIFE	10/08/2016	Accident

Synopsis of the event:
On Wednesday, 10 August 2016, at approximately 16:50 local time, a PZL-Swidnik W-3AS Sokol aircraft, registration SP-SUC, was involved in an accident while taking part in firefighting activities.
The aircraft, which was at the Forest Firefighting Support Squad (BRIF) base in the town of Puntagorda, on the island of La Palma, was mobilized at around 15:00 to take part in firefighting efforts in the town of Villa de Mazo.
After making 12 drops in the area, the forward command post instructed its crew to proceed to a different point from the last one but where they had already made a drop. While executing the approach maneuverer to make a drop at that point, the helicopter started to yaw left at an increasing rate, eventually becoming uncontrollable. The aircraft crashed into the mountainside and was significantly damaged. The two occupants were taken to a hospital for observation.

Safety Recommendation SPAN-2017-010 (CIAIAC):
It is recommended that the EASA standardize the theoretical and practical training on the LTE phenomenon among the various helicopter training programs for obtaining the LAPL(H), PPL(H), CPL(H), ATPL(H) and FI(H) licenses. This training should benefit the level of complexity and responsibility associated with each license. [REC 27/17]

Reply No 2 sent on 28/08/2018:
The theoretical knowledge for Light Aircraft Pilot Licence helicopters LAPL(H) and Private Pilot Licence for helicopters PPL(H) describes the flight instruction syllabus, and specifically mentions Loss of Tail Rotor Effectiveness (LTE) to be trained (ref. FCL.110.H and FCL.210 of Annex I (Part-FCL) to Commission Regulation (EU) No 1178/2011, and their associated Acceptable Means of Compliance (AMC)).

LTE is also in the tail-rotor aerodynamics Learning Objectives (LO) 082 06 01 02 (ref. AMC1 FCL.310; FCL.515 (b); FCL.615 (b)) in support of the detailed theoretical knowledge syllabus and LOs for airline transport pilot licence (ATPL), commercial pilot licence (CPL) and instrument rating (IR). It is also part of the flight instructor for helicopters FI(H) training course so that the instructor is competent to teach such exercise.

For commercial licences, there is no standard training programme. An Approved Training Organisation (ATO) could develop training for an ATPL integrated, ATPL modular, CPL/IR integrated, CPL integrated, or CPL modular course for helicopters. This is reflected in Part-FCL Appendix 3 and the breakdown of training exercise is given in AMC1 to Appendix 3 - Training courses for the issue of a CPL and an ATPL. The ATO is responsible for developing a training programme for each type of course offered (ORA.ATO.125 Training programme) that will depend on initial pilot qualification at entry and the training tools available (Flight Simulation Training Device (FSTD), helicopter complexity…).

Annex VII (Part-ORA) to Commission Regulation (EU) 1178/2011, Subpart ATO – Approved Training Organisation contains in Section II, additional requirements for ATOs providing training for CPL, MPL and ATPL and the associated ratings and certificates. The ATO should demonstrate to the competent authority that it has an adequate number of qualified and competent staff with a minimum qualification level for the Head of Training and the Chief Flight Instructor. The training manual and operations manual should also describe the briefings and air exercises (AMC1 ORA.ATO.230(a)).

An optimum balance between personnel competencies and heavier organisation approval process enables to manage the complexity of a training programme for commercial licences, taking into account the various type ratings and associated flight crew Operational Suitability Data. The Agency does not regulate into the details such training programme, but the approval process is mandated to ensure continued quality standards in training delivery. ORA.GEN.200 Management system also ensure that compliance monitoring function and a safety management system are in place.

Following this Safety Recommendation, the Agency conducted a safety review of LTE occurrences. This review did not reveal any obvious weakness in the commercial training programme compared to private pilots. LTE phenomena involving commercial pilots are often associated with the risk management of complex operations or manoeuvres such as sling release, high altitude operations or specialist aerial photography.

Furthermore, in order to support a common reference for flight instruction, the Agency published Issued 2.2 of the "EHEST Helicopter Flight Instructor Guide" on 27 April 2018. This guide includes training on LTE and is published on the EASA website. This new edition was coordinated with the European Safety Promotion Network Rotorcraft (ESPN-R) and complements the EHEST leaflets "HE1 - Safety Considerations" and "HE2 - Helicopter Airmanship", also addressing LTE.

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

Spain

Registration	Aircraft Type	Location	Date of event	Event Type
EC-YDQ	RANS S6	San Javier-Murcia	15/07/2016	Accident

Synopsis of the event:
The pilot was flying a second traffic circuit of the "Los Garranchos" airfield, in the municipality of San Javier (Murcia). Based on information provided by eyewitnesses, during the final phase of the circuit the engine misfired and seemed to stop. The aircraft pitched up and veered to its right, vertically impacting the terrain. The pilot was killed as a result of the impact. The aircraft was outfitted with a ballistic parachute. While this parachute was being deactivated by specialized personnel, a fire broke out that affected the aircraft.

Safety Recommendation SPAN-2017-042 (CIAIAC):
It is recommended that the European Aviation Safety Agency (EASA) should liaise with International Civil Aviation Organization (ICAO) to include standards for the design (conspicuity, coloration, visibility, and content) in the installation of ballistic parachute systems. This should include, as compulsory for pyrotechnical systems, specifications of the routing of the components of the system and a thermal exposure indicator to enable emergency responders to quickly and safely disable the system, and fully alert persons to the hazards and the danger areas on the aircraft. [REC 42/17]

Reply No 2 sent on 06/11/2018:
EASA has analysed the reported occurrences (in the EASA and NTSB accidents databases) for fixed-wing aircraft (aeroplanes/gliders/motor-gliders, including ultralights/microlights) equipped with a ballistic parachute recovery system (BPRS), in order to assess the post-accident safety issues associated with the presence of a BPRS, concerning first responders, casualties and investigators. The 10-year time period explored (2008-2017) revealed 39 accidents.

The analysis looked for evidence of whether or not the BPRS rocket was fired (unintentionally) after the accident, why it was fired, and the associated injuries or risk of other undesirable consequences. If the rocket had not been fired, the risk of unintentional activation was also assessed.

There were 16 accidents where the BPRS rocket was not fired in the event sequence until crash impact or emergency landing. In 5 cases, the post-accident risk of unintentional activation was considered to be 'low', while in 4 cases it was considered to be 'medium', and in 7 cases it was considered to be 'high'.

Among these 16 accidents, only 4 involved an aircraft which was certified by EASA; all of which were rated as 'low' risk.

The other occurrences involved aircraft within the scope of Annex I to Regulation (EU) 2018/1139 (formerly referred to as "Annex II aircraft" with reference to the repealed regulation (EC) No 216/2008), meaning the EU regulations do not directly apply.

Lastly, in all of the 16 accidents, there were no post-accident injuries to any persons on the ground.

EASA Certification Specifications applicable to Light Sport Aeroplanes, CS-LSA, requires that installed BPRS comply with the ASTM F2316-12 international standard (refer to subpart K, CS-LSA.45).

EASA includes the same ASTM international standard in the certification basis for the other small aeroplanes category by means of a Special Condition. It should be noted that EASA Member States may decide to adopt similar EU certification specifications for aircraft under their jurisdiction, i.e. within the scope of Annex I to Regulation (EU) 2018/1139.

This ASTM standard requires the provision of three types of placard or label ("danger", "identifying" and "warning" placards) in order to alert rescue or other personnel at the scene of an accident or incident. The minimum sizes of the labels and the colours to be used are addressed in this standard. These minimum sizes and colours are considered to be adequate in terms of providing an alerting function when personnel are approaching the aircraft whilst staying at a reasonable distance away. It also includes the indication of the egress point of the rocket launcher.

The intent of this standard is that the placards should provide enough information to the emergency responders to identify the presence of the equipment and obtain the contact information required to seek advice from the manufacturer of the ballistic device. When installed according to such standard, the placards should effectively provide the necessary information in most of the accident scenarios.

While EASA's analysis of accidents was restricted by the limited amount of data available, the results do not indicate a safety concern that would justify the need to raise new design-related specifications. Therefore, EASA will not create new specifications addressing the routing of the components of the system and a thermal exposure indicator to enable emergency responders to quickly and safely disable the system, and fully alert persons to the hazards and the danger areas on the aircraft.

At the level of ICAO, discussions on this topic over the previous few years have resulted in a decision not to amend the standards and recommended practices (SARP), but, instead, to include guidance in the Manual of Aircraft Accident and Incident Investigation, Part III — Investigation (Doc 9756). From the analysis described above, EASA did not find any new elements to justify re-opening this discussion at ICAO level.

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

Sweden

Registration	Aircraft Type	Location	Date of event	Event Type
SE-DUX	BOMBARDIER CL600 2B19	Oajevágge, Norrbotten County, Sweden (position 6743N 01654E, 2 370 feet above mean sea level)	07/01/2016	Accident

Synopsis of the event:
The accident occurred on 8 January 2016 during a commercial cargo flight from Oslo/Gardermoen Airport (ENGM) to Tromsø/Langnes Airport (ENTC) and involved an aeroplane of the model CL-600-2B19, manufactured by Bombardier Inc. The aeroplane was operated by West Atlantic Sweden AB and had the registration SE-DUX.
The flight was uneventful until the start of the event, which occurred during the approach briefing in level flight at FL 330. The event started at 00:19:20 hrs during darkness without moonlight, clouds or turbulence. The lack of external visual references meant that the pilots were totally dependent on their instruments which, inter alia consisted of three independent attitude indicators.
According to recorded data and simulations a very fast increase in pitch was displayed on the left attitude indicator. The pilot in command, who was the pilot flying and seated in the left seat exclaimed a strong expression. The displayed pitch change meant that the pilot in command was subjected to a surprise effect and a degradation of spatial orientation The autopilot was, most probably, disconnected automatically, a "cavalry charge" aural warning and a single chime was heard, the latter most likely as a result of miscompare between the left and right pilots' flying displays (PFD).
Both elevators moved towards nose down and nose down stabilizer trim was gradually activated from the left control wheel trim switch. The aeroplane started to descend, the angle of attack and G-loads became negative. Both pilots exclaimed strong expressions and the co-pilot said "come up".
About 13 seconds after the start of the event the crew were presented with two contradictory attitude indicators with red chevrons pointing in opposite directions. At the same time none of the instruments displayed any comparator caution due to the PFDs declutter function in unusual attitude. Bank angle warnings were heard and the maximum operating speed and Mach number were exceeded 17 seconds after the start of the event, which activated the overspeed warning. The speed continued to increase, a distress call was transmitted and acknowledged by the air traffic control and the engine thrust was reduced to flight idle.

The crew was active during the entire event. The dialogue between the pilots consisted mainly of different perceptions regarding turn directions. They also expressed the need to climb. At this stage, the pilots were probably subjected to spatial disorientation. The aircraft collided with the ground one minute and twenty seconds after the initial height loss. The two pilots were fatally injured and the aeroplane was destroyed.

Safety Recommendation SWED-2016-001 (SHK):
EASA is recommended to ensure that a general system of initial standard calls for the handling of abnormal and emergency procedures and also for unusual and unexpected situations is implemented throughout the commercial air transport industry. [RL 2016:11 R2]

Reply No 2 sent on 08/02/2018:
Annex 1 (Part-FCL) of Commission Regulation (EU) No 1178/2011 on Aircrew includes specific multi-crew cooperation (MCC) training (FCL.735.A). The MCC course includes training to achieve competencies in communication, problem-solving, decision-making, monitoring and cross-checking. It includes making and responding to standard callouts (see AMC1 FCL.735.A).

The operator shall also define the crew composition (ORO.FC.100) and provide Crew Resource Management (CRM) training appropriate to the flight crew member's role, as specified in the operations manual (ORO.FC.115 (a) of Commission Regulation (EU) No 965/2012). Elements of CRM training are required to be included in the aircraft type training and recurrent training as well as in the command course (ORO.FC.115 (b)).

CRM is a major contributing factor to many occurrences, therefore the Agency significantly extended and modernised the existing CRM training scheme with ED Decision 2015/022/R, which entered into force on 01 October 2016. In particular, AMC1 ORO.FC.115 refers to the integration of CRM principles into flight crew training and operations including abnormal and emergency procedures. It identifies as training elements the operation monitoring and intervention as specified in the operations manual and puts a special emphasis on crew resilience, surprise and startle effect.

The regulatory framework already provides requirements for monitoring and intervention on abnormal and emergency procedures with a special emphasis on unexpected situations. The Agency intends to support air operators in its implementation.

For this purpose, the Agency has published a Safety Promotion document on "CRM training implementation". This document is available on the EASA website. It shares recommended practices and information on Crew Resource Management (CRM) and promotes the development of CRM training for both Air Operators having CRM training responsibilities, and Competent Authorities having oversight responsibilities.

Status: Closed – **Category:** Agreement

Safety Recommendation SWED-2016-005 (SHK):
Ensure that the design criteria of PFD units are improved in such a way that pertinent cautions are not removed during unusual attitude or declutter modes. [RL 2016:11 R3]

Reply No 2 sent on 20/12/2018:
Pitch miscompare flags are implemented in Primary Flight Displays (PFD) to mitigate the effect of misleading attitude indication. The intent of the certification requirements for PFD is that miscompare flags are not removed in unusual attitudes or declutter modes.

EASA has carried out an analysis of the design criteria for PFD units in coordination with the primary certification authority for the subject aircraft (Transport Canada Civil Aviation) and the Federal Aviation Administration. The data indicates that there is no systemic issue caused by the current system safety guidance, and in particular, the guidance concerning the display of misleading attitude information and other such primary flight information.

Nevertheless, EASA intends to provide additional guidance to indicate that the failure message, flag, or comparative monitoring alert for any fault that can contribute to, or cause, misleading presentations of primary flight information, should remain on the PFD or in the primary field of view during modes of declutter, where they may be otherwise masked or removed.

The Agency has also reviewed the other EASA certified designs, and has found that, in a few models, the current design is such that certain miscompare flags are removed in declutter modes. EASA intends to assess if, for those few models, any design or procedural improvement is feasible.

Status: Open

Sweden

Registration	Aircraft Type	Location	Date of event	Event Type
SE-GIC	PIPER PA34	Malmö/Sturup Airport, ESMS	27/06/2015	Accident

Synopsis of the event:
An airplane of model Piper PA 34 took off from Malmö/Sturup airport for a training flight. On board were an instructor, a student pilot and an observer. The intention was to carry out a check flight before the student's skill test, where – among other items – engine failure should be trained. Just after lift off the instructor retarded the throttle to the left engine. The student levelled off at about 100-150 feet, but hesitated on further actions. After the instructor repeatedly had called out "speed", he reduced the power even on the right engine and instructed the student to land.
In this position, however, airspeed and height was insufficient for a controlled flare and landing which resulted in the aircraft struck hard onto the runway and was substantially damaged. Of those on board - who themselves could leave the aircraft wreckage - two got back injuries of varying degrees. The instructor had planned to carry out the simulated engine failure during take-off with the intention that the student himself would retard power on the second engine and land straight ahead, so-called "Decision" procedure. The exercise had not been communicated to the student before the flight. No cameras at the airport were directed against the runway system, and the sequence of events in the report is based solely on witness interviews.

Safety Recommendation SWED-2016-004 (SHK):
EASA is recommended to investigate the conditions for the installation of operational CCTV cameras for investigative purposes at European commercial airports that are covered by EASA's regulations under Regulation (EC) 216/2008. (RL 2016:05 R2)

Reply No 2 sent on 16/01/2018:
The Agency conducted a survey amongst the competent authorities of EASA Member States to acquire information regarding the presence of CCTV systems at aerodromes falling within the scope of Commission Regulation (EU) No 139/2014 and the way such systems are currently used. Moreover, in November 2017, the Agency presented the preliminary results of the analysis conducted so far to the Agency's Advisory Bodies for their input.

The Agency will continue the analysis of the relevant information before determining the course of any future action, which may, as an interim measure, include the issuance of safety promotion material.

Status: Open

Sweden

Registration	Aircraft Type	Location	Date of event	Event Type
SE-LVR	DIAMOND DA42	Ängsö, Västmanland County	22/01/2016	Accident

Synopsis of the event:
A training flight in an aeroplane of the model Diamond DA42 was to be undertaken at Västerås Airport. On board were an instructor and a student in the front seats, with one further student in the back seat. During the training exercise – the plan for which included approaches and flying on one engine – the instructor should demonstrate a manoeuvre called "deep stall". It was dark during the flight, which was undertaken partly under instrument meteorological conditions, with overcast clouds with base of 300–400 feet and tops of approx. 2,000 feet, with icing conditions forecasted in clouds.
According to the instructor, the exercise was conducted in the following manner: The aeroplane was brought into a steep climb with an attitude of approx. 25–30º at the same time as an approx. 30º bank to the right was set. During the deceleration, both engines were set to full power and when the aeroplane was approaching stall speed, the stick was pulled fully back. However, the students gave evidence when interviewed that the pitch attitude during the climb was at least 50º (nose up). This information also supports the analyses conducted by the Swedish Accident Investigation Authority (SHK) on data recorded by units in the aeroplane.
At the top of this manoeuvre, the aeroplane rolled over to the left and entered a spin from an altitude of approx. 4,500 feet. The instructor attempted – e.g. by varying the engine power – to exit the spin. However, the aeroplane continued to spin and, following a sequence of events lasting just over 30 seconds, crashed into woodland close to Ängsjö Church. According to the data registered on units on board and the radar data that have been obtained, the rate of descent in the initial phase is determined to have been approx. 52 m/s (approx. 10 200 ft/min), which then gradually decreased to approx. 19 m/s (approx. 3 700 ft/min) prior to impact.
During the impact phase into the woods, a tree trunk entered the fuselage, causing the student in the back seat to be thrown out of the aeroplane. With the rate of descent and the rotation decreasing and with parts of the aeroplane remaining in the surrounding trees, the wrecked aeroplane finally impacted in the woodland and was totally destroyed. The two people in the front seats survived, but were seriously injured. The student in the back seat, who also suffered serious injuries, came to his senses standing in front of the aeroplane wreckage.

Safety Recommendation SWED-2017-001 (SHK):
Identify exercises in flight training that might entail an increased risk factor and to issue guidance material (GM) for the practical execution of these. [RL 2017:04 R1]

Reply No 2 sent on 09/05/2018:
EASA made a comprehensive review of all accidents and serious incidents since the year 2000 related to flight instruction or examination on aircrafts with a maximum take-off weight below 5.7t. This review highlighted the higher risk related to stall and upset training exercises as well as the in-flight simulation of an engine-out situation.

EASA used the opportunity of the aircrew standardisation meeting with the competent authorities that took place on 12.10.2016 to present a similar accident investigation as a case study. The EASA review was shared with competent authorities of EASA Member States to support them in the frame of their oversight responsibilities.

However, the Agency believes that this issue cannot be addressed with a one-size-fits-all guidance material, because the risk areas vary depending on the type of activity. The risk has to be permanently evaluated and monitored in line with latest information, and it is then up to each organisation to define their own procedures tailored to mitigate the risks associated with their specific fleet and operations.

Therefore, whilst it is acknowledged that prescriptive limitations without safety assurance have limited effect, awareness and safety promotion are key vectors to help ATOs in their Safety Risk Management.

In accordance with it, EASA sent a reminder to all EASA Member States, in the frame of their oversight function, to carefully take into consideration the risks associated with each flight training exercise in an aircraft, and to clarify the status of Upset Prevention and Recovery Training.

Furthermore, with specific case of Sweden, the Agency used the opportunity of the standardisation visit to the national CAA in February 2018 to visit aviation training organisations and review in practice how their management system is performing. The outcome of standardisation visit is being managed in cooperation with the Competent Authority and aims at improving the process in place to ensure compliance with the applicable regulations.

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

Sweden

Registration	Aircraft Type	Location	Date of event	Event Type
SE-DSV	BAE BAE146	ESGG (GOT): Goteborg/Landvetter	07/11/2016	Serious incident

Synopsis of the event:
The incident occurred during a commercial flight from Gothenburg/Landvetter Airport. The aeroplane, of the model AVRO 146-RJ 100, was operated by Braathens Regional Aviation AB (BRA). The aeroplane had been parked outside for approximately forty hours before the incident and was heavily contaminated with precipitation of snow and ice. A one-step de-icing of wings, stabilizer, rudder and fuselage was ordered by the commander. The de-icing was performed by the subcontracted company AVIATOR.
Shortly after take-off, heavy vibrations occurred at an indicated airspeed of around 195 knots. The commander took control of the aeroplane and disconnected the autopilot while the co-pilot made a distress call to air traffic control. The indicated airspeed was reduced whereby the vibrations ceased. Thereafter, the speed was increased again and the vibrations returned until the speed was reduced a second time. The crew then decided to abort the flight and return to the airport. The engineers of the company inspected the airplane after landing and discovered extensive ice coverage on multiple flight control surfaces.

Safety Recommendation SWED-2017-014 (SHK):
EASA is recommended to:
Investigate and evaluate the risks of recommended methods for de-icing and post-de-icing check, especially the incorporated method referred to in the referenced documents in GM3 CAT.OP.MPA.250 of Commission Regulation (EU) No 965/2012, and consider and decide whether the reference should be changed.

Reply No 1 sent on 08/02/2018:
Commercial Air Transport (CAT) operators are required to establish procedures to be followed when ground de-icing and anti-icing and related inspections of the aircraft are necessary to allow the safe operation of the aircraft [see CAT.OP.MPA.250 of Commission Regulation (EU) No 965/2012 (hereinafter referred to as the Air Operations Regulation)].

The associated Guidance Material, GM3 CAT.OP.MPA.250, states that the basis for establishing the procedures for ground de-icing can be found in the Association of European Airlines (AEA) 'Recommendations for de-icing/anti-icing of aircraft on the ground' and 'Training recommendations and background information for de-icing/anti-icing of aircraft on the ground'.

In 2011, the International Air Transport Association (IATA) launched an initiative, supported by the International Civil Aviation Organisation (ICAO), to harmonise worldwide de-icing methods, training standards and quality assurance processes, aiming to facilitate airline de-icing operations at different aerodromes around the world and the provision of de-icing services by ground handlers serving many airlines.

IATA tasked the SAE International G12 'Aircraft Ground De-icing Committee' to develop, considering best industry practices, global aircraft de-icing standards. The AEA ground de-icing group and the EASA were in favour of this IATA-ICAO initiative, and had a certain level of involvement in the task. Accordingly, AEA decided to discontinue their publications when the global standards were published.

This culminated in the publication of SAE International's 'Global Aircraft De-icing Standards' documents on processes, phraseology for flight and ground crews, training and qualifications, and quality management. These documents superseded the AEA documents referred to in GM3 CAT.OP.MPA.250 and, through SIB 2017-11, EASA recommended that the SAE standards should be followed, as from winter 2017-18.

Operators of aerodromes are required to ensure that safe operations of aircraft at the aerodrome are ensured and that ground handlers are trained to operate safely on the aerodrome and provide safe services (see Essential Requirements, Part B - Operations and Management (1) (a), (d), (e) and (f) of Annex Va of the Basic Regulation).

In addition, CAT operators are required to establish de-icing procedures for their operations (see CAT.OP.MPA.250 of the Air Operations Regulation) which should be documented in their Operations Manual (see (a) (A) 8.2.4 of AMC3 ORO.MLR.100 of the Air Operations Regulation). The operator may apply industry standards, such as the SAE International standards on de-icing, which they should adapt to reflect the specificities of their operation and fleet and taking into account manufacturer's documentation, such as the Aircraft Flight Manual, Aircraft Maintenance Manual and Aircraft Operating Manual. Checks and controls should be carried out as part of the operators Safety Management System (see ORO.GEN.200 of the Air Operations Regulation).

Through their oversight, certification and enforcement responsibilities under ARO.GEN.300 of the Air Operations Regulation, the competent authorities are required to verify that the operator to whom the Air Operator Certificate (AOC) has been issued complies with the applicable requirements.

Furthermore, the operator shall ensure that when contracting any part of its activity (such as de-icing), the contracted service conforms to the applicable requirements. The ultimate responsibility for the service provided by external organisations always remains with the operator (see ORO.GEN.205 of the Air Operations Regulation).

Regarding, in particular, the incorporated post de-icing check, the Agency considers that if it is conducted by suitably qualified and trained personnel, as described in the SAE International documents, an acceptable level of safety will be achieved.

Nevertheless, the Agency will consider, in collaboration with the ground de-icing industry community, whether there is a need to re-inforce the established procedures through safety promotion channels, to remind the service providers of the importance of applying the procedures correctly. This will inevitably include an evaluation of the suitability of the recommended methodologies.

Reply No 2 sent on 20/12/2018:
EASA has, in collaboration with the ground de-icing industry community, reviewed the recommended methods for de-icing and post de-icing checks referred to in the referenced AEA documents in GM3 CAT.OP.MPA.250 of Commission Regulation (EU) No 965/2012, which have been superseded by SAE International 'Global Aircraft De-icing Standards' documents (see EASA Safety Information Bulletin SIB 2017-11).

With regard to the integrity of SAE International Aerospace Standard AS6285 'Aircraft Ground De-icing/Anti-Icing Processes', in particular the prescribed procedures on the incorporated method for the post de-icing checks, EASA has collaborated with the de-icing experts during forums which took place in April 2018 (Airlines for Europe (A4E) de-icing group meeting) and May 2018 (SAE International G12 'Aircraft Ground De-icing Committee' meeting). The feedback indicated that, if the post de-icing checks are conducted by suitably qualified and trained personnel, as described in the referenced SAE documents, an acceptable level of safety will be achieved.

In addition, EASA has published a SIB to remind de-icing service providers about the importance of applying the procedures correctly, in particular the incorporated method for the post de-icing checks (see SIB 2018-12, dated 27 July 2018). Before publication, the SIB underwent consultation with various stakeholders, including National Aviation Authorities, A4E, SAE, FAA and TCCA. During this consultation process, the stakeholders did not indicate a need to change the procedures which were referred to in the SIB.

EASA did not consider that a full investigation and evaluation was necessary, as the expert feedback and available data did not reveal any weaknesses in the recommended de-icing procedures, as long as they were applied correctly. The SIB serves to highlight, to de-icing service providers, the risks associated with improper execution of de-icing and post-de-icing checks, and the importance of correctly applying the procedures, in particular the incorporated method for the post de-icing checks, which are based on established industry standards.

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

Sweden

Registration	Aircraft Type	Location	Date of event	Event Type
SE-JVI	MD HELICOPTER 369	Högheden, Västerbotten County,	26/09/2017	Accident

Synopsis of the event:
On 26 September 2017, a crew flying a helicopter of the model MD 369D was going to carry out a power line inspection on behalf of Vattenfall. Shortly after take-off from Älvsbyn/Högheden Airport, at a height of about 80 metres above the ground and a speed of 67 knots, they started to rapidly loose both altitude and speed. Twelve seconds later, the helicopter collided with the ground at the side of a grass field behind a building and near the edge of a forest. One crew member was killed and another was seriously injured. The helicopter sustained extensive damage, but no fire broke out.
The examination of the accident site has shown, among other findings that the helicopter had a descent angle of approximately 70 degrees, close to zero for-ward speed and very low rpm in the main rotor and tail rotor, combined with an exceptionally large coning angle of the rotor disk at some point during the sequence. These findings indicated that the engine stopped supplying power during the flight. The technical investigation showed that a fitting to the gas generator fuel control unit had come loose during the flight, which meant that the engine did not supply enough power to actuate the rotor system. The fault occurred at such a flight position, and was of such a nature, that the crew was forced to immediately shift to flight in autorotation with a subsequent emergency landing. The surviving pilot has declared not to have any memories of the flight.
The site chosen for the emergency landing meant that the helicopter had to clear an obstacle in the final stage of the flight. The relatively low speed and altitude at the time when the fault occurred, in combination with a heavily loaded helicopter, entailed a shorter flight path than in the flight regimes that had been practised for autorotation landings during the type rating. For this reason, the crew did not reach the landing site without utilising the available rotor rpm at an early stage, which lead to a hard collision with the ground.

Safety Recommendation SWED-2018-003 (SHK):
EASA is recommended to:
Evaluate whether the construction of the Rolls-Royce engine RR 250-C20 and other models using the same type of B-nut without any other safety measures than the tightening torque and the prescribed nut checks in accordance with EASA AD 2004-0009R3, provides sufficiently secure protection against engine failure in single-engine configurations. (RL 2018:08 R3)

Reply No 1 sent on 06/11/2018:
EASA has contacted the Federal Aviation Administration (FAA), the primary certification authority of the engine, to obtain the information necessary to support the Agency's evaluation. In addition, EASA is performing a review of the EASA Internal Occurrence Reporting System (IORS) occurrences which involve ”B-nuts".

Status: Open

Switzerland

Registration	Aircraft Type	Location	Date of event	Event Type
HB-WAR	OTHER (DynAero MCR-ULC)	airfield Locarno (LSZL)	13/12/2015	Accident

Synopsis of the event:
Der Pilot des Schleppflugzeuges, ein Segelfluglehrer und mehrere Segelflugschü-ler der Segelfluggruppe Tessin (gruppo volo a vela Ticino – GVVT) trafen sich am Morgen des 13. Dezember 2015 auf dem Flugplatz Locarno. Es war vorgesehen, auf einem Segelflugzeug mit den Schülern mehrere Schulungsflüge im Flugplatz-bereich durchzuführen. Nach den üblichen Flugvorbereitungen und einer Flugan-meldung beim C-Büro bereitete der Pilot die Schleppmaschine DynAero MCR-ULC mit dem Kennzeichen HB-WAR für den Einsatz vor und betankte das Flugzeug.
Um 09:58 Uhr erfolgte auf der Graspiste 26L der erste Start der HB-WAR mit dem Segelflugzeug im Schlepp. Weitere sieben Schleppflüge folgten, bei denen sich das Segelflugzeug jeweils auf einer Höhe von rund 500 m/M ausklinkte, der Schlepppilot im Sinkflug das Schleppseil mittels der eingebauten elektrischen Winde einzog und das Schleppflugzeug wieder auf der Piste 26L landete. Am Bo-den zwischen den Flügen liess der Schlepppilot den Motor der HB-WAR jeweils laufen, um das Landen des Segelflugzeuges und dessen Bereitstellen mit wech-selnden Flugschülern abzuwarten.
Für den letzten Flug reihte sich der Schleppzug wie üblich auf der Piste 26L auf und der Pilot rollte das Schleppflugzeug langsam vorwärts, bis sich das Schlepp-seil zum Segelflugzeug gespannt hatte. Die Landeklappen der HB-WAR waren für den Start gesetzt und die elektrische Treibstoffpumpe (fuel pump 2) eingeschaltet. Nach dem Setzen der Startleistung um 11:53 Uhr beschleunigte der Schleppzug wie gewöhnlich.
Wenige Sekunden nach dem Abheben des Schleppzugs bemerkte der Schlepppi-lot, wie der Flugzeugmotor unregelmässig zu laufen begann und gleichzeitig die Sicherungsautomaten (circuit breaker – CB) des Funkgeräts und der Zigaretten-anzünder-Steckdose im Instrumentenbrett heraussprangen. Er versuchte erfolg-los, die beiden CBs wieder hineinzudrücken. Wenige Sekunden später versagte der Motor der HB-WAR auf einer Flughöhe von rund 20 m über Grund.
Der Fluglehrer im Segelflugzeug bemerkte die Verringerung der Steigrate und ent-schied sich zum sofortigen Ausklinken und für eine sichere Aussenlandung auf einer gemähten Wiese, die rechts der Abflugroute in der Verlängerung der Graspiste 26C in etwa 100 m nach deren Pistenende lag. Das Segelflugzeug blieb dabei unbeschädigt.
Der Schlepppilot flog geradeaus weiter und landete in einer Wiese ungefähr 310 m nach dem Ende der Piste 26L. Nach weiteren 55 m Ausrollstrecke kollidierte das Flugzeug mit geringer Geschwindigkeit mit einem leicht erhöhten Feldweg, der quer zur Pistenverlängerung verlief. Dabei brach das Bugfahrwerk ab, die beiden untenstehenden Propellerblätter knickten ab und beide Flügelenden wurden be-schädigt.
Der Schlepppilot konnte das Wrack sofort und unverletzt verlassen.
Es entstand weder ein Brand am Flugzeug auf noch trat Kraftstoff aus. Es entstand ebenfalls kein Flurschaden.

Safety Recommendation SWTZ-2016-511 (AAIB):

[German] - Die Europäische Agentur für Flugsicherheit (European Aviation Safety Agency – EASA) und das Bundesamt für Zivilluftfahrt (BAZL) sollten durch geeignete Massnahmen sicherstellen, dass das elektrische System der mit Rotax-Motoren des Baumusters 914 betriebenen Luftfahrzeuge mit einer redundanten Spannungsversorgung der beiden elektrischen Treibstoffpumpen ausgerüstet ist.

Reply No 2 sent on 11/12/2018:
EASA has reviewed the service history of the EASA certified aircraft types equipped with the Rotax 914 engines in order to check for possible continuing airworthiness issues. The data did not indicate any in-service engine shutdowns caused by dual fuel pump failures.

As part of the initial airworthiness activity, EASA certifies aircraft designs in accordance with Regulation (EU) 2018/1139 and against the applicable certification basis.

For aeroplanes certified according to Certification Specification (CS) 23 and CS VLA, requirements CS 23.991 and CS VLA.991, as carried over from the Joint Airworthiness Regulation (JAR) paragraph – respectively - JAR 23.991 and JAR VLA.991, require independent power supply to the fuel pumps. In the new amendment 5 of CS 23, this is covered in requirement CS 23.2410, CS 23.2430 and corresponding ASTM F3063/F3063M – 16.

Although (CS) LSA does not contain such requirement, for aeroplanes that may be in the future certified according to Certification Specification (CS) LSA a special condition will be raised by the Agency to require such redundancy.

Status: Closed – **Category:** Agreement

Switzerland

Registration	Aircraft Type	Location	Date of event	Event Type
HB-JZQ	AIRBUS A319	5 MN north waypoint LAMUR	20/07/2014	Accident

Synopsis of the event:
Le 20 juillet 2014, l'Airbus A319-111 immatriculé HB-JZQ décolle de l'aéroport d'Olbia à 14:25 UTC à destination de l'aéroport de Bâle-Mulhouse. Les phases de montée et de croisière se déroulent normalement. Lors de la phase de descente, le changement de reference de Mach à kt de la vitesse cible ne s'effectue pas et la vitesse de l'avion augmente progressivement jusqu'à atteindre la vitesse maximale admissible en exploitation. Le pilote réagit en tirant brusquement sur le mini-manche latéral (sidestick), induisant un facteur de charge de 2.33 g. Trois des quatre membres d'équipage de cabine sont projetés au sol et l'un d'eux se blesse gravement à la cheville gauche.
L'avion atterrit sans encombre à l'aéroport de destination. Le membre d'équipage blessé est transporté à l'hôpital.

Safety Recommendation SWTZ-2017-524 (AAIB):
[French] - L'EASA devrait s'assurer qu'une réflexion soit engagée par le constructeur en vue de sensibiliser et entrainer les équipages de conduite d'Airbus série A320 aux situations de survitesse.

Reply No 1 sent on 08/02/2018:
In accordance with the Safety Recommendation, the European Aviation Safety Agency has requested Airbus to review the existing procedures (through the operational documentation and training materials) to evaluate the need of amending, promoting, or developing specific ones in order to enhance the crew awareness and practices while facing overspeed situations.

EASA will review the way forward together with Airbus.

Status: Open

Switzerland

Registration	Aircraft Type	Location	Date of event	Event Type
HB-EQN	AVIONS ROBIN DR400	AD Schaffhausen	26/08/2016	Accident

Synopsis of the event:
Am Nachmittag des 26. August 2016 fand auf dem Flugfeld Schaffhausen (LSPF) ein Jahresanlass des Gewerbevereins Klettgau statt. Es standen unter anderem die Besichtigung der Segelflugzeuge sowie Rundflüge auf dem Programm. Letz-tere konnten bereits im vornherein oder direkt am Anlass gebucht werden.
Die dafür angekündigten Passagiere wurden durch die Piloten im Vorfeld auf zwei Flugzeuge aufgeteilt und die jeweiligen Masse- und Schwerpunktsberechnungen erstellt. Ebenso wurde eine Berechnung der Startstrecke durchgeführt (vgl. Kapi-tel 1.4.6). Nach einem allgemeinen Briefing zu Wetter und Daily Airspace Bulletin Switzerland (DABS) wurde der Rundflugbetrieb mit den zwei Motorflugzeugen, da-runter auch die als HB-EQN eingetragene Robin DR 400/180 R um 14:45 Uhr auf-genommen.
Nachdem der Pilot mit der HB-EQN zwei Rundflüge mit je zwei Passagieren durch-geführt hatte, betankte er das Flugzeug mit zusätzlich 65 Liter Flugbenzin für einen weiteren Rundflug, da sich spontan nochmals drei Personen angemeldet hatten.
Im Vorfeld zum Flug erfragte der Pilot die Gewichte der Passagiere und liess sich diese nochmals von ihnen bestätigen. Danach berechnete er anhand dieser An-gaben die Masse und den Schwerpunkt des Flugzeuges (vgl. Kapitel 1.4.5).
Da für den Piloten keine Einschränkung punkto Schwerpunktsberechnung vorlag, liess er die Passagierin auf ihren Wunsch vorne rechts Platz nehmen und bat die zwei anderen Passagiere, sich auf den beiden hinteren Sitzplätzen zu setzen. Der Pilot erklärte den Passagieren dabei die Bedienung der Sicherheitsgurte und war ihnen beim Anschnallen behilflich.
Nachdem die drei Passagiere an Bord gestiegen waren, startete der Pilot den Mo-tor und rollte zum Startpunkt der Graspiste 07. Dort führte er die Prüfliste vor dem Start sowie die Funktionskontrolle des Motors durch (run up). Der Pilot war der Meinung, den Kipphebelschalter des Flarms während des Checks auf die Position „ON" geschaltet zu haben. Anschliessend machte er das Abflugsbriefing. Mit den Landeklappen auf Startstellung (1. Raste) rollte er für einen weiteren Flug von etwa 30 Minuten in die Startposition, rund 14 m vor dem Pistenanfang.
Die Kommunikation an Bord der HB-EQN erfolgte über die Bordverständigungs-anlage (intercom) mittels Sprechgarnitur (headset), die jeder Insasse trug.
Wie der Pilot später angab, war das Flugzeug technisch in Ordnung und funktio-nierte einwandfrei.

Safety Recommendation SWTZ-2017-536 (AAIB):
[German] - Die Europäische Agentur für Flugsicherheit (European Aviation Safety Agency – EASA) sollte Massnahmen ergreifen, dass alle Insassen, insbesondere auch auf den Frontsitzen, vor erheblichen Verletzungen an Kopf und Oberkörper geschützt sind.

Reply No 1 sent on 08/02/2018:
From an aircraft design perspective, the applicable initial airworthiness requirements for small aeroplanes have included, since the 1960s, several specifications aimed at protecting all occupants' from upper body injuries in case of incidents or accidents. For example, the following extracts are taken from the FAR Part 23 Amendment 7 (dated 14/09/1969), which is a globally recognised Certification Basis for older general aviation (GA) products:

- FAR 23.561:

(a) The aeroplane, although it may be damaged in emergency landing conditions, must be designed as prescribed in this section to protect each occupant under those conditions.

(b) The structure must be designed to give each occupant every reasonable chance of escaping serious injury in a minor crash landing when:

(1) Proper use is made of the belts or harnesses provided for in the design; and

(2) The occupant experiences the ultimate inertia forces shown in the published table of ultimate inertia forces.

…

- FAR 23.785:

…

(g) Each occupant must be protected from head injury by:

(1) A safety belt and shoulder harness that will prevent the head from contacting any injurious object; or

(2) A safety belt plus the elimination of any injurious object within striking radius of the head; or

(3) A safety belt plus an energy absorbing rest that will support the arms, shoulders, head and spine.

Furthermore, in 1988 new specifications were introduced (Amdt. 23-36) with the creation of FAR 23.562 dedicated to emergency landing dynamic conditions. These specifications require different dynamic tests to demonstrate that the occupant is protected against head injury, by reference to a maximum head injury criteria (HIC).

The EASA Certification Specifications for small aeroplanes (Certification Specifications CS 23.561, CS 23.562 and CS 23.785 up to Amendment 4 of CS-23, and CS 23.2270 in the current amendment 5 of CS-23), as well as the former Joint Aviation Requirements JAR 23.561, 23.562 and JAR 23.785, and national legislations) include equivalent design standards for protection of the occupant in emergency conditions.

Similar requirements are in place for aeroplanes certified according to CS-LSA, CS-VLA and CS-22.

In addition, operational provisions for EU operators are provided through Commission Regulation (EU) No 965/2012 (such as NCO.IDE.A.140), which are supplementary to the design mitigations required by the certification specifications.

The Agency considers that suitable, proportionate measures are already in place to protect all occupants from upper body injuries in case of incidents or accidents in general aviation. Furthermore, imposing additional measures over the existing regulatory defences would not be in line with the principles as defined in the EASA General Aviation Roadmap and supported by the stakeholders.

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

Taiwan

Registration	Aircraft Type	Location	Date of event	Event Type
B-22816	ATR ATR72	Taipei Songshan Airport (RCSS)	04/02/2015	Accident

Synopsis of the event:
On February 4, 2015, about 10.54 Taipei Local Time, TransAsia Airways (TNA) flight GE 235, an ATR-GIE Avions de Transport Régional ATR72-212A (ATR72-600) aircraft, registered B-22816, was loss of control during initial climb and impacted Keelung River, three nautical miles east from its departing runway 10 of Taipei's Songshan Airport. Forty-three occupants were fatally injured, including three flight crew, one cabin crew, and 39 passengers. The remaining 13 passengers and one cabin crew sustained serious injuries. One passenger received minor injuries. The aircraft was destroyed by impact forces. The aircraft's left wing tip collided with a taxi on an overpass before the aircraft entered the river. The taxi driver sustained serious injuries and the only taxi passenger sustained minor injuries. Flight 235 was on an instrument flight rules (IFR) regular public transport service from Songshan to Kinmen.

Safety Recommendation TAIW-2016-001 (ASC):
Require a review at industry level of manufacturer's functional or display logic of the flight director so that it disappears or presents appropriate orders when a stall protection is automatically triggered.

Reply No 2 sent on 22/03/2018:
Design change MOD 7474 - New Avionic Suite (NAS) Standard 3 has been approved on 23 June 2017, addressing the intent of the Safety Recommendation. After NAS Standard 3, upon stall or unusual attitudes, Flight Display bars are now removed.

Status: Closed – **Category:** Agreement

Safety Recommendation TAIW-2016-003 (ASC):
Require a review of manufacturer's airplane flight manual (AFM) to ensure that a rejected take off procedure is also applicable to both engines operating.

Reply No 2 sent on 16/01/2018:
EASA approved an updated Aircraft Flight Manual (AFM) procedure associated with rejected take-off (EASA approval 10061392 dated 23 March 2017).
Abnormal procedure 99.03.01 "Aborted Take-off with All Engines Operative" refers.

Status: Closed – **Category:** Agreement

United Arab Emirates

Registration	Aircraft Type	Location	Date of event	Event Type
A6-EHF	AIRBUS A340	900 NM WSW Singapore	03/02/2013	Serious incident

Synopsis of the event:
On 2 February 2013, an Airbus A340-600 Aircraft, registration A6-EHF, operating a scheduled passenger flight to Melbourne International Airport, Australia, departed Abu Dhabi International Airport at approximately 1935 UTC. There were a total of 295 persons onboard: 4 flight crew members, 13 cabin crew and 278 passengers. . The captain was the pilot flying (PF) and the first officer was the pilot monitoring (PM).
While cruising at FL350, just leaving the Colombo FIR and entering the Melbourne FIR, the Aircraft encountered moderate to heavy turbulence, and experienced significant airspeed oscillations on both the captain's and the standby airspeed indicators. The autopilot, autothrust, and flight directors disconnected automatically. The flight control law changed from "Normal" to "Alternate" Law, leading to the loss of some flight mode and flight envelope protections. Changes from Normal to Alternate Law occurred twice; thereafter the Aircraft remained in Alternate Law until the end of the flight. The autothrust system and the flight directors were successfully re-engaged, however, neither autopilot (autopilots 1 or 2) could be re-engaged, thus the Aircraft was flown manually until landing. In addition to the system anomalies, the Aircraft experienced high N1 vibration on the No. 2 engine.
As the Aircraft had lost capability to maintain Reduced Vertical Separation Minima (RVSM) the flight crew decided to divert to Singapore, Changi International Airport. The diversion required the flight crew to dump fuel in order to land the Aircraft below its maximum landing weight.
The landing was uneventful and none of persons onboard were injured.

Safety Recommendation UNAR-2015-042 (AIB):
The European Aviation Safety Agency (EASA) should consider mandating the qualification aspects of the pitot probes in icing conditions to meet the new requirements of CS-25, Amendment 16, for forward fitting to aircraft in production and for retrofitting to aircraft already in service. (SR 42/2015)

Reply No 2 sent on 08/02/2018:
EASA has decided to mandate the qualification aspects of the pitot probes in icing conditions to meet the new requirements of CS-25, Amendment 16 for all new Type Certificate application received after January 1st, 2010 by a mean of a Special Condition.

About the in-service fleet, EASA will not mandate the probes compliant with CS-25 amendment 16, because as of today no unsafe condition has been identified for any of the Airbus models with their probes, after the actions taken in the Single Aisle (SA) and Long Range (LR) families:

- SA family (A318/A319/A320/A321) and LR family (A330/A340): two kind of probes were installed on the fleet. EASA has mandated the Goodrich ones through AD 2015-0205 (SA) and AD 2009-0195 (SA) which restored the safety of the fleets. Therefore, no further mandatory actions will be taken.

- Wide Body family (A300, A310), A350, A380: there is no unsafe condition with the current probes. No mandatory action will be taken.

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

United Kingdom

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

Safety Recommendation UNKG-2005-074 (AAIB):
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 No 4 sent on 09/05/2018:
This safety recommendation has been taken into account within the framework of EASA rulemaking task RMT.0249 entitled "Recorders installation and maintenance thereof - certification aspects".

The Notice of Proposed Amendment (NPA) 2018-03 was published on 27 March 2018 and it includes proposals to amend CS-25 (Certification Specifications for large aeroplanes), in particular:
- CS 25.1457 Cockpit voice recorders, to require that any single electrical failure external to the recorder does not disable both the cockpit voice recorder function and the flight data recorder function;
- CS 25.1459 Flight data recorders, to require that:
☐ If the cockpit voice recorder function is also performed by the flight data recorder and no other recorder is installed, any single electrical failure external to the recorder does not disable both the cockpit voice recorder function and the flight data recorder function;
☐ If another recorder is installed to perform the cockpit voice recorder function, any single electrical failure external to the recorder dedicated for the flight data recorder function does not disable both recorders.
It includes similar proposals for large rotorcraft (CS-29).
These provisions address new designs.

The suitability of addressing already certified design, still in production, has been considered, however, there are insufficient events to justify retroactive actions. Therefore, introducing such a requirement in the air operations regulation (Commission Regulation (EU) No 965/2012) in order to address newly manufactured aircraft of already certified designs is not supported by the Agency.

The ED Decisions to amend CS-25 is planned to be issued by 4Q2018.

Status: Open

Safety Recommendation UNKG-2005-075 (AAIB):
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 No 5 sent on 09/05/2018:
Regarding backup power for the Cockpit Voice Recorder (CVR), the more flexible concept of 'alternate power source' has been recognised by flight recorder experts and it has replaced the concept of 'recorder independent power supply' in both EUROCAE Document 112A (performance specifications for crash-protected airborne recorders) and ICAO Annex 6 Part I (International commercial air transport operations with aeroplanes).

This safety recommendation has been taken into account within the framework of EASA rulemaking task RMT.0249 entitled "Recorders installation and maintenance thereof - certification aspects".

The Notice of Proposed Amendment (NPA) 2018-03 was published on 27 March 2018 and it includes the following proposals:
- amend Commission Regulation (EU) No 965/2012, Annex IV (Part-CAT), CAT.IDE.A.185 Cockpit voice recorder, to require that aeroplanes with an Maximum Certified Take-Off Mass (MCTOM) of over 27 000 kg and first issued with an individual Certificate of Airworthiness (CofA) on or after [date of publication + 3 years] shall be equipped with an alternate power source to which the CVR and cockpit-mounted area microphone are switched automatically in the event that all other power to the recorder is interrupted;

- amend Acceptable Means of Compliance (AMC) and Guidance Material (GM) to Part-CAT, AMC1 CAT.IDE.A.185 Cockpit voice recorder, to mention that, if required to be installed, the alternate power source should provide electrical power to operate both the CVR and the cockpit area microphone for at least 9 minutes. If the cockpit voice recorder has a recording duration of less than 25 hours, the alternate power source should not provide electrical power for more than 30 minutes;

- amend CS-25 (Certification Specifications for large aeroplanes), and CS-29 (Certification Specifications for large rotorcraft), to require that CVRs have an alternate power source:
— that provides at least 9 minutes of electrical power to operate both the recorder and cockpit-mounted area microphone; and
— to which the recorder and cockpit-mounted area microphone are switched automatically in the event that all other power to the recorder is interrupted either by a normal shutdown or by any other loss of power from the electrical power bus.

The Opinion to the European Commission proposing an amendment of Regulation (EU) No 965/2012, and the ED Decisions to amend CS-25 and CS-29 are planned to be issued by 4Q2018.

Status: Open

United Kingdom

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

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

Safety Recommendation UNKG-2008-074 (AAIB):
It is recommended that the Federal Aviation Administration and the European Aviation Safety Agency review the certification requirements for automatically stopping flight recorders within 10 minutes after a crash impact, with a view to including a specific reference prohibiting the use of `g` switches as a means of compliance as recommended in ED112 issued by EUROCAE Working Group 50.

Reply No 4 sent on 09/05/2018:
This safety recommendation has been taken into account within the framework of EASA rulemaking task RMT.0249 entitled "Recorders installation and maintenance thereof - certification aspects".

The Notice of Proposed amendment (NPA) 2018-03 was published on 27 March 2018 and it includes the following elements related to large aircraft recorders' power supply.

NPA 2018-03 proposes to amend the certification specifications for large aeroplanes (CS-25) and large rotorcraft (CS-29) to require that a negative acceleration sensor ('g-switch') is not used as the sole means to detect a crash impact and to automatically stop a recorder after the detection of such a crash impact.

This is consistent with the industry specifications in EUROCAE Document 112 revision A (entitled "Minimum Operational Performance Specification for Crash Protected Airborne Recorder Systems"): instead of completely prohibiting the use of g-switches, ED-112A recommends that this type of sensor shall not be used as the sole means of detection of crash impact.

In addition, conditions are introduced to address the use of the recorder start-and-stop logic as an alternative to the g-switch, in order to provide a means to automatically stop the recorder after a crash impact.

The ED Decisions to amend CS-25 and CS-29 are planned to be issued by 4Q2018.

Status: Open

United Kingdom

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

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

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

Reply No 4 sent on 08/02/2018:
Operations on wet and contaminated runways are addressed in paragraph CAT.OP.MPA.300 'Approaches and landing conditions' of Commission Regulation (EU) No 965/2012, which has been applicable for commercial air transport since 28 October 2014. The associated Acceptable Means of Compliance, AMC1 CAT.OP.MPA.300, states that the in-flight determination of the landing distance should be based on the latest available meteorological or runway state report, preferably not more than 30 minutes before the expected landing time.

The existing provisions are currently being reviewed within the framework of Agency rulemaking task RMT.0296, taking into account new Standards and Recommended Practices, published in July 2016 in amendments to Part I and Part II of Annex 6 to the Convention on International Civil Aviation , and effective 5 November 2020. The next deliverable for RMT.0296, an EASA Opinion, is planned to be published in the second quarter of 2018. Pending adoption and publication of the related amending regulation to Commission Regulation (EU) No 965/2012, the associated Executive Director Decisions will then be issued.

In addition, the Agency has published a Safety Information Bulletin (SIB) to enhance the awareness of air operators and pilots of the risks associated with unreliable runway surface condition reporting, to inform of the on-going related rulemaking actions, and to provide recommendations for the purpose of mitigating those risks in the meantime (see SIB No. 2018-02 on 'runway surface condition reporting' published 18 January 2018).

Notably, in the SIB, operators and flight crew are reminded about the existing applicable provisions, and operators are recommended to be aware of the reporting methodology at the aerodromes to which they operate when developing their risk assessment and mitigation under their Safety Management Systems. Operators are recommended to give special consideration to those aerodromes that are critical in terms of runway length, challenging weather conditions, and aerodrome capability and reliability, for runway surface conditions assessment and reporting. Operators should base their assessment at least on information contained in the Aeronautical Information Publication (AIP), in-service experience and occurrence reporting. Member States are also recommended to include, in the AIP, information on the methodology in use for runway surface condition assessment and reporting, terminology and reporting format.

In case of uncertainty on runway surface condition reporting, the SIB recommends that conservative assumptions are made either in terms of aircraft performance calculations or, when different conditions are reported for different segments of the runway, in terms of assuming the worst condition for the entire runway.

Furthermore, the SIB states that operators should include in their flight crew training programme at least the following elements:

- Description of runway surface condition reporting methods; and
- Types of runway contamination and its effects; and
- Aircraft take-off and landing performance on wet and contaminated runways.

The SIB also refers to guidance on the changes adopted by ICAO for runway surface condition reporting format for aeroplane performance purposes, which is available in ICAO Doc 9981 'Procedures for air navigation services (PANS) – Aerodromes, and ICAO Doc 4444 'PANS – Air Traffic Management'.

With the publication of the SIB as summarised above, the operators are expected to provide suitable guidance to their flight crews on aircraft performance on contaminated runways.

The Agency therefore considers that the safety issue referred to in the safety recommendation has been adequately addressed through this SIB.

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

United Kingdom

Registration	Aircraft Type	Location	Date of event	Event Type
G-CJCC	CESSNA 680	London Luton Airport	30/09/2010	Serious incident

Synopsis of the event:
The aircraft was operating a commercial passenger flight from London Luton Airport, United Kingdom, to Milas-Bodrum Airport, Turkey. It departed with a full fuel load of approximately 11,000 lbs. As it passed FL300 for FL320 in the climb, the DC EMER BUS L amber Crew Alerting System (CAS) message appeared. The crew referred to the Emergency/Abnormal Procedures checklist and, from the observed indications, concluded that there was a fault on the left main electrical bus. They completed the required action items, which included selecting the left generator to OFF. They elected to return to Luton as the weather there was favourable and it was only 20 minutes flying time.
When the left generator was selected OFF, a number of systems lost power, including the flaps, the left fuel quantity indication and the commander's Primary Flight Display (PFD). The commander handed control to the co-pilot, who remained the handling pilot for the rest of the flight. As the flight progressed, the co-pilot became aware that an increasing amount of right aileron control input was required to maintain a wings-level attitude. A flapless landing was completed at Luton Airport without further incident.
When the aircraft was powered up again, all systems appeared to operate normally, including the left fuel quantity indication. The left tank fuel quantity indication was approximately 5,500 lbs (corresponding to full) and the right tank indication was approximately 3,300 lbs. The crew confirmed that they had not selected the fuel cross-feed during the flight.

Safety Recommendation UNKG-2011-027 (AAIB):
It is recommended that the European Aviation Safety Agency review their certification requirements, guidance and procedures to ensure that controlled documentation, sufficient to satisfy operator flight data recorder documentation requirements, are explicitly part of the type certification and supplemental type certification processes where flight data recorder installations are involved.

Reply No 4 sent on 09/05/2018:
This safety recommendation has been taken into account within the framework of EASA rulemaking task RMT.0249 entitled "Recorders installation and maintenance thereof - certification aspects".

The general objective of this rulemaking task is to improve the availability and quality of data recorded by flight recorders in order to better support safety investigation authorities in the investigation of accidents and incidents.

One of the specific objectives is to optimise the data recovery and analysis process by adding provisions to clearly establish the (Supplemental) Type Certificate applicant's obligation to provide the necessary information to convert Flight Data Recorder (FDR) raw data into engineering units as well as maintenance procedures.

This topic is identified in the Terms of Reference Issue 2 of RMT.0249, under item 1.5 'Provisions for ensuring serviceability of flight recorders':
https://www.easa.europa.eu/document-library/terms-of-reference-and-group-compositions/tor-rmt0249-mdm051

It will be addressed in the second Notice of Proposed Amendments (NPA) of RMT.0249, currently planned to be published in Q2/2019.

Status: Open

Safety Recommendation UNKG-2011-029 (AAIB):

It is recommended that the European Aviation Safety Agency provides guidance detailing the standards for the flight data recorder documentation required for the certification of systems or system changes associated with flight data recorders.

Reply No 4 sent on 09/05/2018:

This safety recommendation has been taken into account within the framework of EASA rulemaking task RMT.0249 entitled "Recorders installation and maintenance thereof - certification aspects".

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It will be addressed in the second Notice of Proposed Amendment (NPA) of RMT.0249, currently planned to be published Q2/2019.

In this frame, the Agency will also review the existing FDR documentation standards and will provide guidance in the certification specifications.

Status: Open

United Kingdom

Registration	Aircraft Type	Location	Date of event	Event Type
G-REDL	AEROSPATIALE AS332	11 miles NE Petershead (Offshore)	01/04/2009	Accident

Synopsis of the event:
The accident occurred whilst the helicopter was operating a scheduled passenger flight from the Miller Platform in the North Sea, to Aberdeen. Whilst cruising at 2,000 ft amsl, and some 50 minutes into the flight, there was a catastrophic failure of the helicopter's Main Rotor Gearbox (MGB). The helicopter departed from cruise flight and shortly after this the main rotor and part of the epicyclic module separated from the fuselage. The helicopter then struck the surface of the sea with a high vertical speed. An extensive and complex investigation revealed that the failure of the MGB initiated in one of the eight second stage planet gears in the epicyclic module. The planet gear had fractured as a result of a fatigue crack, the precise origin of which could not be determined. However, analysis indicated that this is likely to have occurred in the loaded area of the planet gear bearing outer race. A metallic particle had been discovered on the epicyclic chip detector during maintenance on 25 March 2009, some 36 flying hours prior to the accident. This was the only indication of the impending failure of the second stage planet gear. The lack of damage on the recovered areas of the bearing outer race indicated that the initiation was not entirely consistent with the understood characteristics of spalling (see 1.6.5.7). The possibility of a material defect in the planet gear or damage due to the presence of foreign object debris could not be discounted.

Safety Recommendation UNKG-2011-045 (AAIB):
It is recommended that the European Aviation Safety Agency require the 'crash sensor' in helicopters, fitted to stop a Cockpit Voice Recorder in the event of an accident, to comply with EUROCAE ED62A.

Reply No 4 sent on 09/05/2018:
This safety recommendation has been taken into account within the framework of EASA rulemaking task RMT.0249 entitled "Recorders installation and maintenance thereof - certification aspects".

The Notice of Proposed Amendments (NPA) 2018-03 was published on 27 March 2018 and it includes the following elements related to large rotorcraft recorders power supply.

Regarding this safety recommendation, the NPA concluded:

'The Minimum Operational Performance Standards (MOPS) for aircraft emergency locator transmitters (ELT) contained EUROCAE in ED-62A include specifications for g-switches; however, these specifications are not expected to provide for a better detection of crash impact because they are meant for another purpose (rescuing survivors), and therefore, they are based on a trade-off between nuisance warnings and missed alerts that is different from the appropriate trade-off for a flight recorder.'

This means that when considering the crash detection sensor of an ELT, the priority is to reduce the number of missed alerts (to rescue as many people as possible), therefore more sensitive crash-detection sensors are desirable and a higher rate of nuisance triggers is an acceptable consequence. On the other hand, for a flight recorder, nuisance triggers of the crash-detection sensor must be avoided by all means because they stop prematurely the recording. The performance specifications for ELT crash detection sensors defined in EUROCAE ED-62A should not be used for the crash detection sensor of a flight recorder.

Therefore, NPA 2018-03 does not propose that the negative acceleration sensor ('g-switch') of the CVR is required to be compliant with EUROCAE ED-62A.

However, as an alternative to address the issue, the NPA 2018-03 proposes to amend the certification specifications for large rotorcraft (CS-29) to require that a negative acceleration sensor is not used as the sole means to detect a crash impact and to automatically stop a recorder after the detection of such a crash impact. In addition, conditions are introduced to address the use of the recorder start-and-stop logic to provide an alternative means to automatically stop the recorder after a crash impact.

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

United Kingdom

Registration	Aircraft Type	Location	Date of event	Event Type
G-REDU	EUROCOPTER EC225	132 NM east of Aberdeen, offshore, United Kingdom	18/02/2009	Accident

Synopsis of the event:
The Helicopter departed Aberdeen Airport at 1742 hrs on a scheduled flight to the Eastern Trough Area Project (ETAP). The flight consisted of three sectors with the first landing being made, at night, on the ETAP Central Production Facility platform. Weather conditions at the platform deteriorated after the aircraft departed Aberdeen; the visibility and cloud base were estimated as being 0.5 nm and 500 ft respectively. At 1835 hrs the flight crew made a visual approach to the platform during which the helicopter descended and impacted the surface of the sea. The helicopter remained upright, supported by its flotation equipment which had inflated automatically. All those onboard were able to evacuate the helicopter into its liferafts and they were successfully rescued by air and maritime Search and Rescue (SAR) assets.

Safety Recommendation UNKG-2011-061 (AAIB):
It is recommended that the European Aviation Safety Agency ensures that helicopter performance is taken into consideration when determining the timeliness of warnings generated by Helicopter Terrain Awareness and Warning Systems.

Reply No 3 sent on 22/03/2018:
CAA UK has performed research activities over the last years to improve Class A Helicopter Terrain Awareness Warning Systems (HTAWS) for offshore helicopter operations. The final report of a recent study, reference FDP-CAA-Report 150922, was published in April 2017. The report is published by CAA UK as CAP1538 at version 1.1, dated 5 June 2017.

The report compares the new identified warning envelopes between EC225 and S76A+, and concludes that only minor adaptations are necessary. It further considers that the new warning envelopes are generally applicable, and that a single set of warning envelopes would serve the need for various helicopter types when using the classical parameter radio altitude and sink rate.

Based on this, the Agency considers that the timelines of HTAWS are in general not type-performance dependent.
EC225 and S76A+ fleets Flight Data Monitoring programmes have been used to develop and test modified warning envelopes of the 'Classic' or non-database EGPWS alerting modes (using radio altitude and sink rate parameters). This has demonstrated significant improvement in terms of warning time while maintaining acceptably low nuisance alert rates. The two helicopter types and associated styles of operation are considered to represent a broad spectrum of offshore operations, indicating that a single set of warning envelopes would have general applicability, avoiding the need to tailor warning envelopes for individual helicopter types and/or types of operation.

The study therefore does not indicate that the timeliness of HTAWS warning alerts are in general type performance dependent.

To be mentioned, that new warning envelopes based on airspeed and total torque parameters were also evaluated, which are more dependent on the specific helicopter type. This is captured in CAP1519, Offshore Helicopter Terrain Awareness Warning System Alert Envelopes, version 1.2, dated 29 November 2017 and proposed for field testing. However, changing the input parameter for a warning function is a too significant shift in the approach to be introduced, for the time being, as a minimum performance requirement.

Status: Closed – **Category:** Disagreement

United Kingdom

Registration	Aircraft Type	Location	Date of event	Event Type
G-CHCN	EUROCOPTER EC225	North Sea, 32nm southwest of Sumburgh	22/10/2012	Accident
G-REDW	EUROCOPTER EC225	20 NM east of Aberdeen	10/05/2012	Accident

Synopsis of the event:
While operating over the North Sea, in daylight, the crews of G-REDW and G-CHCN experienced a loss of main rotor gearbox oil pressure, which required them to activate the emergency lubrication system. This system uses a mixture of glycol and water to provide 30 minutes of alternative cooling and lubrication. Both helicopters should have been able to fly to the nearest airport; however, shortly after the system had activated, a warning illuminated indicating that the emergency lubrication system had failed. This required the crews to ditch their helicopters immediately in the North Sea. Both ditchings were successful and the crew and passengers evacuated into the helicopter’s liferafts before being rescued. There were no serious injuries.
The loss of oil pressure on both helicopters was caused by a failure of the bevel gear vertical shaft in the main rotor gearbox, which drives the oil pumps. The shafts had failed as result of a circumferential fatigue crack in the area where the two parts of the shaft are welded together.
On G-REDW the crack initiated from a small corrosion pit on the countersink of the 4 mm manufacturing hole in the weld. The corrosion probably resulted from the presence of moisture within the gap between the PTFE plug and the countersink. The shaft on G-REDW had accumulated 167 flying hours since new.
On G-CHCN, the crack initiated from a small corrosion pit located on a feature on the shaft described as the inner radius. Debris that contained iron oxide and moisture had become trapped on the inner radius, which led to the formation of corrosion pits. The shaft fitted to G-CHCN had accumulated 3,845 flying hours; this was more than any other EC225 LP shaft.
The stress, in the areas where the cracks initiated, was found to be higher than that predicted during the certification of the shaft. However, the safety factor of the shaft was still adequate, providing there were no surface defects such as corrosion.
The emergency lubrication system operated in both cases, but the system warning light illuminated as a result of an incompatibility between the helicopter wiring and the pressure switches. This meant the warning light would always illuminate after the crew activated the emergency lubrication system.
A number of other safety issues were identified concerning emergency checklists, the crash position indicator and liferafts.

Safety Recommendation UNKG-2014-019 (AAIB):
It is recommended that the European Aviation Safety Agency commission research into the fatigue performance of components manufactured from high strength low alloy steel. An aim of the research should be the prediction of the reduction in service-life and fatigue strength as a consequence of small defects such as scratches and corrosion pits.

Reply No 2 sent on 22/03/2018:
In the framework of rotorcraft design and certification activities there is an ongoing evaluation by Type Certificate Holders and EASA of the effect of corrosion on fatigue strength for high strength steels. This has already resulted in changes to the means provided by applicants to show compliance with CS 29.571 fatigue tolerance requirements.

Nonetheless, as further research in this field and other related areas is considered beneficial, the Agency has introduced the research project RES.008 “Rotorcraft main gear box (MGB) design to guarantee integrity of critical parts and system architecture to prevent separation of the main rotor following any MGB failure” in the European Plan for Aviation Safety (EPAS) 2018-2022.

One of the objectives of this research project is to understand threats to rotor drive system critical component integrity and methods to design and substantiate flaw tolerant critical component designs. This will include investigation of the effects of small defects including corrosion pits, dents and scratches.

Status: Open

United Kingdom

Registration	Aircraft Type	Location	Date of event	Event Type
G-EUOE	AIRBUS A319	London Heathrow Airport	24/05/2013	Accident

Synopsis of the event:
During takeoff from Runway 27L at London Heathrow Airport, the fan cowl doors from both engines detached from the aircraft, damaging the airframe and a number of aircraft systems. The flight crew elected to return to Heathrow and on the approach to land on Runway 27R, leaking fuel from a damaged fuel pipe on the right engine ignited and an external fire developed. The left engine continued to operate satisfactorily throughout the flight. The right engine was shut down promptly, reducing the intensity of the fire, and the aircraft landed safely. It was brought to a stop on the runway and the emergency services were quickly in attendance. The fire in the right engine was extinguished and the passengers and crew evacuated via the emergency escape slides on the left side of the aircraft.
Subsequent investigation revealed that the fan cowl doors on both engines were left unlatched during maintenance and this was not identified prior to aircraft departure.

Safety Recommendation UNKG-2015-001 (AAIB):

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

Reply No 2 sent on 22/03/2018:
The European Plan for Aviation Safety (EPAS) 2018-2022 (https://www.easa.europa.eu/system/files/dfu/EASA%20MB%20Decision%2008-2017%20Annex%201%20EPAS%202018-2022.pdf) was published on 01 February 2018, and it includes Rulemaking Task RMT.0251 'Embodiment of safety management system requirements into Commission Regulations (EU) Nos 1321/2014 and 748/2012', with one of the most important elements being the identification and mitigation of risks, one of which being fatigue.

The scope of RMT.0251 covers initial and continuing airworthiness.

The associated Terms of Reference were published on 12 July 2017 and the next deliverable, a Notice of Proposed Amendment, is planned to be published in the second quarter of 2018.

Status: Open

Safety Recommendation UNKG-2015-003 (AAIB):

It is recommended that the European Aviation Safety Agency amends Certification Specification 25.901(c), Acceptable Means of Compliance (AMC) 25.901(c) and AMC 25.1193, to include fan cowl doors in the System Safety Assessment for the engine installation and requires compliance with these amended requirements during the certification of modifications to existing products and the initial certification of new designs.

Reply No 3 sent on 26/06/2018:

Based on the lessons learnt from in-service events, the Agency introduced in 2013 a new Certification Review Item (CRI) providing Special Conditions (SC) for the retention of engine cowls.

This SC has been applied since 2013 on several large aeroplane certification projects where the design of the cowling and its installation have similarities with the aeroplanes subject to the in-service events of engine cowl separation.

Building on this SC, the Agency has published Notice of Proposed Amendment (NPA) 2017-12 dated 24 July 2017 in order to implement the content of this SC in the Certification Specifications for large aeroplanes CS-25.

Following the NPA consultation, EASA issued amendment 21 of CS-25, dated 27 March 2018, which includes the following provisions.

CS 25.1193 (e)(4) requires engine cowlings to be designed in order to minimise the risk of in-flight opening or loss that could prevent continued safe flight and landing.

CS 25.1193 (f) requires the cowling retention system to:
(1) keep the cowling closed and secured under the operational loads following either of the following conditions:
(i) improper fastening of any single latching, locking, or other retention device, or
(ii) the failure of any single latch or hinge;
(2) have readily accessible means to close and secure the cowling that do not require excessive force or manual dexterity; and
(3) have a reliable means for effectively verifying that the cowling is secured prior to each take-off.

AMC 25.1193(e)(4) and (f) provides guidance and acceptable means of compliance.

With the exception of CS 25.1193(f)(1), which prescribes some minimum load carrying capabilities of the retention system, the new specifications are not prescriptive. The applicant has the possibility to analyse all the aspects and risks inherent to its aeroplane architecture, in particular the powerplant installation, and then propose appropriate design features.

Compliance with the new certification specifications will be required for new designs, as well as for changes to existing designs if applicable in accordance with point 21.A.101 of Annex I (Part-21) to Commission Regulation (EU) No 748/2012.

These new provisions allow for certification of fan cowl doors designs which adequately protect against the risk of fan cowl door loss. In particular, human errors, and more generally human factors, are addressed in the AMC material.

CS 25.1193(f)(3), although not prescriptive, requests a means for effectively verifying that the fan cowls are secured prior to take-off. One of the means, but not the only means, which can be used by applicants is a remote indication system of the fan cowl latches condition, for which the corresponding system safety assessment will be required. This means has for instance been applied on the A320 NEO family of aeroplane.

However, other approaches without remote indication systems have also proven to ensure an adequate level of safety, and therefore the Agency did not consider that such a system should be universally mandated.

The Agency considers that the above actions fulfil the intent of the safety recommendation.

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

United Kingdom

Registration	Aircraft Type	Location	Date of event	Event Type
G-SPAO	EUROCOPTER EC135	Glasgow City Centre, Scotland	29/11/2013	Accident

Synopsis of the event:
The helicopter departed Glasgow City Heliport (GCH) at 2044 hrs on 29 November 2013, in support of Police Scotland operations. On board were the pilot and two Police Observers. After their initial task, south of Glasgow City Centre, they completed four more tasks; one in Dalkeith, Midlothian, and three others to the east of Glasgow, before routing back towards the heliport. When the helicopter was about 2.7 nm from GCH, the right engine flamed out. Shortly afterwards, the left engine also flamed out. An autorotation, flare recovery and landing were not achieved and the helicopter descended at a high rate onto the roof of the Clutha Vaults Bar, which collapsed. The three occupants in the helicopter and seven people in the bar were fatally injured. Eleven others in the bar were seriously injured.
Fuel in the helicopter's main fuel tank is pumped by two transfer pumps into a supply tank, which is divided into two cells. Each cell of the supply tank feeds its respective engine. During subsequent examination of the helicopter, 76 kg of fuel was recovered from the main fuel tank. However, the supply tank was found to have been empty at the time of impact. It was deduced from wreckage examination and testing that both fuel transfer pumps in the main tank had been selected off for a sustained period before the accident, leaving the fuel in the main tank, unusable. The low fuel 1 and low fuel 2 warning captions, and their associated audio attention-getters, had been triggered and acknowledged, after which, the flight had continued beyond the 10-minute period specified in the Pilot's Checklist Emergency and Malfunction Procedures.
The helicopter was not required to have, and was not fitted with, flight recorders. However, data and recordings were recovered from non-volatile memory (NVM) in systems on board the helicopter, and radar, radio, police equipment and CCTV recordings were also examined.

Safety Recommendation UNKG-2015-035 (AAIB):
It is recommended that the European Aviation Safety Agency mandate the ICAO Annex 6 flight recorder requirements for all helicopter emergency medical service operations, regardless of aircraft weight. The last two hours of flight crew communications and cockpit area audio should be recorded. The cockpit area audio recording should continue for 10 minutes after the loss of normal electrical power.

Reply No 4 sent on 28/09/2018:
Commission Regulation (EU) No 965/2012 on air operations contains the following provisions on Flight Data Recorders (FDRs) and Cockpit Voice Recorders (CVRs) for Commercial Air Transport (CAT) operations with helicopters (including emergency medical services):

CAT.IDE.H.190 Flight data recorder
(a) The following helicopters shall be equipped with an FDR that uses a digital method of recording and storing data and for which a method of readily retrieving that data from the storage medium is available:

(1) helicopters with a Maximum Certified Take-Off Mass (MCTOM) of more than 3 175 kg and first issued with an individual CofA on or after 1 August 1999;
(2) helicopters with an MCTOM of more than 7 000 kg, or a Maximum Operational Passenger Seating Configuration (MOPSC) of more than nine, and first issued with an individual Certificate of Airworthiness (CofA) on or after 1 January 1989 but before 1 August 1999.

CAT.IDE.H.185 Cockpit voice recorder
(a) The following helicopter types shall be equipped with a cockpit voice recorder (CVR):
(1) all helicopters with an MCTOM of more than 7 000 kg; and
(2) helicopters with an MCTOM of more than 3 175 kg and first issued with an individual CofA on or after 1 January 1987.
(b) The CVR shall be capable of retaining the data recorded during at least:
(1) the preceding two hours for helicopters referred to in (a)(1) and (a)(2), when first issued with an individual CofA on or after 1 January 2016.

In addition, the Agency published for public consultation, on 03 April 2017, Notice of Proposed Amendment NPA 2017-03 under rulemaking task RMT.0271 'In-flight recording for light aircraft'. The comments received were reviewed with the help of a stakeholder's group. The UK AAIB was represented in this group. The stakeholder's group supported the lightweight flight recorder carriage requirements as proposed in NPA 2017-03, as summarised below:

The NPA included a proposal to mandate the carriage of lightweight flight recorders capable of recording flight parameters for turbine-engined helicopters with an MCTOM greater than or equal to 2 250 kg (for example, the Airbus Helicopters EC135), when the helicopter is newly manufactured, is commercially operated (commercial air transport and commercial specialised operations), and is not currently required to carry a flight data recorder. However, the benefit of recording cockpit audio was not considered sufficient to mandate it. The impact assessment concluded that voluntary installation (through safety promotion channels) of in-flight recording systems (also capable of recording cockpit audio) is the most appropriate way forward for all other cases (except for balloons).

The issue of an alternate power source for the CVR has been considered within the framework of rulemaking task RMT.0249 'Recorders installation and maintenance thereof - certification aspects'. Under this rulemaking task, the Agency published NPA 2018-03 on 27 March 2018 for public consultation. This NPA proposed mandating an alternate power source for new type certificates of aeroplanes with a Maximum Take-Off Weight of over 5 700 kg (through an amendment to the certification specifications for large aeroplanes) and for newly manufactured aeroplanes with an MCTOM of 27 000 kg (through an amendment to the rules for air operations). While the need for alternate power sources for CVRs appears to be well-supported by investigations of accidents involving aeroplanes with an MCTOM of over 27 000 kg, this is not indicated for lighter aeroplanes or helicopters.

The comments received on NPA 2018-03 which were related to the alternate power source were reviewed and this review did not lead to an extension of the applicability of the alternate power source requirements.

The proposals in NPA 2018-03 related to rules for air operations were recently transferred to rulemaking task RMT.0296, in particular the proposal to require an alternate power source. The next RMT.0296 deliverable, an EASA Opinion, is planned to be published Q1/2019.

Status: Open

United Kingdom

Registration	Aircraft Type	Location	Date of event	Event Type
G-WNSB	AEROSPATIALE AS332	on approach to Sumburgh Airport in the Shetland Islands	23/08/2013	Accident

Synopsis of the event:
At 1717 hrs UTC on 23 August 2013, an AS332 L2 Super Puma helicopter with sixteen passengers and two crew on board crashed in the sea during the approach to land at Sumburgh Airport. Four of the passengers did not survive.
The purpose of the flight was to transport the passengers, who were employees of the UK offshore oil and gas industry, to Aberdeen. On the accident flight, the helicopter had departed the Borgsten Dolphin semi-submersible drilling platform in the North Sea, to route to Sumburgh Airport for a refuelling stop. It then planned to continue to Aberdeen Airport.

The commander was the Pilot Flying (PF) on the accident sector. The weather conditions were such that the final approach to Runway 09 at Sumburgh Airport was flown in cloud, requiring the approach to be made by sole reference to the helicopter's instruments, in accordance with the Standard Operating Procedure (SOP) set out in the operator's Operating Manual (OM). The approach was flown with the autopilot in 3-axes with Vertical Speed (V/S) mode, which required the commander to operate the collective pitch control manually to control the helicopter's airspeed. The co-pilot was responsible for monitoring the helicopter's vertical flightpath against the published approach vertical profile and for seeking the external visual references necessary to continue with the approach and landing. The procedures permitted the helicopter to descend to a height of 300 ft, the Minimum Descent Altitude (MDA) for the approach, at which point a level-off was required if visual references had not yet been acquired.

Although the approach vertical profile was maintained initially, insufficient collective pitch control input was applied by the commander to maintain the approach profile and the target approach airspeed of 80 kt. This resulted in insufficient engine power being provided and the helicopter's airspeed reduced continuously during the final approach. Control of the flightpath was lost and the helicopter continued to descend below the MDA. During the latter stages of the approach the helicopter's airspeed had decreased below 35 kt and a high rate of descent had developed.

The decreasing airspeed went unnoticed by the pilots until a very late stage, when the helicopter was in a critically low energy state. The commander's attempt to recover the situation was unsuccessful and the helicopter struck the surface of the sea approximately 1.7 nm west of Sumburgh Airport. It rapidly filled with water and rolled inverted, but was kept afloat by the flotation bags which had deployed.
Search and Rescue (SAR) assets were dispatched to assist and the survivors were rescued by the Sumburgh-based SAR helicopters that attended the scene.

Safety Recommendation UNKG-2016-017 (AAIB):
It is recommended that, where technically feasible, regulatory changes introduced by the European Aviation Safety Agency Rulemaking Task RMT.120 are applied retrospectively to helicopters currently used in offshore operations.

Reply No 2 sent on 28/08/2018:
The Terms of Reference for Rulemaking Task RMT.0120 (‘Helicopter ditching and water impact occupant survivability’) includes the task of considering retroactive requirements for already certified helicopters.

A proposed amendment of Certification Specification CS-27 and CS-29 has been publically consulted through the first Notice of Proposed Amendment, (NPA) 2016-01, which was published on 23/03/2016. CS-27 and CS-29 were amended on 25 June 2018 through Executive Director Decision 2018/007/R.

A second NPA will be published to propose retrospective requirements through an amendment of Commission Regulation (EU) No 2015/640 Additional airworthiness specifications for operations (Part-26). The current target for publication is 4Q2018 (per the European Plan for Aviation Safety (EPAS) 2018-2022).

Status: Open

Safety Recommendation UNKG-2016-018 (AAIB):
It is recommended that the European Aviation Safety Agency amends the Certification Specifications for rotorcraft (CS 27 and 29) to require the installation of systems for the automatic arming and activation of flotation equipment. The amended requirements should also be applied retrospectively to helicopters currently used in offshore operations.

Reply No 3 sent on 28/08/2018:
In the frame of Rulemaking Task RMT.0120 ('Helicopter ditching and water impact occupant survivability'), the first Notice of Proposed Amendment, NPA (2016-01), was published on 23/03/2016 proposing an amendment of certification specifications (CS-27 and CS-29) to address this safety recommendation.

CS-27 and CS-29 have been amended on 25 June 2018 by Executive Director Decision 2018/007/R.
These amendments include the following new specifications:

CS 27.801(c):
'(c) An emergency flotation system that is stowed in a deflated condition during normal flight must:
(1) be designed such that the effects of a water impact (i.e. crash) on the emergency flotation system are minimised.
(2) have a means of automatic deployment following water entry.'

CS 29.801(c):
'(c) An emergency flotation system that is stowed in a deflated condition during normal flight must:
(1) be designed such that the effects of a water impact (i.e. crash) on the emergency flotation system are minimised.
(2) have a means of automatic deployment following water entry. Automatic deployment must not rely on any pilot action during flight.'

CS-27 Category A rotorcraft must also comply with CS 29.801(c), as indicated by an amendment of Appendix C to CS-27.

This means that, although CS 27 Cat. A and CS-29 rotorcraft are required to be equipped with an emergency flotation system that includes both a means of automatic arming and a means of automatic deployment, small CS-27 rotorcraft are only required to be equipped with an emergency flotation system that has a means of automatic deployment. This difference has been adopted by EASA following the comments received on NPA 2016-01, explaining that such requirement would not be proportionate and would add significant complexity to system design for small CS-27 rotorcraft.

The retrospective application of the requirements to existing helicopters, through an amendment of Commission Regulation (EU) No 2015/640 , Additional airworthiness specifications for operations (Part-26) will be considered in a second NPA. The current target for publication is 4Q2018 (per the European Plan for Aviation Safety (EPAS) 2018-2022).

Status: Open

Safety Recommendation UNKG-2016-019 (AAIB):

It is recommended that the European Aviation Safety Agency amends the Certification Specifications for Large Rotorcraft (CS 29), certified for offshore operation, to require the provision of a side-floating capability for a helicopter in the event of impact with water or capsize after ditching. This should also be applied retrospectively to helicopters currently used in offshore operations.

Reply No 2 sent on 28/09/2018:

In the frame of Rulemaking Task RMT.0120 ('Helicopter ditching and water impact occupant survivability'), Notice of Proposed Amendment, NPA (2016-01), was published on 23/03/2016 proposing new certification specifications and acceptable means of compliance (CS-29) to address this safety recommendation.

The NPA proposed the following:
- CS 29.801(i): 'The rotorcraft design must incorporate appropriate post-capsize survivability features to enable all passenger cabin occupants to safely egress the rotorcraft, taking into account the human breath hold capability';

- AMC 29.801, paragraph (c)(8): 'One method of meeting the post-capsize survivability provisions of CS 29.801(i) is to create a post-capsize rotorcraft floating attitude which will create an air pocket in the passenger cabin. This can be achieved by means of additional buoyancy.'

After consideration of the comments received during the public consultation of the NPA, EASA decided to withdraw these new provisions from the amendment of CS-29. The reason is that the design solutions, necessary to comply with the proposed specifications, are not yet technically mature. EASA will continue to monitor any research and development activities conducted by the industry in this domain.

For the same reason, EASA does not plan to propose retrospective requirements to equip already certified rotorcraft.

Status: Closed – **Category:** Disagreement

Safety Recommendation UNKG-2016-020 (AAIB):
It is recommended that the European Aviation Safety Agency amends the Certification Specifications for Large Rotorcraft (CS 29), certified for offshore operation, to ensure that any approved cabin seating layouts are designed such that, in an emergency (assuming all the exits are available), each exit need only be used by a maximum of two passengers seated directly adjacent to it.

Reply No 3 sent on 28/08/2018:
In the frame of Rulemaking Task RMT.0120 ('Helicopter ditching and water impact occupant survivability'), Notice of Proposed Amendment, NPA (2016-01), was published on 23/03/2016 proposing new certification specifications (CS-29) to address this safety recommendation.

CS-29 has been amended on 25 June 2018 by Executive Director Decision 2018/007/R.

This amendment includes the following new specifications:

- CS 29.807(d): 'Underwater emergency exits for passengers. If certification with ditching provisions is requested by the applicant, underwater emergency exits must be provided in accordance with the following requirements and must be proven by test, demonstration, or analysis to provide for rapid escape with the rotorcraft in the upright floating position or capsized.
(1) One underwater emergency exit in each side of the rotorcraft, meeting at least the dimensions of a Type IV exit for each unit (or part of a unit) of four passenger seats. However, the passenger seat to-exit ratio may be increased for exits large enough to permit the simultaneous egress of two passengers side by side.'

- CS 29.813(d): 'If certification with ditching provisions is requested:
(1) passenger seats must be located in relation to the underwater emergency exits provided in accordance with CS 29.807(d)(1) in a way to best facilitate escape with the rotorcraft capsized and the cabin flooded; and
(2) means must be provided to assist cross-cabin escape when capsized.'

In addition the proposed associated Acceptable Means of Compliance (AMC) material further points out that the objective of this latter rule is that no passenger is in a worse position than the second person to egress through an exit.

Status: Closed – **Category:** Agreement

Safety Recommendation UNKG-2016-021 (AAIB):

It is recommended that the European Aviation Safety Agency amends the Certification Specifications for Large Rotorcraft (CS 29), certified for commercial offshore operations, to include minimum size limitations for all removable exits, to allow for the successful egress of a 95th percentile-sized offshore worker wearing the maximum recommended level of survival clothing and equipment.

Reply No 3 sent on 28/08/2018:

In the frame of Rulemaking Task RMT.0120 ('Helicopter ditching and water impact occupant survivability'), Notice of Proposed Amendment, NPA 2016-01, was published on 23/03/2016, proposing new certification specifications (CS-29) to address this safety recommendation.
CS-29 has been amended on 25 June 2018 by Executive Director Decision 2018/007/R.

CS 29.807(d) requires underwater emergency exits to meet at least the dimensions of a Type IV exit.

As explained in the NPA Appendix B, item 36 on size of occupants, studies have shown that the dimensions of a Type IV exit would be sufficient to allow safe evacuation by all offshore workers whilst wearing survival clothing and equipment.

Status: Closed – **Category:** Agreement

Safety Recommendation UNKG-2016-022 (AAIB):

It is recommended that the European Aviation Safety Agency amends the Certification Specifications for Large Rotorcraft (CS 29), certified for use in commercial offshore operations, to require a common standard for emergency exit opening mechanisms, such that that the exit may be removed readily using one hand and in a continuous movement.

Reply No 2 sent on 28/08/2018:

Paragraph (c) of Certification Specification CS 29.809 'Emergency exit arrangement' requires that the means of opening each emergency exit is simple and obvious and may not require exceptional effort.

In the frame of Rulemaking Task RMT.0120 ('Helicopter ditching and water impact occupant survivability'), Notice of Proposed Amendment, NPA 2016-01, was published for public consultation on 23/03/2016, and proposed new Acceptable Means of Compliance (AMC) provisions to clarify this specification.

CS-29 has been amended on 25 June 2018 by Executive Director Decision 2018/007/R.

It includes a new AMC 29.809, which stipulates the following in paragraph (b)(3):
'The means to open an underwater emergency exit should be simple and obvious and should not require any exceptional effort. Designs with any of the following characteristics (non-exhaustive list) are considered to be non-compliant:
(i) more than one hand is needed to operate the exit itself (use of the handhold may occupy the other hand);
(ii) any part of the opening means, e.g. an operating handle or control, is located remotely from the exit such that it would be outside of a person's direct vision when looking directly at the exit, or that the person should move away from the immediate vicinity of the exit in order to reach it; and
(iii) the exit does not meet the opening effort limitations set by FAA AC 29.809.'

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

Safety Recommendation UNKG-2016-025 (AAIB):
It is recommended that the European Aviation Safety Agency amends the design requirements for helicopters to ensure that where liferafts are required to be fitted, they can be deployed readily from a fuselage floating in any attitude.

Reply No 2 sent on 28/08/2018:
In the frame of Rulemaking Task RMT.0120 ('Helicopter ditching and water impact occupant survivability'), Notice of Proposed Amendment, NPA 2016-01, was published for public consultation on 23/03/2016, and proposed new certification specifications to address this safety recommendation.

Certification Specifications CS-27 and CS-29 have been amended on 25 June 2018 by Executive Director Decision 2018/007/R.

These amendments include specifications in CS 27.1415(b)(1) and CS 29.1415(b)(1) which read as follows:

'Required life raft(s) must be remotely deployable for use in an emergency. Remote controls capable of deploying the life raft(s) must be located within easy reach of the flight crew, occupants of the passenger cabin and survivors in the water, with the rotorcraft in the upright floating or capsized position. It must be substantiated that life raft(s) sufficient to accommodate all rotorcraft occupants, without exceeding the rated capacity of any life raft, can be reliably deployed with the rotorcraft in any reasonably foreseeable floating attitude, including capsized, and in the sea conditions chosen for demonstrating compliance with CS 27.801(e)/CS 29.801(e).'

Paragraph (b)(1)(iii) of the corresponding AMC 27.1415 and AMC 29.1415, provides further guidance as follows:

'Reasonably foreseeable floating attitudes are considered to be, as a minimum, upright, with and without loss of the critical emergency flotation system (EFS) compartment, and capsized, also with and without loss of the critical EFS compartment. Consideration should also be given towards maximising, where practicable, the likelihood of life raft deployment for other cases of EFS damage.'

Status: Closed – **Category:** Agreement

Safety Recommendation UNKG-2016-026 (AAIB):

It is recommended that the European Aviation Safety Agency requires that, for existing helicopters used in offshore operations, a means of deploying each liferaft is available above the waterline, whether the helicopter is floating upright or inverted.

Reply No 2 sent on 28/08/2018:

In the frame of Rulemaking Task RMT.0120 ('Helicopter ditching and water impact occupant survivability'), the first Notice of Proposed Amendment, NPA 2016-01, was published for public consultation on 23/03/2016, and proposed new certification specifications (CS-27 and CS-29) to address this safety recommendation.

Certification Specifications CS-27 and CS-29 have been amended on 25 June 2018 by Executive Director Decision 2018/007/R.

These amendments include specifications in CS 27.1415(b)(1) and CS 29.1415(b)(1) which read as follows:

'Required life raft(s) must be remotely deployable for use in an emergency. Remote controls capable of deploying the life raft(s) must be located within easy reach of the flight crew, occupants of the passenger cabin and survivors in the water, with the rotorcraft in the upright floating or capsized position. (…).'

Paragraph (b)(1)(vi) of AMC 27.1415 and AMC 29.1415 provides the following acceptable means of compliance for life raft activation:

'The following should be provided for each life raft:
(…)
(C) tertiary activation: manual activation control(s) accessible to a person in the water, with the rotorcraft in all foreseeable floating attitudes, including capsized.'

The retrospective application of the requirements to existing helicopters, through an amendment of Regulation (EU) No 2015/640 Additional airworthiness specifications for operations (Part-26), will be considered in a second NPA. The current target for publication is 4Q2018 (per the European Plan for Aviation Safety (EPAS) 2018-2022).

Status: Open

United Kingdom

Registration	Aircraft Type	Location	Date of event	Event Type
G-GSGS	GLASFLUGEL 304	Parham Airfield	10/08/2017	Accident

Synopsis of the event:

The pilot had fully charged both Front Electric Sustainer (FES) batteries on 4 August 2017, after which they were removed from the chargers for storage. He installed them in the glider on the morning of 10 August, with the intention of flying the glider that afternoon. He initiated the FES battery self-checking procedure before conducting a daily inspection of the glider, after which the self-checking procedure had completed with no faults indicated on the FES Control Unit (FCU). He then fitted the FES battery compartment cover and applied tape around the edges of the cover.

The pilot conducted a ground run of the FES propeller, which operated normally. He then switched the Power Switch OFF, and also turned the FCU OFF, which was contrary to his normal practice of leaving the FCU switched ON.

The pilot launched from Parham Airfield by aerotow at 1021 hrs and flew in ridge lift for a period of 38 minutes before encountering a rain shower. He decided to use the FES propulsion system and turned the Power Switch ON. He then noticed that the FCU was switched OFF, so he switched the FCU ON without moving the Power Switch position. After waiting a few seconds for the FCU green LEDs to show that the FES propulsion system was available, he operated the FES motor which responded normally and operated for 4 minutes. The pilot did not recall observing any fault messages on the FCU during the motor operation.

After stopping the FES motor the pilot noticed that the propeller did not realign itself correctly against the nose of the glider. The pilot had experienced this problem previously and did not consider it to be a significant issue, so he did not attempt to realign the propeller. He switched the Power Switch OFF, leaving the FCU switched ON and continued in soaring flight for a further 1 hour 15 minutes before positioning the glider to land on grass Runway 22 at Parham Airfield. The circuit was flown normally to a smooth touchdown, however at the moment of touchdown the pilot heard an unexpected noise. As the glider slowed during the ground run, the pilot smelled burning and the cockpit filled with smoke that was moving forwards from behind the pilot's head. The pilot did not report observing any warning messages or illuminated LEDs on the FCU, although his attention was drawn outside the cockpit during landing. He vacated the cockpit normally, without injury, and observed that the FES battery compartment cover was missing and that smoke, followed shortly by flames, was coming from the battery compartment. The airfield fire truck arrived promptly and an initial attempt was made to extinguish the fire using a CO_2 gaseous extinguisher, but this proved unsuccessful. Aqueous film-forming foam (AFFF) was then sprayed into the FES battery compartment and the fire was extinguished.

The FES battery compartment cover was found close to the glider's touchdown point. The cover's rear carbon fibre catch was fractured, consistent with a vertical load acting on the inside of the cover. The cover did not exhibit any overheating damage.

Safety Recommendation UNKG-2017-018 (AAIB):

It is recommended that the European Aviation Safety Agency (EASA) requires that all powered sailplanes, operating under either an EASA Restricted Type Certificate, or an EASA Permit to Fly, and fitted with a Front Electric Sustainer (FES) system, are equipped with a warning system to alert the pilot to the presence of a fire or other hazardous condition in the FES battery compartment.

Reply No 2 sent on 08/02/2018:

The Agency agrees with intent of the Safety Recommendation.
As immediate action the Emergency Airworthiness Directive (EAD) 2017-0167-E has been published on September 6th, 2017. This EAD required removal of the Front Electrical Sustainer (FES) battery pack or an EASA approved modification of the FES batteries before the next flight.
The three affected manufacturers have taken the following corrective action addressed by the EAD:

Major change approvals:
HPH Sailplanes: 10064072
Schempp-Hirth: 10063863
Sportine Aviacija: 10064174

These corrective actions address, for example, the introduction of a mandatory warning system, Aircraft Flight Manual (AFM) improvements, a Flight Control Unit (FCU) software update with regard to the warnings presented to the pilot, and modifications to the FES battery design itself.
The same corrective action has also been applied to aircraft under Permit to Fly .

Moreover, EASA will ensure that the same approach is applied to ongoing and future certification projects.

Status: Closed – **Category:** Agreement

United Kingdom

Registration	Aircraft Type	Location	Date of event	Event Type
N276AY	AIRBUS A330	London Heathrow Airport	26/06/2016	Serious incident

Synopsis of the event:
The cabin filled with smoke whilst the aircraft was on stand after boarding. The cabin crew were unsuccessful in making contact with the commander, and one of the flight attendants (FAs) initiated a passenger evacuation.

Several passengers exited using the emergency slides from the two aft doors, but most left using the jetbridge at exit 2L. Passengers opened the two emergency exits situated immediately aft of the wings (exit 3L and exit 3R). Exit 3L had not been armed, so the slides did not deploy and the passengers did not use the exit. Exit 3R was armed and opened by a passenger and the slide deployed, but this exit was not used either.

The commander attempted to halt the evacuation, (because he believed he had isolated the source of the smoke) which caused some confusion until the FAs encouraged all remaining passengers to exit via the jetbridge.

Air Traffic Control (ATC) observed the incident and alerted the emergency services, which reached the scene quickly. Three passengers and several FAs received treatment for the effects of smoke inhalation and one passenger suffered a minor leg injury while using an escape slide.

The source of the smoke was traced to a failure of the Auxiliary Power Unit (APU) load compressor carbon seal that allowed hot oil to enter and pyrolyse in the bleed air supply. Metallic debris in the shared oil system compromised the load compressor bearing, leading to the failure of the load compressor carbon seal.

Safety Recommendation UNKG-2017-023 (AAIB):
It is recommended that the European Aviation Safety Agency mandate Service Bulletin GTCP331-49-7936 to add a system that shuts down the APU automatically if there is contamination of the lubricating oil.

Reply No 1 sent on 08/02/2018:
In order to obtain the information necessary to support the Agency decision about the safety recommendation, the EASA has contacted the Federal Aviation Administration (FAA), the primary certification authority of the APU.

Reply No 2 sent on 11/12/2018:
EASA obtained the APU’s and Airframe’s manufacturer positions about this recommendation. They confirmed that the APU performed an automatic shutdown due to high oil temperature, with no release of high energy debris and no increased risk of fire. The high oil temperature protection logic is implemented in all GTCP331 APUs in service.

Regarding the smoke in the cabin, at no moment was its level sufficient to incapacitate the crew or passengers. According to the APU manufacturer, the contamination of the APU oil system had resulted from a mechanical failure of the APU generator. In such a situation, this unit has to be deactivated/removed before the aircraft can be dispatched under a mechanical failure condition Master Minimum Equipment List (MMEL) item. However, during this event, the applicable Aircraft Maintenance Manual (AMM) task could not isolate the mechanical failure, and the dispatch was allowed under an electrical failure condition MMEL item. Since this event, the applicable AMM task has been amended (January 2018) in order to enhance the assessment of the APU generator failed unit. That would allow application of the appropriate MMEL item, thus achieving an equivalent objective compared to the implementation of Service Bulletin (SB) GTCP331-49-7936.

The evaluation of this safety recommendation has been coordinated with the FAA which also concluded that mandating Honeywell SB GTCP33 l-49-7936 based on this event and the likelihood of a future event of the same severity or worse is below the safety threshold for issuance of an Airworthiness Directive (AD).

Status: Closed – **Category:** Disagreement

Safety Recommendation UNKG-2017-025 (AAIB):
It is recommended that the European Aviation Safety Agency regulate the operation of interphone handsets, including during emergency communications, so that it is standardised irrespective of aircraft type.

Reply No 1 sent on 08/02/2018:
Use of interphones for emergency communications across aircraft types is, for EASA Member State operators, addressed under the existing EU air operations regulation (Commission Regulation (EU) No 965/2012) and related EASA Executive Director Decisions, as described below.

Commercial Air Transport operators are required to establish, and document in their Operations Manual (OM), standard operating procedures (SOPs) which should be tailored to suit their operations and fleet (see ORO.GEN.110(f)), taking into account the aircraft manufacturer's documentation, such as the Aircraft Flight Manual, Cabin Crew Training Manual, Operational Suitability Data (OSD).

The crew member interphone system, as required under CAT.IDE.A.175, should have a means for the recipient of a call to determine whether it is a normal call or an emergency call, and also have an alerting system incorporating aural or visual signals for use by flight and cabin crew (see AMC1 CAT.IDE.A.175). The operational methodology is not prescribed, which is in line with risk-based principles underlying rulemaking today.

European operators are required to provide training to cabin crew, including training on:

- Safety equipment and aircraft systems installed, relevant to their duties [see ORO.CC.125(c)(2)(ii)];

These systems include the interphone system, and associated training relies on the OSD information provided by the manufacturer (see CS CCD.310 & Appendix 1 to CS CCD.310 of the Annex to Executive Director Decision 2014/006/R), which addresses, under the communication system:

(1) location of handset unit(s) (crew station/flight crew/crew rest compartment(s));

(2) description and use of interphone integrated keys;

(3) operation of interphone and initiating calls in normal and emergency circumstances (calls: cabin to flight crew compartment; cabin crew to cabin crew station; cabin/flight crew compartment to crew rest compartment(s); cabin crew/flight crew to purser and vice versa);

(4) aural/visual indications associated with interphone calls in normal and emergency circumstances;

(5) location and description of signalling panels associated with communication system;

(6) emergency communication alert system (ECAS) – description/location/operation in cabin and flight crew compartment;

- The operator's SOPs [see ORO.CC.125 (d)(2) and (d)(3)(iii)] and actions assigned to each member of the cabin crew in normal and emergency procedures and drills relevant to each aircraft type and/or variant to be operated [see ORO.CC.140 (b)];

- For the senior cabin crew member (SCCM), the pre-flight briefing, including "… consideration of the particular flight, aircraft type, equipment, area and type of operation …" [see (a)(3) of AMC1 ORO.CC.200(c)].

Sub-paragraph (d)4 of 21.A.15 of Annex I (Part-21) of Commission Regulation (EU) No 748/2012, as amended by Commission Regulation (EU) No 69/2014, on initial airworthiness, requires, as applicable, the type certificate holder, under the OSD process, to determine aircraft types and variants for cabin crew operations, and to establish the associated cabin crew type-specific data. The related Certification Specifications-Cabin Crew Data (CS-CCD) contain type design requirements enabling such determinations at the level of the aircraft certification process.

Furthermore, the EU air operations regulation limits the number of aircraft types that cabin crew can operate to three, and, if certain conditions are met, cabin crew may operate on four aircraft types (see ORO.CC.250).

Proper implementation, by EU operators, of the afore-mentioned EU regulatory provisions is expected to provide an acceptable level of safety.

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

Safety Recommendation UNKG-2017-028 (AAIB):
It is recommended that the European Aviation Safety Agency require cabin crew on aircraft that are parked and with passengers on-board to be evenly distributed throughout the cabin and in the vicinity of floor-level exits, in order to provide the most effective assistance in the event of an emergency.

Reply No 1 sent on 08/02/2018:
Distribution of the cabin crew throughout the cabin of parked aircraft with passengers on-board is, for EASA Member State operators, addressed under the existing EU air operations regulation (Commission Regulation (EU) No 965/2012) and related EASA Executive Director Decisions, as described below.

Commercial Air Transport operators are required to establish, and document in their Operations Manual (OM), standard operating procedures (SOPs) for their operations, including;

- Crew member duties and responsibilities when the aircraft is parked on the ground (see ORO.GEN.110(f));

- Cabin crew stations and surveillance of the passenger cabin during the pre-take-off phase (see AMC1 ORO.GEN.110(f)(h)).

In particular, the cabin crew procedures should address:

- Cabin crew positioning in the cabin during the different phases of flight or whenever deemed necessary in the interest of safety (see 8.3.10 of AMC3 ORO.MLR.100);

- Passenger embarkation and disembarkation (see 8.3.15 (c) of AMC3 ORO.MLR.100);

- Re-fuelling/de-fuelling with passengers embarking, on board or disembarking (see 8.3.15 (d) of AMC3 ORO.MLR.100);

- Passenger briefing procedures (see 8.3.16 of AMC3 ORO.MLR.100).

In addition, cabin crew numbers and stations/seating positions in the cabin should be taken into account in the SOPs, covering, for example, cabin layout, doors/exits, and even distribution of cabin crew stations [see AMC1 ORO.CC.100 (a) and AMC1 CAT.OP.MPA.210(b)].
Typically, the minimum number of cabin crew is determined, during the certification process, taking into account the positioning of the floor-level exits, which are associated with the cabin crew assigned stations. More specifically, the numbers are derived from the emergency evacuation demonstrations and analysis conducted at the time of type certification of the aeroplane types and variants.

Proper implementation, by EU operators, of the afore-mentioned regulatory provisions is expected to provide an acceptable level of safety in the event of an emergency evacuation when passengers are on-board parked aircraft.

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

United Kingdom

Registration	Aircraft Type	Location	Date of event	Event Type
G-WNSR	SIKORSKY S92	West Franklin Platform, North Sea	28/12/2016	Accident

Synopsis of the event:
The helicopter was being operated from Aberdeen on a contract on behalf of an offshore oil and gas company. On 27 December 2016, during a flight on the day prior to the accident, the Health and Usage Monitoring System (HUMS) recorded vibration data which contained a series of exceedences related to the tail rotor pitch change shaft (TRPCS) bearing. Routine maintenance was carried out overnight which included a download and preliminary analysis of the HUMS data. Whilst an anomaly for tail rotor gearbox (TGB) bearing energy was detected by the maintenance engineer, the exceedences were not identified, in part, due to the way they were presented in the analysis tool; the helicopter was released to service without further investigation.

On 28 December 2016, during the first sector of the day, the HUMS recorded further exceedences but these were not scheduled to be downloaded and reviewed until the helicopter returned to Aberdeen; there was no method in place for either the flight crew or maintenance personnel to be made aware of these further exceedences until then. During lift off on the second sector, the helicopter suffered an uncommanded right yaw through 45° and the flight crew re-landed. The helicopter was again lifted into the hover and responded normally to the controls, so the event was attributed to a wind effect and the helicopter departed en route.
The five-minute flight to the West Franklin wellhead platform was uneventful but, in the latter stages of landing, yaw control was lost completely and the helicopter yawed to the right. The crew landed the helicopter expeditiously, but heavily, on the helideck. The helicopter continued to rotate to the right and the crew closed the throttles before it came to rest near the edge of the helideck having turned through approximately 180°. There were no injuries.

Safety Recommendation UNKG-2018-006 (AAIB):
It is recommended that the European Aviation Safety Agency commission research into the development of Vibration Health Monitoring data acquisition and processing, with the aim of reducing the data set capture interval prescribed in the Acceptable Means of Compliance to CS 29.1465 and thereby enhancing the usefulness of VHM data for the timely detection of an impending failure.

Reply No 1 sent on 27/04/2018:
EASA agrees with the intent of the recommendation and the research project proposal RES.011 “Helicopter, tilt rotor and hybrid aircraft Gearbox health monitoring- In-situ failure detection” has been added in the European Plan for Aviation Safety EPAS 2018-2022. One of the objectives of the research will be to investigate the feasibility of maximising the number of vibration health monitoring data acquisitions per flight (whatever the flight profile).

Status: Open

Safety Recommendation UNKG-2018-007 (AAIB):

It is recommended that the European Aviation Safety Agency amend the regulatory requirements to require that Vibration Health Monitoring data gathered on helicopters is analysed in near real-time, and that the presence of any exceedence detected is made available to the flight crew on the helicopter; as a minimum, this information should be available at least before takeoff and after landing.

Reply No 1 sent on 08/06/2018:

The European Plan for Aviation Safety (EPAS) 2018-2022 includes rulemaking task RMT.0711 in order to achieve a "Reduction in accidents caused by failures of critical rotor and rotor drive components through improved vibration health monitoring systems".
The primary objective of this task is to update the existing acceptable means of compliance relating to vibration health monitoring (VHM) in order to take account of advances in technology and current operational best practices. The scope of RMT.0711 will consider the improvement of the frequency of data collection and analysis and will also consider the possibility for provision of a cockpit indication to inform flight crew in the event of a VHM threshold exceedance.

Status: Open

United Kingdom

Registration	Aircraft Type	Location	Date of event	Event Type
G-ZBKF	BOEING 787	En route from London Heathrow to Delhi	29/04/2017	Serious incident

Synopsis of the event:
The aircraft was on a scheduled flight from London Heathrow to New Delhi, India. The aircraft was dispatched in accordance with the Minimum Equipment List (MEL) with the left air conditioning (AC) system disabled. Shortly after reaching FL350 the crew were alerted by EICAS that the cabin altitude was increasing above normal, triggered at 8,500 feet. With no additional Environmental control system (ECS) actions available to control cabin altitude, the flight crew initiated a descent. During this descent the cabin altitude exceeded 10,000 ft and the crew completed the relevant emergency actions.
The loss of cabin pressurisation was caused by detachment of the lower right air conditioning recirculation fan duct on a sector where the left air conditioning system had been disabled before flight. As a consequence of this finding, the Aircraft Maintenance Manual has been amended to alter the process of replacing the relevant recirculation fan and maintenance procedures to react to a related Maintenance Alert Message have been altered.
The investigation also identified a software problem related to the volume of the cabin decompression pre-recorded announcement (PRA) in the passenger cabin which is being addressed by the Operator's safety action. Three Safety Recommendations are made concerning the testing of the installed performance of CVR systems.

Safety Recommendation UNKG-2018-009 (AAIB):
It is recommended that the European Aviation Safety Agency initiate a review to consider whether a repeatable and objective analysis technique can be applied to audio recordings to establish consistent installed performance of cockpit voice recorder systems.

Reply No 1 sent on 28/09/2018:
Today various technologies exist to measure the quality of an audio system. Those technologies have different objectives like the most original repetition of a sound used e.g. for music recording or the intelligibility of voice messages e.g. in the context of hearing aids. As a first step EASA considers it important to agree on the objectives for a methodology which is bringing repeatable results in the assessment of Cockpit Voice Recorder (CVR) recordings during various aircraft operation conditions.
As part of the work the existing technical audio requirements for the elements of the CVR system will be considered to maintain consistency with those requirements. This may help defining overall recording quality indicators.
Once such objectives are formalised an assessment of various techniques is possible which may have the potential for repeatable results.

EASA plans to involve experts from other organisations to ensure that sufficient expertise is available.

Status: Open

United States

Registration	Aircraft Type	Location	Date of event	Event Type
N14053	AIRBUS A300	Belle Harbor	12/11/2001	Accident

Synopsis of the event:
On November 12, 2001, about 0916:15 eastern standard time, American Airlines flight 587, an Airbus Industrie A300-605R, N14053, crashed into a residential area of Belle Harbor, New York, shortly after takeoff from John F. Kennedy International Airport, Jamaica, New York. Flight 587 was a regularly scheduled passenger flight to Las Americas International Airport, Santo Domingo, Dominican Republic, with 2 flight crewmembers, 7 flight attendants, and 251 passengers aboard the airplane. The airplane's vertical stabilizer and rudder separated in flight and were found in Jamaica Bay, about 1 mile north of the main wreckage site. The airplane's engines subsequently separated in flight and were found several blocks north and east of the main wreckage site. All 260 people aboard the airplane and 5 people on the ground were killed, and the airplane was destroyed by impact forces and a postcrash fire. Flight 587 was operating under the provisions of 14 Code of Federal Regulations Part 121 on an instrument flight rules flight plan. Visual meteorological conditions prevailed at the time of the accident.

Safety Recommendation UNST-2010-119 (NTSB):
The National Transportation Safety Board recommends that the European Aviation Safety Agency modify European Aviation Safety Agency Certification Specifications for Large Aeroplanes CS-25 to ensure safe handling qualities in the yaw axis throughout the flight envelope, including limits for rudder pedal sensitivity. [A-10-119]

Reply No 5 sent on 11/12/2018:
The FAA Aviation Rulemaking Advisory Committee (ARAC) established the Flight Controls Harmonization Working Group (FCHWG) to assist in the analysis of the issue of rudder pedal sensitivity and rudder reversals (notice published under Federal register Vol.76, No. 59, dated 28 March 2011). The task of the group was to review the need to revise existing certification specifications for large aeroplanes as well as the need to enforce retroactive measures for the already certificated aircraft.

EASA participated in this group which released its "Rudder Pedal Sensitivity/Rudder Reversal Recommendation Report", dated November 7 2013. The report includes recommendations for the amendment of FAR Part 25 and EU CS-25. It is available on the FAA Website at:
http://www.faa.gov/regulations_policies/rulemaking/committees/documents/media/taefch_rpsrrt1-32811.pdf

As an interim action, based on this report, the Agency issued a Special Condition (SC) to ensure that the aeroplane is designed for loads, considered as ultimate, resulting from the application of two rudder reversal pedal inputs.

Rulemaking task RMT.0397 'Unintended or inappropriate rudder usage — rudder reversals' was launched on 30 May 2017 to propose new certification specifications in CS-25 (applicable to new certification projects for large aeroplanes) to mitigate the risk of pilots' unintended or inappropriate rudder pedal usage. This resulted in the publication of Notice of Proposed Amendment (NPA) 2017-18, dated 27/11/17, which proposed new

specifications and acceptable means of compliance consistent with the SC. The NPA is available on the EASA Website:
https://www.easa.europa.eu/document-library/notices-of-proposed-amendment/npa-2017-18

Based on this NPA, the comments received, and in cooperation with the FAA to harmonise as much as possible, EASA issued Executive Director (ED) Decision 2018/010/R, dated 5 November 2018, amending CS-25 (amendment 22):
https://www.easa.europa.eu/document-library/agency-decisions/ed-decision-2018010r

This amendment:
— creates a new CS 25.353 yaw manoeuvre condition, consisting of a two-pedal doublet manoeuvre, and the related AMC 25.353. This will ensure that the structure of the aeroplane is adequately protected from the loads created by rudder control reversals; and
— clarifies the existing CS 25.1583(a)(3) regarding manoeuvring speed limitation statements in the Aeroplane Flight Manual (AFM), and amends the related AMC 25.1581. This will ensure that statements are included in the limitations section of AFMs to recommend to the flight crew that they should avoid large and rapid alternating control inputs, including such inputs below the manoeuvring speed.

Status: Closed – **Category:** Agreement

Annex B

Definitions

ANNUAL SAFETY RECOMMENDATIONS REVIEW 2018

Definitions

The following definitions are extracted from Regulation (EU) No 996/2010 of the European Parliament and of the Council of 20 October 2010.

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

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

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

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

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

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

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

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

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

- a near collision requiring an avoidance manoeuvre to avoid a collision or an unsafe situation or when an avoidance action would have been appropriate,
- controlled flight into terrain only marginally avoided,
- aborted take-offs on a closed or engaged runway, on a taxiway, excluding authorised operations by helicopters, or from an unassigned runway,

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

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

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

Safety recommendation of Global Concern (SRGC)[1]: is defined as a safety recommendation made to a State civil aviation authority, to a regional certification authority, or to ICAO regarding a systemic deficiency having a probability of recurrence with potential for significant consequences, and requiring timely action to improve safety.

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

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

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

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

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

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

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

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

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

h) the mitigation of the risks associated with the deficiency will require coordinated efforts of more than one entity of the air transport industry, such as civil aviation authority(ies), manufacturer(s) and operator(s).

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

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

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

Technical Adviser (Article 8 of REGULATION (EU) No 996/2010)
1. Safety investigation authorities shall, provided that the requirement of no conflict of interest is satisfied, invite EASA and national civil aviation authorities of the Member States concerned, within the scope of their respective competence, to appoint a representative to participate:
(a) as an adviser to the investigator-in-charge in any safety investigation under Article 5(1) and (2), conducted in the territory of a Member State or in the location referred to in Article 5(2) under the control and at the discretion of the investigator-in-charge;
(b) as an adviser appointed under this Regulation to assist accredited representative(s) of the Member States in any safety investigation conducted in a third country to which a safety investigation authority is invited to designate an accredited representative in accordance with international standards and recommended practices for aircraft accident and incident investigation, under the supervision of the accredited representative.
2. The participants referred to in paragraph 1 shall be entitled, in particular to:
(a) visit the scene of the accident and examine the wreckage;
(b) suggest areas of questioning and obtain witness information;
(c) receive copies of all pertinent documents and obtain relevant factual information;
(d) participate in the read-outs of recorded media, except cockpit voice or image recorders;
(e) participate in off-scene investigative activities such as component examinations, tests and simulations, technical briefings and investigation progress meetings, except when related to the determination of the causes or the formulation of safety recommendations.

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

Annex C

Safety Recommendations classification

ANNUAL SAFETY RECOMMENDATIONS REVIEW 2018

Safety Recommendations classification

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

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

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

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

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

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

- **Adequate:** safety recommendation for which appropriate action is planned or implemented or sufficient evidence of completed action satisfying the objective has been received by the originator.

- **Partially adequate:** safety recommendation for which the planned action or the action taken will reduce but not substantially reduce or eliminate the deficiency or for which a safety issue has been recognised and a new orientation has been given to the recommended action.

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

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

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