
Annual Safety Report 2011



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Chief Inspector's Report

I am pleased to introduce the first AAIB Annual Safety Report. This builds on the previously published reports on Safety Recommendation progress and includes information on our activity during 2010.

I was privileged to take over the role of Chief Inspector in August 2010 from Dr David King who held the role for the previous 5 years. Thanks to his leadership I was fortunate to inherit a close knit team with a proven capability to deliver challenging reports. I believe these have significantly contributed to UK and indeed, global flight safety and the AAIB continues to enjoy the highest of reputations worldwide.

My appointment coincided with the implementation of the Government's Comprehensive Spending Review and the AAIB's budget was not exempt from this. Consequently we have begun reducing the number of staff by approximately 20%; a process which will be complete by 2015. The challenge to the AAIB is to deliver the same high standard of safety investigation with this reduced resource and we are developing different methods and policies to achieve this.

Investigations

During 2010, the AAIB deployed a field team on 48 occasions and investigated 9 fatal accidents responsible for 15 deaths. Further in depth information is included in this report along with that of previous years for comparison.

Globally, the trend in commercial air transport accidents has moved towards loss of control events. Several serious loss of control incidents have recently been investigated by the AAIB but fortunately we have not had to deal with tragedies on the scale of the Colgan Air DHC8 or Air France A330 accidents. The warning signs are there though and the CAA has launched a loss of control task force in which the AAIB is participating. I am conscious of a desire to review the fundamentals of pilot training and currency requirements and, from the AAIB's experience, that appears a worthy initiative. However it is of interest that most of our larger investigations over the last few years have been the result of technical defects.

Overseas, the AAIB deployed to three accidents in the Far East, including an uncontained engine failure to an Airbus A380. This ongoing investigation is led by the Australian Transport Safety Board but we are involved because the aircraft was powered by UK manufactured engines.

The AAIB continued to support RAF Service Inquiries on two occasions in 2010 and is currently forging a new relationship with the Military Air Accident Investigation Branch which formed during the early part of 2011.

Elsewhere, AAIB staff are actively engaged on international working groups developing flight recorder technology, underwater aircraft search and recovery techniques, European helicopter safety assessment, protection of sensitive safety information, European safety databases and various European Civil Aviation Conference workshops. Their work will ensure that the AAIB remains at the leading edge of accident investigation for the foreseeable future.

Europe

In December 2010, EU Regulation 996/2010 on the investigation and prevention of accidents in civil aviation became applicable in all European Union States. My predecessor and members of the Department for Transport worked tirelessly to provide the practical background to this legislation and in practice to date, I believe it has strengthened our capability.

This Regulation requires a timely response from Safety Recommendation addressees and I am pleased that this appears to be reflected in the high number of previously unresolved recommendations that are now included in this report.

I trust that you find this new format of report to be informative and a useful insight into the work of the AAIB.



Keith Conradi

Introduction

The Air Accidents Investigation Branch is the part of the Department for Transport responsible for the investigation of all civil aircraft accidents and serious incidents (collectively referred to as 'accidents' in this document) occurring in or over the United Kingdom, its Overseas Territories and Crown Dependencies. Its authority is enshrined in Regulation (EU) No 996/2010 of the European Parliament and of the Council of 20 October 2010 and the Civil Aviation (Investigation of Air Accidents and incidents) Regulations 1996. Its purpose is 'to improve aviation safety by determining the causes of air accidents and serious incidents and making Safety Recommendations intended to prevent recurrence'. The AAIB reports directly to the Secretary of State for Transport on safety matters.

The Civil Aviation Authority (CAA) Safety Regulation Group (SRG) is established to develop the UK's aviation safety environment, in partnership with industry, through continuous improvements in aviation safety in the UK and, in partnership with the European Aviation Safety Agency (EASA), across Europe.

The European Community established the EASA in 2003 with the legal competence to be the rulemaking and standard setting organisation for all aviation safety regulation on behalf of its member states. The EASA now actively undertakes the tasks of aircraft and product certification, and has responsibility for the rules related to the design and maintenance of aircraft products and parts, plus setting standards for those organisations involved in design, production and maintenance of these products and parts. The Agency's rulemaking role is expanding into Implementing Rules for aircraft operations and flight crew licensing. Similarly, work has begun on developing draft (high level) Essential Requirements to cover air traffic management and aerodrome activities. This is expected to be the third and final major phase of the transition to a coherent European rulemaking body for aviation safety regulation.

As a National Aviation Authority however, the CAA SRG retains a statutory duty to exercise full rulemaking and oversight responsibility for all those aspects not being adopted by EASA. Moreover, as a Competent Authority within the new European framework, CAA SRG is required to deliver safety oversight of UK industry against EASA's pan-European rules and standards. The developing European framework for the regulation of aviation safety has at its heart '2 pillars' – EASA and the National Aviation Authorities of the Community member states. Collectively, therefore, a maturing European regulatory system will continue to be focused on seeing that aircraft are properly designed, manufactured, operated and maintained; that airlines operate safely; that flight crews, air traffic controllers and aircraft maintenance engineers are suitably skilled; that licensed aerodromes are safe to use and that air traffic control services and general aviation activities meet the required safety standards.

Accident investigation and safety regulation are clearly different and the two functions are deliberately kept independent from each other. However, the evaluation of the findings of an accident investigation and the determination of the need for, and the initiation of, appropriate action to maintain and enhance safety is an important part of safety regulation. Thus a good working relationship between the AAIB, the CAA and the EASA is essential, while in no way jeopardising the independence of accident investigation.

Effective liaison has been maintained between the AAIB, the CAA and the EASA, which has been particularly useful in the immediate aftermath of any accident. However, the formal procedure by which the AAIB identifies and conveys to the CAA, the EASA or other bodies, matters which it believes require action is by means of Safety Recommendations.

Safety Recommendations can be made at any stage as the AAIB investigation progresses. Both the CAA and the EASA have formal procedures for the receipt and evaluation of such recommendations and initiation of necessary action.

The CAA is informed of all AAIB Safety Recommendations and has, until now, responded to the AAIB, in the form of a Follow-up Action on Occurrence Report (FACTOR), on all Safety Recommendations, regardless of whether they were the action addressee. In future, however, the CAA will only formally respond to the AAIB with a FACTOR if a Safety Recommendation is specifically addressed to them. They have assured the AAIB, however, that they will continue to react appropriately to any Safety Recommendation if they believe it is in the interests of UK aviation safety.

Until September 2004, responses to the Air Accidents Investigation Branch's recommendations were published by the Civil Aviation Authority in their annual Progress Report on AAIB recommendations under the cover of a Civil Aviation Publication (CAP). With the shift of responsibilities, however, it has become more appropriate for the AAIB to take responsibility for reporting on the responses to its recommendations regardless of the target authority or organisation. The first AAIB progress report was published in March 2006.

This Seventh report, which has been renamed the AAIB's 'Annual Safety Report' contains additional information concerning accident statistics and the activities of the AAIB. The bulk of the report remains unaltered and details the responses received to AAIB Safety Recommendations made up to and including 31 December 2010.

Statistics

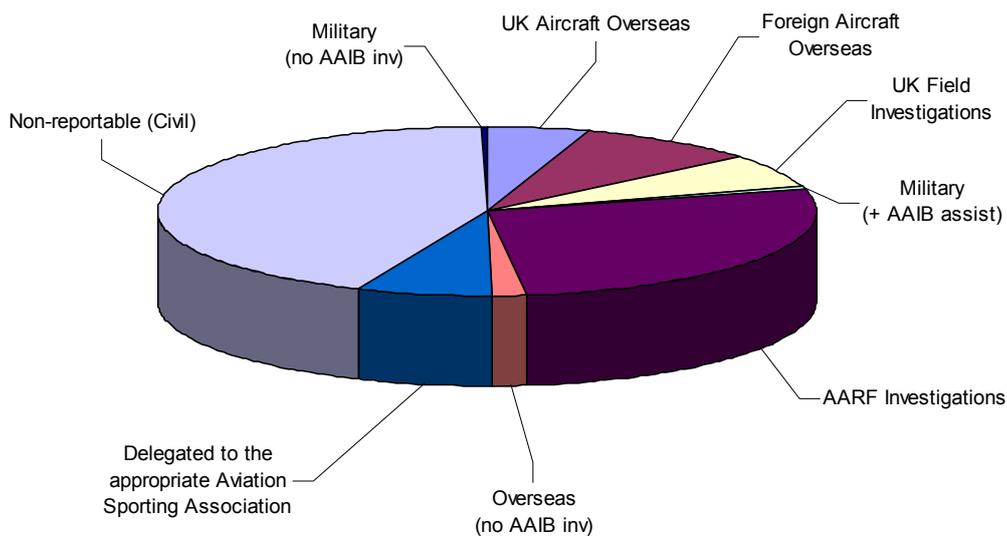
The following pages provide the statistics for 2010, 2009 and 2008, for accidents and serious incidents involving the Air Accidents Investigation Branch.

An explanation of the categories is as follows:

Category	Definition
UK Aircraft overseas	Investigations involving UK registered aircraft, or aircraft registered in one of the UK Overseas Territories or Crown Dependencies, occurring in a Foreign State where the AAIB has participated in the capacity as the Accredited Representative representing the State of Registry in accordance with ICAO Annex 13.
Foreign Aircraft overseas	Accidents and serious incident investigations to Foreign registered aircraft occurring in a Foreign State where the AAIB have participated in the capacity as the Accredited Representative
UK Field Investigations	Investigations involving the deployment of a 'Field' team within the UK or to one of the UK Overseas Territories or Crown Dependencies and those investigations where a team have not deployed but Safety Recommendations are made. Also includes investigations which have been delegated to the AAIB by another State.
Military with AAIB Assistance	Where an MoD Service Inquiry is convened following an accident / serious incident to a Military aircraft and an AAIB Inspector is appointed to assist.
AARF Investigations	Investigations conducted by correspondence only using an Aircraft Accident Report Form (AARF) completed by the aircraft commander.
Overseas (no AAIB)	Notifications to the AAIB of an overseas event which has no AAIB involvement.
Delegations to Sporting Associations	Investigations delegated to the relevant UK Sporting Associations.
Non-reportable (Civil)	Occurrences notified to the AAIB involving civil registered aircraft which do not satisfy the criteria of a reportable accident or serious incident in accordance with the Regulations.
Military (no AAIB inv)	Notifications to the AAIB concerning Military aircraft with no AAIB involvement.

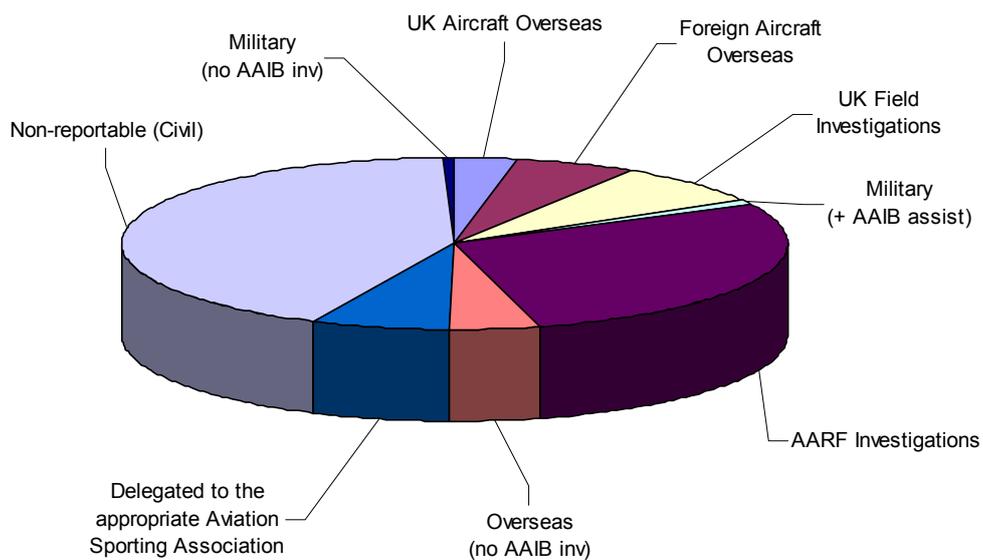
AAIB Notifications 2010

	J	F	M	A	M	J	J	A	S	O	N	D	Total
UK Aircraft Overseas	3	2	3	1	2	6	5	5	3	1	3	3	37
Foreign Aircraft Overseas	8	2	7	5	8	5	3	9	5	3	6	4	65
UK Field Investigations	3	4	1	6	4	7	3	8	4	3	4	1	48
Military (+ AAIB assist)	0	0	1	0	1	1	0	0	0	0	0	0	3
AARF Investigations	6	8	13	25	21	34	19	17	20	16	13	8	200
Overseas (no AAIB inv)	3	0	0	0	1	0	2	1	2	1	1	1	12
Delegated to the appropriate Aviation Sporting Association	0	0	1	7	7	7	7	9	6	4	1	0	49
Non-reportable (Civil)	25	25	32	19	27	28	37	30	32	22	22	20	319
Military (no AAIB inv)	0	1	0	0	0	0	0	1	0	0	0	0	2
Total	48	42	58	63	71	88	76	80	72	50	50	37	735
UK FATAL ACCIDENTS	2	0	0	1	0	0	9						
No of DEATHS	3	0	0	2	1	1	2	1	2	3	0	0	15



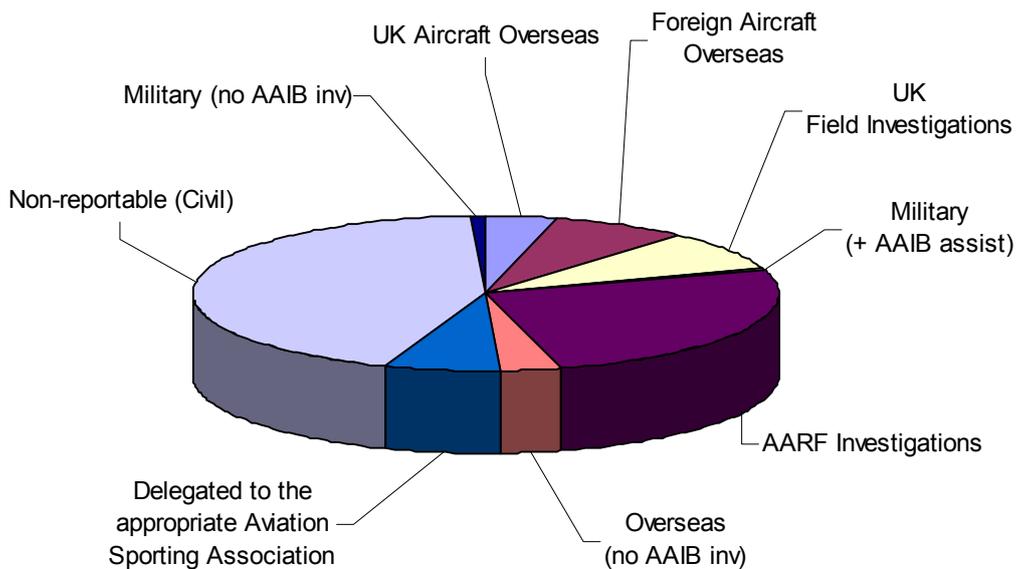
AAIB Notifications 2009

	J	F	M	A	M	J	J	A	S	O	N	D	Total
UK Aircraft Overseas	3	1	2	1	2	3	4	3	3	1	3	0	26
Foreign Aircraft Overseas	5	4	5	3	3	6	4	3	2	6	2	7	50
UK Field Investigations	6	8	6	4	5	8	8	4	6	5	4	3	67
Military (+ AAIB assist)	0	2	1	0	0	0	2	1	1	0	1	0	8
AARF Investigations	7	13	15	21	33	28	26	29	23	23	12	14	244
Overseas (no AAIB inv)	1	2	2	3	6	1	5	5	3	3	4	3	38
Delegated to the appropriate Aviation Sporting Association	1	0	10	6	4	10	6	10	7	0	3	0	57
Non-reportable (Civil)	39	25	33	29	39	32	29	31	26	35	29	19	366
Military (no AAIB inv)	0	0	0	0	3	0	0	0	0	1	0	0	4
Total	62	55	74	67	95	88	84	86	71	74	58	46	860
UK FATAL ACCIDENTS	1	3	1	3	2	4	2	1	2	1	2	0	22
No of DEATHS	3	6	1	20	2	7	2	1	4	1	2	0	49



AAIB Notifications 2008

	J	F	M	A	M	J	J	A	S	O	N	D	Total
UK Aircraft Overseas	2	4	3	4	0	5	5	3	1	4	1	0	32
Foreign Aircraft Overseas	4	8	9	5	5	4	6	3	8	2	6	1	61
UK Field Investigations	3	5	4	8	9	4	9	8	2	7	6	4	69
Military (+ AAIB assist)	0	0	0	1	0	1	0	1	0	0	0	0	3
AARF Investigations	8	11	7	9	35	30	30	23	28	12	10	7	210
Overseas (no AAIB inv)	1	0	1	1	0	2	1	6	2	6	3	4	27
Delegated to the appropriate Aviation Sporting Association	2	2	1	1	7	6	17	5	6	2	1	2	52
Non-reportable (Civil)	27	34	25	37	35	32	34	26	28	30	24	23	355
Military (no AAIB inv)	0	1	0	1	1	1	0	1	0	1	1	0	7
Total	47	65	50	67	92	85	102	76	75	64	52	41	816
UK FATAL ACCIDENTS	1	1	1	1	2	0	0	1	0	4	1	0	12
No of DEATHS	2	1	5	1	2	0	0	5	0	5	3	0	24



Safety Recommendations Report

This is the seventh annual Safety Report containing Safety Recommendations submitted to the Secretary of State by the Air Accidents Investigation Branch (AAIB). It contains all the recommendations made by the AAIB in 2010 including the responses to those recommendations received up to and including 30 June 2011 and those recommendations categorised as open from previous years where the category has changed and/or significant additional information has been received.

The recommendations are grouped into eight sections:

1. Aeroplanes 5,700kg MTWA and above
2. Aeroplanes above 2,250kg and below 5,700kg MTWA
3. Aeroplanes 2,250kg MTWA and below
4. Microlights
5. Rotorcraft 5,700kg MTWA and above
6. Rotorcraft above 2,250kg and below 5,700kg MTWA
7. Rotorcraft 2,250kg MTWA and below
8. Others

Within each section the accidents are listed by event date in reverse chronological order. This date should be taken as the date the recommendation was made.

The Status of responses to Safety Recommendations, as determined by the AAIB, have been divided into 6 categories.

1. Accepted - CLOSED (appropriate action implemented or planned but not yet implemented)
2. Rejected - OPEN (further action required)
3. Rejected - Rejected for acceptable reasons not known at the time of publication (no further AAIB action)
4. Partially accepted - OPEN
5. Response awaited - OPEN
6. Superseded - CLOSED

Statistics

Recommendations made in 2010 and status:

Number	Status Category					
	1 Accepted CLOSED	2 Rejected OPEN	3 Rejected	4 Partially accepted OPEN	5 Response awaited OPEN	6 Superseded CLOSED
94	24	2	2	7	53	0
% of total	26	2	2	7	56	0

89% of recommendations receiving a response have been accepted or partially accepted.

Note: 6 Safety Recommendations were allocated with recommendation numbers but were withdrawn.

Recommendations made in 2010 by Addressee:

Addressee	Number
Airbus	5
Avcraft Aerospace GmbH	1
Belgium Civil Aviation Authority	1
Boeing	4
Bombardier Aerospace	2
British Airways PLC	2
Cessna Aircraft Company	3
Civil Aviation Authority	19
Diamond Aircraft Industries	3
Directorate General of Civil Aviation Turkey	1
EASA	28
Eastern Caribbean Civil Aviation Authority	2
Embraer	1
Ethiopian Civil Aviation Authority	2
Eurocopter	1
Extra Aircraft Company	1
FAA	17
Flight Design GmbH	1
Flybe	2
Government of Gibraltar	1
Heathrow Airport Ltd	3
International Civil Aviation Organisation	3
London City Airport	2
NATS	1
Netjets Transportes Aeros	1
No1 Elementary Flying Training School, RAF	1
P&M Aviation	1
Pratt & Whitney Canada	1
Raytheon Aircraft Company	1
Royal Airforce	8
Ryanair	1
Serbian Civil Aviation Department	1
Transport Canada	6

Note: Please note that a number of Safety Recommendations are made to more than one Addressee

Aeroplanes > 5,700kg MTWA or above

De Havilland
DHC 8

25 miles north of
Edinburgh

2 March 2003

Incident

AAIB Bulletin: 12/2003

FACTOR: F5/2004

Synopsis

The aircraft, in the climb with the autopilot engaged, failed to level at the selected altitude of FL170. The combined effort of both pilots to level the aircraft manually was also ineffective. The recall actions for an 'elevator jam' were initiated and reduced elevator authority was regained on selection of the 'pitch disconnect handle'. The crew transmitted a 'MAYDAY' and, without further incident, and with the assistance of radar vectors, carried out as flapless landing on Runway 24 at Edinburgh. Even though the anti-icing systems were used during the climb, flight data analysis suggested that the control difficulties were due to a restriction of the right elevator spring tab brought about by ice contamination. Post flight examination revealed the presence of re-hydrated residues of anti-icing fluids remaining from previous fluid applications. It is possible that this re-hydrated gel, very low in glycol content and with a freezing point of approximately -1.1°C , had frozen around the bearings. Two Safety Recommendations are made: The first addresses the implementation of advice given to operators on airframe inspections and cleaning of aerodynamically 'quiet areas' where residues can accumulate, and the second highlights the need for anti-icing fluid manufacturers to develop gelling agents, with suitable holdover times, that are not rehydratable.

SAFETY RECOMMENDATION - 2003-082

The Civil Aviation Authority should consult with anti-icing fluid manufacturers with a view to encouraging them to develop fluids, with suitable 'holdover' times, that incorporate gelling agents that are not rehydratable.

Response

The CAA believes that the best way to encourage anti-icing fluid manufacturers to develop fluids with suitable holdover times that incorporate gelling agents that are not rehydratable is to submit a proposal to the SAE committee that develops the fluids specifications. Therefore, the CAA will propose to the SAE Fluids Committee that consideration should be given to developing a specification for a fluid with suitable holdover times that incorporate gelling agents that are not rehydratable, and of establishing a practical way of setting a pass/fail limit for the fluid. This proposal will be submitted to the secretary of the SAE Fluids Committee for discussion at the meeting in March/April 2004. The CAA will monitor the action taken in respect of the proposal and will then decide what if any further action is required.

The SAE Fluids Committee gave consideration to the need to develop a revised specification that dealt with the issue of rehydration. Following further research into the issue, which was commissioned by the UK CAA and conducted by the Anti-Icing Materials Laboratory (AMIL), the results were presented to the SAE G-12 Fluids Subcommittee Meeting in November 2006. Since then work has continued on developing a revised specification which exhibits improved characteristics. The fluid manufacturers have responded by developing products that meet that specification. With the change in certification responsibility, this activity now falls within EASA's remit as evidenced by EASA's publication of an Advanced Notice of Proposed Amendment (A-NPA) 2007-11 issued 31 July 2007.

The primary means of controlling the rehydration issue and the potential threat to aircraft due to freezing of the controls is to emphasise to the operators the need to manage the use of de-icing on their aircraft. EASA has issued Safety Information Notices (SIN) on the subject, namely SIN 2006-09 issued September 2006 which was updated by SIN 2008-29 issued 4 April 2008. Operators are encouraged towards the end of the Summer to consider their preparedness for winter operations and the CAA continues to promote awareness of the issues annually. Further information can be found on the CAA web-site at www.caa.co.uk/winteroperations. In addition, EASA issued SIN 2010-26 Revision 1 on 23 February 2011 highlighting the potential degrading effects of runway de-icing fluids upon aircraft de-icing fluids and the associated possible reduction in holdover times. EASA has issued a further SIN 2010-28 which copied the FAA Safety Alert for Operators (SAFO) 10001 dated 4 February 2010.

Status - Accepted - closed

Airbus A320-231	Addis Abbaba	31 March 2003	Incident
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AAIB Bulletin: 6/2010

FACTOR: N/A

Synopsis

The United Kingdom Air Accidents Investigation Branch (AAIB) was notified of this incident by the Flight Safety Manger of British Mediterranean Airways. The AAIB then notified the Ethiopian Accident Investigation Authority.

A British Mediterranean Airbus A-320 aircraft, registration G-MEDA operating as flight number LAJ 6711 on a flight from Alexandria (Bourg-el-Arab), Egypt, to Addis Abeba, Ethiopia, carried out two approaches using the Addis Abeba VHF Omni-Directional Radio Range beacon (ADS VOR) and associated Distance Measuring Equipment (DME). On the second approach the aircraft crossed over a ridge of high ground in Instrument Meteorological Conditions (IMC) and came within 56 ft of terrain at a location 5 nm to the northeast of the airport. As the aircraft crossed the ridge the crew, alerted a few seconds earlier by a radio altimeter (RA) height callout, carried out a go-around; at the same time the Enhanced Ground Proximity Warning System (EGPWS) generated a 'TOO LOW TERRAIN' aural alert.

The investigation determined that the antenna of the ADS VOR had suffered water ingress and was not functioning correctly. The correct maintenance procedures for the ADS VOR/DME and its associated monitoring equipment were not followed.

The aircraft received erroneous information from the ADS VOR which was fed to the flight deck VOR display, the Flight Management System (FMS), the navigation displays and the EGPWS computer with its associated Terrain Awareness Display (TAD). A single common position source error thus adversely affected all these apparently independent navigation/situational awareness systems.

The existing certification standards for the aircraft navigation systems were met but were not sufficient to protect against this problem.

Six Safety Recommendations have been made.

SAFETY RECOMMENDATION - 2010-020

It is recommended that the Ethiopian Civil Aviation Authority review the quality mechanisms that govern maintenance and monitoring of the ground station facilities to ensure that the correct procedures and correct parts are used.

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-021

It is recommended that the Ethiopian Civil Aviation Authority review their procedures for the issuing of NOTAMs and other safety related information to ensure a more robust process.

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-022

It is recommended that the International Civil Aviation Organization review the methods by which the effectiveness of radio navigation aid ground station monitors are assured.

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-023

It is recommended that the European Aviation Safety Agency and the Federal Aviation Administration review and revise the existing TAWS certification requirements with a view to ensuring that they protect against common mode failures that could induce a CFIT accident. Furthermore the minimum requirements for the navigational accuracy of sources used for TAWS should be tightened to reflect the needs of the system to perform its function. These revised standards should then be applied retrospectively to all aircraft required to be fitted with TAWS.

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-024

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

Response

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

Federal Aviation Administration (FAA) Washington - No response received

Status - Rejected - open

SAFETY RECOMMENDATION - 2010-025

It is recommended that the European Aviation Safety Agency and the Federal Aviation Administration consider whether the crew should be alerted when a FMS has identified a recurrent problem with a particular navigation aid and furthermore consider whether the subsequent use of that navigation aid for position information is desirable.

Status - Response Awaited - open

Boeing 747-436	En route from Los Angeles International Airport to London Heathrow Airport	20 February 2005	Incident
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AAIB Bulletin: 6/2006**FACTOR: F23/2006****Synopsis**

Immediately after the aircraft took off on a night flight from Los Angeles to London, a banging sound was heard and passengers and ATC reported seeing flames from the No 2 engine. The symptoms and resultant turbine over-temperature were consistent with an engine surge; the crew completed the appropriate checklist, which led to the engine being shut down. After assessing the situation, and in accordance with approved policy, the commander decided to continue the flight as planned rather than jettison fuel and return to Los Angeles. Having reached the east coast of the USA with no indications of further abnormality and with adequate predicted arrival fuel, the crew decided to continue to the UK. The winds and available flight levels were subsequently less favourable than anticipated and, nearing the UK, the crew decided to divert to Manchester in order to maintain the required arrival fuel reserve.

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

The investigation determined that the engine surge had been due to excessive wear to the high-pressure compressor casing and, with the standard of fuel controller software installed, this resulted in turbine over-temperature damage. There was no evidence of fuel system malfunction and it was possible to maintain fuel tank quantities in balance by the selective use of fuel pumps. The evidence suggested that the operator should ensure that flight crews are provided with relevant instruction on 3-engined fuel handling during initial and recurrent training, and that the regulators should review the policy on flight continuation for public transport aircraft operations, following an in-flight shutdown of an engine, in order to provide greater clarity to the operators.

Eight Safety Recommendations are made, six of which relate to flight data recorders.

SAFETY RECOMMENDATION - 2006-025

It is recommended that the Federal Aviation Administration should require Honeywell to amend the Maintenance Manual for the series 980-4011 model of flight data recorder to include a specific inspection of the underside of the distribution board for the presence of short circuits and detached wiring following the replacement of components.

Response

We asked the Seattle Aircraft Evaluation Group (SEA AEG) to evaluate FAA Safety Recommendation 06.097. The SEA AEG coordinated with Honeywell on a resolution. Honeywell evaluated the problem and determined that testing the distribution board with the specified Automated Test Unit (ATU) is a satisfactory means of accomplishing the recommended inspection to check for the presence of short circuits or detached wires. Honeywell issued Service Letter ATU-0434-SW No. 42 and Service Information Letter (SIL) ATU-0434-SW No. 14 which provide added upgrades to the ATU. Additionally, the ATU

Component Maintenance Manual (CMM), section 4-1, page 22, has a note stating to check for the latest software by using SIL ATU-0434-SW No. 14. We have attached the SEA AEG memorandum for your use.

We concur with the DEA AEG that these actions satisfy the concerns of FAA Safety Recommendation 06.097. Therefore, we consider FAA Safety Recommendation 06.097 closed and plan no further action.

Status - Accepted - closed

DHC-8-311	On departure from Manchester Airport	9 August 2005	Incident
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AAIB Bulletin: 9/2006
FACTOR: F34/2006

Synopsis

Shortly after takeoff from Manchester the No 2 (right) engine failed and subsequent attempts to feather the propeller were unsuccessful. The aircraft returned to Manchester where it made an uneventful landing. The No.1 propeller blade support bearing of the right propeller assembly had failed catastrophically, resulting in large imbalance loads through the engine. This led to the fracture of the Power Turbine (PT) shaft, and a consequent overspeed of the PTs, leading to the loss of the PT blades and an exhaust baffle plate from the rear of the engine. The failure of the propeller to feather was due to a ball from the failed bearing becoming jammed between the propeller blade root and the propeller hub. The origin of the bearing failure was not determined although metallurgic examination revealed that cracking had been occurring for a period of time. Six days prior to the incident, heavy vibration was reported but, as vibration survey equipment was not available at the time, the defect was deferred in accordance with the aircraft operator’s technical instruction. When vibration survey equipment was fitted, it was set up incorrectly and a full vibration survey was not carried out prior to the incident flight.

Two Safety Recommendations are made.

SAFETY RECOMMENDATION - 2006-067

It is recommended that Transport Canada require the aircraft manufacturer, Bombardier Aerospace, to amend the maintenance manual for the DHC Dash 8-300 aircraft with regard to propeller vibration measurements and to provide instructions when to investigate the propeller and/or engine assembly for possible internal damage, based on measured vibration levels, and to provide specific vibration level limits at which detailed inspections are required.

Response

In a response to this Safety Recommendation, Transport Canada stated the following:

‘Transport Canada agrees with the intent of this recommendation. If appropriate Instructions for Continued Airworthiness (ICA) or other operational limitations for procedures regarding significant or unusual vibration events were in place at the time of the initial event noted in the “Aircraft Vibration History”, the bearing failure and subsequent events may have been prevented.’

Status - Superseded - closed

DHC-8-402**Leeds Bradford
International
Airport****20 October 2005****Incident****AAIB Bulletin: 5/2006****FACTOR: F36/2006****Synopsis**

The aircraft was conducting a practice CAT II ILS approach to Runway 32 at Leeds Bradford International Airport in VMC. Contrary to company standard operating procedures, the co-pilot flew the approach and the landing. At a height of approximately 80 ft, the co-pilot retarded both power levers, resulting in a high rate of descent. Both pilots applied power and the co-pilot flared positively in an attempt to reduce this rate of descent. In doing so, the aircraft was pitched-up to an angle sufficient to cause the underside of the rear fuselage to contact the ground. Damage was confined to the composite fairing covering the 'runway touched' sensor. There were no injuries. Although not a cause of the incident, the investigation revealed that the heading selectors for the commander and co-pilot operated independently, resulting in a temporary deviation from the ATC assigned heading. This was not noticed immediately by the non-handling commander.

Two Safety Recommendations are made.

SAFETY RECOMMENDATION - 2006-049

It is recommended that the aircraft operator, Flybe, expedite the reconfiguring of the heading selector systems on their DHC-8-400 (Q400) aircraft that do not have coupled heading selectors, such that operation of either heading selector results in an identical selection being presented on both the commander's and co-pilot's flight instruments.

Response

Service Bulletin SB84-34-114 "AutoPilot Heading Set Knobs Coupled Left and Right" was issued as a result of a Safety Recommendation. The SB has been progressively embodied across the Flybe Q400 fleet. There are only 7 remaining aircraft pending installation. Four of the remaining 7 will be complete by end Feb 2011. The remaining will be embodied at the earliest servicing input. A decal is installed on the LH and RH instrument panels when an aircraft has the coupled heading bug function embodied.

All new aircraft have "AutoPilot Heading Set Knobs Coupled Left and Right" embodied at build.

Status – Accepted - closed

**Airbus
A319-131-131****Near London
Heathrow****22 October 2005****Incident****AAIB Bulletin: 2/2008****FACTOR: N/A****Synopsis**

As the aircraft climbed to Flight Level (FL) 200 in night VMC, there was a major electrical failure. The crew reported that both the commander's and co-pilot's Primary Flight Displays (PFD) and Navigation Displays (ND) went blank, as did the upper ECAM display. The autopilot and autothrust systems disconnected, the VHF radio and intercom were inoperative and most of the cockpit lighting went off.

The commander maintained control of the aircraft, flying by reference to the visible night horizon and the standby instruments, which were difficult to see in the poor light. The co-pilot carried out the abnormal checklist actions which appeared on the lower ECAM display; the only available electronic flight display. Most of the affected systems were restored after approximately 90 seconds, when the co-pilot selected the AC Essential Feed switch to Alternate ('ALTN').

Preliminary information on the progress of the investigation was published in AAIB Special Bulletins S2/2005 and S3/2006, in November 2005 and April 2006. Four Safety Recommendations were made in Special Bulletin S3/2006.

It was not possible to determine the cause of the incident due to a lack of available evidence, however, ten additional Safety Recommendations were made.

SAFETY RECOMMENDATION - 2006-051

It is recommended that the aircraft manufacturer, Airbus, reviews the existing ECAM actions for the A320 series aircraft, given the possibility of the simultaneous in-flight loss of the commander's and co pilots' primary flight and navigation displays. They should consider whether the priority of the items displayed on the ECAM should be altered, to enable the displays to be recovered as quickly as possible and subsequently issue operators with a revised procedure if necessary.

Response

Airbus has responded to this Safety Recommendation stating that it would not be acceptable to change the priority of the ECAM action items for the following reasons:

- There are other failure modes in which the selection of the AC ESS FEED is not the most important action
- The current ECAM action prioritisation was arrived at after taking into account many different safety analyses
- Changing the priority of the ECAM items would require validation on all airframe engine combinations and could have an impact on other engine or electrical alerts
- New priorities could introduce new operational issues which would need to be reviewed and approved by the regulatory authorities (EASA/FAA)

Status - Accepted - closed

SAFETY RECOMMENDATION - 2006-052

It is recommended that the aircraft manufacturer, Airbus, should review the A320 series aircraft Master Minimum Equipment List Chapter 31, INDICATING/RECORDING SYSTEMS and reconsider whether it is acceptable to allow the ECAM lower display unit to be unserviceable. They should amend the requirement, as necessary, to take account of the possibility of the simultaneous in-flight loss of both the commander's and co-pilot's primary flight and navigation displays and the ECAM upper display.

Response

In response to this Safety Recommendation, Airbus has reviewed the content of the A318/A319/A320/A321 MMEL regarding dispatch with the lower ECAM display inoperative.

MMEL Sections 1 and 2 were updated in August 2006 to include the condition that an operational test of the AC Essential bus transfer function and indication must be performed once per day if the lower ECAM is inoperative. The Aircraft Maintenance Manual will also be updated to include the test procedure.

This Safety Recommendation was made to ensure that the operating crew would always have information presented on ECAM as to the actions required to recover the systems should a similar event occur. The response of Airbus to the recommendation did not address this problem, which is that if the Lower ECAM screen were not available, in the event of a similar failure, there would not be any information displayed to the crew as to what action they should take to recover the systems. Accordingly, Airbus propose to amend the A320 family MMEL section 2 regarding dispatch with the lower ECAM inoperative, to remind crews of the necessary recovery action should the AC ESS bus, and therefore all DUs be lost:

'In case of failure of AC Bus 1, all DUs are lost:

- Apply AC ESS BUS FAULTY procedure of FCOM 3.02.24
(Select AC ESS FEED at ALTN) to recover AC ESS BUS'

Status - Accepted - closed

SAFETY RECOMMENDATION - 2006-053

The aircraft manufacturer, Airbus, should identify those aircraft with the single power supply to the standby artificial horizon and advise the operators of the potential implications of this configuration.

In Special Bulletin S2/2005 it was reported that the standby artificial horizon on G-EUOB would not have remained powered. This statement was based on information contained in the Flight Crew Operating Manual (FCOM) for G-EUOB, which implied that the standby horizon had the single power supply configuration. It was subsequently established that this aircraft had the ISIS wiring provision and so its standby horizon remained powered, but would not have been lit.

Response

In response to this Safety Recommendation Airbus has advised operators through OIT9SE999.0115/05/BB Rev 1, that for aircraft without the ISIS wiring configuration to the standby instruments, the standby horizon may be unusable after five minutes if the DC ESS bus is lost.

Status - Accepted - closed

SAFETY RECOMMENDATION - 2006-054

It is recommended that the aircraft manufacturer, Airbus, revises the information about the power sources for the standby artificial horizon provided in Flight Crew Operating Manuals for the A320 series aircraft to reflect the actual status of the aircraft to which they apply.

Response

In response to this Safety Recommendation Airbus has updated A320 family Flight Crew Operating Manual Section 3.02.24 page 11, Section 1.34.20 page 1 and Section 1.34.97 page 1 to reflect the different power supply configurations for the standby horizons.

Status - Accepted - closed

SAFETY RECOMMENDATION - 2007-062

It is recommended that the European Aviation Safety Agency should, in consultation with other National Airworthiness Authorities outside Europe, consider requiring training for flight by sole reference to standby instruments for pilots during initial and recurrent training courses.

Response

Rulemaking Tasks FCL.009 (a) 'Training for flying by sole reference to standby instruments Development of Implementing Rule addressing safety recommendation UNKG-2007-062.' and FCL.009 (b) 'Training or flying by sole reference to standby instruments Development of AMC/GM addressing safety recommendation UNKG-2007-062.' are identified in the Rulemaking programme inventory as published in the EASA website, and will address the issue.

Actions have been included in Airbus basic training course.

Status - Accepted - closed

Airbus A340-300 Boeing 777-200	Holding Area Runway 27L, London Heathrow Airport	6 November 2005	Accident
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AAIB Bulletin: 8/2006

FACTOR: N/A

Synopsis

Aircraft entering the Holding Area prior to departure from Runway 27L at London Heathrow Airport, initially follow a single yellow taxiway centreline, which splits into two parallel lines within the holding area. This is wide enough for two 'heavy/widebody' aircraft to position side by side when lined up on the parallel lines. Prior to departure, a Boeing 777 (B777) was holding, in turn, at N2W behind a Boeing 737-800 (B737), in the Holding Area. Whilst in this position, an Airbus A340 (A340) was instructed to taxi to N2E. As it passed behind the B777, the A340's right winglet made contact with the B777's left elevator and its left wing tip. The A340 had not reached the section of the line parallel to that upon which the B777 was parked. This accident happened at the same location as a collision between similar aircraft types reported in AAIB Bulletin 9/2005, reference EW/C2004/07/03.

Two Safety Recommendations are made addressing the issues of the design and operation of the Holding Area for Runway 27L at London Heathrow Airport.

SAFETY RECOMMENDATION - 2006-058

It is recommended that Heathrow Airport Limited review the current layout/design of the Holding Areas for departing aircraft, to ensure that wingtip clearance is maintained between manoeuvring aircraft.

Response

Of the four runway holding areas, three of them are currently the subject, or have been subjected to, a change in design of the 09 ends which has resulted in a layout which does not present any wingtip hazards.

27R is currently under redevelopment and has already removed the area which has seen wingtip clashes in the past and, again, presents a layout does not expose aircraft to wingtip hazards.

27L, which is the subject of this recommendation, will shortly be reconfigured to allow the continued redevelopment of the east side of the airfield. An interim measure has been actioned in the form of ground markings which define the rear boundary of the holding area, there by giving the pilot a better 'picture' to estimate whether there is sufficient room to pass around the rear of an aircraft in the Holding Area.

Status - Superseded - closed

SAFETY RECOMMENDATION - 2006-059

It is recommended that Heathrow Airport Limited, in co-operation with National Air Traffic Services, review the current Air Traffic Control procedures applicable to the Holding Areas for departing aircraft, and any future layout of these Holding Areas, to ensure that adequate wingtip clearance is maintained between manoeuvring aircraft.

Response

The design of future Holding Areas will maintain wingtip clearance.

Changes to phraseology will ensure flight crews, who's natural language is not English, will better understand what is required of them.

Status - Superseded - closed

Boeing 757-2T7	On approach to Gibraltar Airport	17 March 2006	Incident
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AAIB Bulletin: 8/2006
FACTOR: F31/2006

Synopsis

Following a surveillance radar approach (SRA) to Runway 09 at Gibraltar Airport, the flight crew lost visual contact with the runway after passing the Visual Decision Point (VDP). During the subsequent go-around, the crew did not follow the correct missed approach procedures but ATC provided effective heading control to avoid the high ground. The lowest altitude of the aircraft when over the land was 2,100 ft. The highest point on the land, just south of the airfield, is 1,420 ft.

Following the incident, ATC and the aircraft operating company made changes to procedures to reduce the chances of a similar occurrence. Additionally, it was considered that the airport lighting should be improved and a recommendation has been made to that effect.

SAFETY RECOMMENDATION - 2006-065

It is recommended that the air regulator review the airport lighting at Gibraltar with the aim of providing, for civilian operations from the airfield, runway approach lighting and improving the runway lighting.

Response

The Government of Gibraltar has agreed to install a simple Approach Lighting System to both runways and I am advised by the Director of Civil Aviation that works in this respect have already commenced. I am further advised that the MOD have also agreed to install improved runway lighting and this will be included in the next runway resurfacing programme.

Status - Accepted - closed

Boeing 737	R/W 33 Birmingham Airport	15 June 2006	Accident
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AAIB Bulletin: 5/2008

FACTOR: N/A

Synopsis

On a scheduled cargo flight from Liège Airport to London Stansted Airport the crew diverted to Nottingham East Midlands Airport due to unforecast poor weather conditions at Stansted. The weather conditions at EMA required a Cat IIIA approach and landing. On approach, at approximately 500 feet agl, the crew were passed a message by ATC advising them of a company request to divert to Liverpool Airport. Within the cockpit, the commander inadvertently disconnected the autopilot whilst attempting to reply to ATC. He then attempted to re-engage the autopilot in order to continue the approach.

The aircraft diverged to the left of the runway centre-line and the commander commenced a go-around but, too late to prevent the aircraft contacting the grass some 90 m to the left of the runway centreline. The aircraft got airborne again but, during the ground contact, the right main landing gear had broken off.

The crew subsequently made an emergency landing at Birmingham Airport.

SAFETY RECOMMENDATION - 2008-010

It is recommended that the Kingdom of Belgium Civil Aviation Authority require TNT Airlines in Belgium to carry out a review of their standard operating procedures to ensure that it is clear to all pilots when go-around action is required.

Response

TNT Airways have taken the following actions:

- Each pilot received a supplementary simulator session about CAT2/3 approach.
- The Operations Manual Part B of TNT Airways has been updated (procedure concerning failures and associated actions).

Status - Accepted - closed

Dornier 328-100

Aberdeen

22 June 2006

Incident

AAIB Bulletin: S7/2006

FACTOR: N/A

Synopsis

During the landing roll, the crew could not decelerate the aircraft sufficiently because they were unable, repeatedly, to select the power levers into the beta range. The aircraft overran the runway and the Runway End Safety Area, coming to rest some 350 metres beyond the end of the runway. There were no injuries.

Three Safety Recommendations are made.

SAFETY RECOMMENDATION - 2006-104

It is recommended that Avcraft Aerospace GmbH advise all operators of Dornier 328 turboprop aircraft to detail procedures, and provide adequate training, to ensure that their pilots are able to act appropriately if the beta control range on the power levers cannot be selected after landing.

Response

This recommendation is not addressed to the CAA. However, the recommendation has been acted upon by the CAA and Inspectors, assigned to the UK companies operating Dornier 328 aircraft, have been made fully aware of the issue and will be discussing the incident with the companies as necessary.

Status - Superseded - closed

Airbus A319-111

**Overhead
Brest, France**

**15 September
2006**

Serious Incident

AAIB Formal Report: 4/2009

FACTOR: F6/2007

Synopsis

The aircraft was dispatched under the provisions of the operator's Minimum Equipment List with the Auxiliary Power Unit (APU) generator on line, substituting for the No 1 main generator which had been selected off after a fault on the previous flight had caused it to trip off line. During the cruise, the APU generator disconnected from the system, probably because of a recurrence of the original fault. This caused the loss of a substantial number of aircraft services, including some flight instruments and all means of radio telephony (RTF) communication. Manual reconfiguration of the electrical system should have recovered many of the services but the flight crew was not able to achieve this. Since they were without RTF communications, the crew considered that the best option was to select the emergency transponder code and continue the flight in accordance with the flight plan.

In the light of the initial findings of the investigation, four Safety Recommendations are made.

SAFETY RECOMMENDATION - 2008-085

It is recommended that the EASA and the FAA re-categorise the loss of all RTF communications for public transport aircraft as 'Hazardous'.

Response

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

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

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

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

Status - Rejected

Raytheon Hawker 800XP-H25B	After departure from London City Airport	31 October 2006	Incident
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AAIB Bulletin: 1/2008
FACTOR: F3/2008

Synopsis

This aircraft experienced significant navigation problems after taking off from London City Airport (LCY) and was unable to comply with the Standard Instrument Departure (SID). The crew were able to recover heading information after approximately 10 minutes and landed back at LCY without incident. It transpired that several similar incidents had previously occurred with other aircraft and there have been similar incidents subsequent to this one. The cause of the problem was identified as strong magnetic anomalies in the holding area for Runway 28.

Six Safety Recommendations have been made.

SAFETY RECOMMENDATION - 2007-119

It is recommended that ICAO amend Annex 14 to highlight the importance of ensuring that no airport infrastructure is allowed to alter significantly the local earth's magnetic field density in areas where aircraft hold prior to departure.

Response

In this regard, I am pleased to inform you that the Air Navigation Commission will study the issue raised in the Safety Recommendation further and develop new specifications, if necessary, for inclusion in Annex 14, Volume I.

The follow up feedback related to this action is:

The issue was referred to the Aerodromes Panel for further study. After coordination among different working groups of the panel, it was proposed that relevant guidance material would be developed for inclusion in Doc 9157, Aerodrome Design Manual, Part 3 - Pavements. Besides the guidance material, if necessary, proposed amendments to SARPs will be developed as well for inclusion in Annex 14, Volume I.

Status - Response Awaited open

Boeing 747-436 A340-311	London Heathrow Airport	15 October 2007	Incident
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AAIB Bulletin: 4/2010

FACTOR: N/A

Synopsis

A ground collision occurred when an Airbus A340 attempted to pass a Boeing 747 that was stationary on an adjoining taxiway, at night. Various factors contributed to the incident including the challenge faced by the crews of these large aircraft in assessing wing tip clearances, their interpretation of ATC instructions and the taxiway design.

SAFETY RECOMMENDATION - 2010-010

It is recommended that Heathrow Airport Limited improve the effectiveness of the warnings issued to pilots of manoeuvring aircraft to clarify that clearance from other aircraft is not assured in all circumstances, regardless of the ATC taxi clearance.

Status - Response Awaited - open

Bombardier BD700 Global Express	Luton Airport	29 January 2008	Accident
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AAIB Bulletin: 12/2008

FACTOR: N/A

Synopsis

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 - 2008-074

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.

Response

European Aviation Safety Agency's response

EASA has obtained the inclusion of the issue pointed out by this Safety Recommendation into the Working Programme of the European Organisation for Civil Aviation Equipment (EUROCAE) Working Group 90. The objective of this Working Group is to revise EUROCAE Document 112 titled 'Minimum Operational Performance Specification for Crash Protected Airborne Recorder Systems', which is already referenced in EASA's proposed OPS rules.

Federal Aviation Administration's response

Based on our review of aircraft incident and accident data, we believe there is insufficient evidence to support revising policy or certification requirements for the negative acceleration sensor, or g-switch. In support of our findings, the United Kingdom of Air Accidents Investigation Branch (UK AAIB) states that 'maintenance records did not confirm the operation of the g-switch' and that a 'continued CVR recording would not have contributed significantly to this investigation.'

As required by Title 14 Code of Federal Regulations (14 CFR) 25.1457(d)(2) and 25.1459(a)(5), each flight recorder must have an automatic means to simultaneously stop a recorder that has a data erasure feature and prevent each erasure feature from functioning, within 10 minutes after crash impact. We believe that the Bombardier BD700 Global Express performed as designed in its certified state. Based on our findings and research, we plan no further action and consider this action item completed.

Status - Rejected - closed

ERJ 190-200 LR	40 nm NW of Wallesey	1 August 2008	Incident
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AAIB Bulletin: 6/2010
FACTOR: N/A

Synopsis

The aircraft was operating a scheduled passenger transport flight with the No 2 air conditioning pack inoperative, as permitted by the Minimum Equipment List (MEL). Whilst en route, a failure of the No 1 Air Cycle Machine (ACM) occurred, releasing smoke and fumes into the aircraft. A MAYDAY was declared and an expeditious diversion was carried out. After donning oxygen masks the pilots had great difficulty communicating with each other, ATC and cabin crew, because of technical problems with the masks. During the emergency evacuation the right overwing emergency exit door became jammed and unusable. Passengers who evacuated via the left overwing exit were unaware of how to get from the wing down to the ground.

Two Safety Recommendations are made as a result of this investigation.

SAFETY RECOMMENDATION - 2010-007

It is recommended that the European Aviation Safety Agency review the design, contrast and conspicuity of wing surface markings associated with emergency exits on Public Transport aircraft, with the aim of ensuring that the route be taken from wing to ground is marked unambiguously.

Response

EASA acknowledges receipt of this Safety Recommendation.

In the current Certification Specifications (CS) 25, paragraph CS 25.810 (c) requires that an escape route is established for each over-wing emergency exit; the escape route must meet given minimum criterion of width, reflectance and surface-to-marking ratio.

The Agency accepts to review ways of improvement of these specifications and a dedicated Rulemaking Task (25.075) has been provisioned in the Rulemaking Programme Inventory.

In addition, the Agency notes that during the evacuation of this incident, the passengers using the emergency over-wing escape route were surprised and confused by the height of the step to go down from the wing to the ground. Thus the Agency will also consider this aspect in its review of cabin safety improvements; a recent study done for the Agency recommended to review the appropriateness of the current 6 feet height criteria about which assisting means shall be provided.

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-008

It is recommended that Embraer modify the overwing emergency exits on Embraer 195 aircraft, to eliminate the possibility of the exit door jamming due to interference between the door trim panel and the ceiling edge panel.

Response

Embraer understands that the possibility of interference between the door trim panel and the ceiling edge panel (light deflector) in normal door operation was eliminated after the incorporation of SB 190-25-0092 (issued on 29/10/2009 and applicable to aircraft ERJ 190-200 MSN 190-0029 thru 190-0213 – factory implemented in subsequent MSNs). This SB basically changes the light deflector design by applying to the ERJ 190-200 the same solution of the ERJ 190-100. As of April 2010, Embraer has received from the field no service difficulty reports of ERJ 190-100 type III door jamming, which is checked every 6,000 flight hours in accordance to the MRB (Maintenance Review Board) Report.

Status - Accepted - closed

Boeing 767-324

Manchester
Airport

9 May 2008

Incident

AAIB Bulletin: 10/2009**FACTOR: N/A****Synopsis**

During pre-startup checks, a burning smell was identified in the rear of the aircraft cabin. The commander investigated and decided to disembark the passengers. During the disembarkation it was reported that the aircraft was "on fire". The commander made a MAYDAY call to ATC, switched off all aircraft power and exited the aircraft.

Examination revealed that the 'unloader check valve' (a non-return valve between the potable water tank and the potable water air compressor) had failed and this allowed moisture or liquid into the air compressor which, in turn, caused the air compressor to lock up. The thermal cut-out switch, associated with the electric motor that powered the potable water air compressor, had cycled until it eventually became welded, or fused, in the ON position allowing a constant supply of electrical power to the compressors' motor, causing it to overheat severely.

SAFETY RECOMMENDATION - 2009-090

It is recommended that the Federal Aviation Administration (FAA) review the continued airworthiness of the potable water air compressor system fitted to Boeing 767 aircraft, to ensure that the compressor's electric motor does not overheat, causing the generation of acrid fumes and creating a fire hazard.

Response

We reviewed data provided with the recommendation and by The Boeing Company. In the past five years, twelve occurrences in which the potable water pump motor overheated were reported to Boeing. All twelve instances occurred on the ground. Fire was not reported in any occurrence. Boeing improved the design to incorporate a water pump, instead of an air compressor to reduce the likelihood of this type of failure.

Additionally, Boeing provided information showing that it is unlikely for the overheated motor to catch on fire due to the lack of flammable material in proximity to the compressor motor. The smoke generated results from charring paint on the overheated motor casing and has been very limited. During the flight phase, airflow around the motor provides a cooling effect and smoke would not be introduced into the cabin.

We have determined that the issue does not meet the criteria for issuance of an airworthiness directive and we plan no further action with regard to FAA SR 09.307.

Status - Accepted - closed

**Bombardier
CL600-2B19-
CRJ200**

**Manchester
Airport**

13 November 2008

Incident

**AAIB Bulletin: 9/2010
FACTOR: N/A**

Synopsis

Whilst a technician was rectifying an under-inflated tyre, a pressure of approximately six times the normal tyre pressure was developed. The tie bolts on the wheel failed, the assembly exploded and the technician was seriously injured.

Two Safety Recommendations are made.

SAFETY RECOMMENDATION - 2010-069

It is recommended that the Federal Aviation Administration review the number of occurrences of the overpressure failure of tyres or wheels on Transport Category Airplanes and consider retrospectively applying the requirements of Federal Aviation Regulations Part 25.731, for Overpressure Burst Protection on the wheels of Transport Category Airplanes.

Response

We are reviewing the number of occurrences of overpressure failure of tires or wheels on transport category airplanes and evaluating our guidance materials to determine if additional action is appropriate.

We anticipate submitting an update on our progress by May 2011.

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-070

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

Response

The Agency reviewed the International Civil Aviation Organisation (ICAO) Accident Incident Data Reporting System (ADREP) Database for accidents/incidents in which tyre overpressure/over-inflation resulted in tyre burst and/or wheel disintegration. Only four events were recorded over the last past forty years, including the event subject to this safety recommendation; two of them are classified as accidents, and two as serious incidents. One of them resulted in a fatality of the mechanic. The causes of those events were identified as unauthorised tyre inflation, operation of unfamiliar tools or wrong placards. The report also mentions two events acknowledged by a large aircraft manufacturer.

Although it is probably not possible to determine the actual rate of such events (because most of them, occurring on the ground when the aircraft is not in operation, do not meet the definition of an accident or serious incident per ICAO Annex 13), the available information indicate a very low order of magnitude.

Based on this status, the Agency cannot justify a retroactive regulation to impose the standard of Certification Specification (CS) 25.731(d).

Meanwhile, the Agency is preparing and will publish soon a Safety Information Bulletin (SIB) to remind operators of the importance that:

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

Status - Accepted - closed

DHC-8-402	On approach to Edinburgh	23 December 2008	Incident
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AAIB Bulletin: 3/2010

FACTOR: N/A

Synopsis

The aircraft descended below a cleared altitude and then below the ILS glideslope because the appropriate mode of the flight director was not selected. The deviation from the correct flight path was noticed by an ATC controller when the aircraft had descended to within 800 ft of local terrain approximately 5 nm from the runway threshold. The crew were advised accordingly and although the aircraft's descent rate was adjusted, it did not regain the correct vertical flight path, however, the aircraft landed without further incident. A subsequent event involving the same operator and aircraft type is also considered in this report.

Two Safety Recommendations are made and the operator and ATC unit have taken safety action aimed at preventing a recurrence.

SAFETY RECOMMENDATION - 2010-005

It is recommended that Bombardier Aerospace enable automatic arming of the altitude select mode of the flight director fitted to Dash-8-400 series aircraft upon selection of a new altitude and vertical mode.

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-006

It is recommended that Flybe consider amending its standard operating procedures to require an altitude check whilst on final approach even when the pilots are in visual contact with the runway.

Status - Response Awaited - open

Boeing 737-73V

West of Norwich,
Norfolk

12 January 2009

Incident

AAIB Bulletin: 9/2010

FACTOR: N/A

Synopsis

A flight control manual reversion check² was being conducted as part of a post-maintenance check flight. During the check, the aircraft pitched rapidly nose-down, descending approximately 9,000 ft before control was recovered. A number of maintenance and airworthiness check issues were identified and six Safety Recommendations have been made.

SAFETY RECOMMENDATION - 2010-071

It is recommended that Boeing review their published B737 flight test schedules to improve their clarity and suitability for use by pilots conducting such tests.

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-072

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

Response

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

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-073

It is recommended that the European Aviation Safety Agency require AOC operators to have, and comply with, a detailed procedure and a controlled test schedule and record of findings for briefing, conducting and debriefing check flights that assess or demonstrate the serviceability or airworthiness of an aircraft.

Response

The Agency is initiating a Rulemaking Task on a Multi Disciplinary Measure (MDM.097) to address the continuing airworthiness and operational aspects, including crew competence, of maintenance check flights (this new task will jointly combine the task on maintenance (M.009) and operations (OPS.075) in relation with maintenance check flights as described in the rulemaking plan for 2011). The safety recommendation will be considered during the development of this Rulemaking Task.

In the meantime, the Agency plans to issue a Safety Information Bulletin (SIB) providing information and recommendations for the performance of functional check flights, which include maintenance check flights.

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-074

It is recommended that Boeing develop an Aircraft Maintenance Manual procedure to identify mis-rigging of the B737 elevator tab control system and amend the Aircraft Maintenance Manual tab adjustment procedure to limit the amount of trim adjustment on any one maintenance input.

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-075

It is recommended that the European Aviation Safety Agency provide guidance on minimum crew proficiency requirements and recommended crew composition and training for those undertaking check flights that assess or demonstrate the serviceability or airworthiness of an aircraft.

Response

The Agency is initiating a Rulemaking Task on a Multi Disciplinary Measure (MDM.097) to address the continuing airworthiness and operational aspects, including crew competence, of maintenance check flights (this new task will jointly combine the task on maintenance (M.009) and operations (OPS.075) in relation with maintenance check flights as described in the rulemaking plan for 2011). This safety recommendation will be considered during the development of this Rulemaking Task.

In the meantime, the Agency plans to issue a Safety Information Bulletin (SIB) providing information and recommendations for the performance of functional check flights, which include maintenance check flights.

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-076

It is recommended that the European Aviation Safety Agency provide guidance to National Airworthiness Authorities on monitoring continuing airworthiness.

Response

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

Status - Response Awaited - open

Boeing 747-436	Phoenix Airport (KPHX), Arizona, USA	11 July 2009	Incident
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AAIB Bulletin: 6/2010

FACTOR: N/A

Synopsis

The engines were being started during pushback when fumes and smoke were noticed in the cabin. The commander decided to return to the stand; however, there was some delay while the tug was reconnected. The intensity of the fumes increased and as the aircraft came to a halt on the stand an emergency evacuation was carried out. An extensive engineering

investigation after the event was not able to provide any explanation for the origin of the fumes. The aircraft was returned to service and no further instances have occurred.

This serious incident occurred in the USA. In accordance with Annex 13 of the ICAO Convention on Civil Aviation, an investigation would normally be carried out by the State of Occurrence. On this occasion, it was agreed with the National Transportation Safety Board (NTSB) that it would be more appropriate for the State of the Operator, ie the UK, to conduct the investigation.

SAFETY RECOMMENDATION - 2010-011

It is recommended that British Airways plc review their procedures and training of flight and maintenance crews to ensure the timely preservation of Cockpit Voice Recorder recordings in the event of a reportable occurrence, in accordance with ICAO Annex 6 Part I, 11.6 and EU-OPS 1.160. The procedures and training should provide the necessary information and skills to identify when reportable accidents and serious incidents occur, and implement the necessary tasks to preserve flight recordings in a timely manner.

Response

Handling of CVRs following an accident / incident is covered in ATP E7622 (Reporting of Air Safety Accidents and Incidents). It is understood from CS&Q that ATP E7622 is to be replaced and that all applicable sections of the subject publication are to be retained and republished in the SMS procedures. NB. Since this investigation the Safety Management Manual (SMM) has been published and this transfer has occurred.

British Airways Engineering have reviewed ATP E7622 and have re-drafted Appendix 1 to ensure that Maintrol, through the Operational Duty Engineering Manager, upon being made aware of an incident or accident should check that the local engineering staff have pulled the circuit breaker on the CVR. Other administrative corrections to the procedure have also been suggested.

The amendments to ATP E7622, identified above, have been confirmed by Corporate Safety and Quality for inclusion in subsequent procedures.

Appendix I of the SMM states:

BA Engineering Staff or their Agents (Local to Incident)

- Ascertain as soon as is safely possible, that the Aircraft Cockpit Voice Recorder Circuit Breaker has been tripped by the departing cockpit crew in order that recordings stay intact. Ensure that this occurs if the disembarking flight crew were unable to, or did not complete this task.

Operational Duty Engineering Managers Maintrol

Upon being made aware of an aircraft accident or serious incident Maintrol should.

1. Establish with British Airways Corporate (Aviation) Safety any requirement for the involvement of the AAIB or the foreign equivalent. Advise all parties if this procedure is to be invoked.
2. If required, ensure that the CVR CB is pulled by crew or local staff to preserve critical information.
3. Make contact with British Airways Engineering Flight

In addition the FCOM Vol 1 and Maintrol documentation has specific information for Flight Crew and Maintrol to carry out this function.

British Airways has considered the recommendation in regards to the training element of the recommendation, but we regard this as compliance issue rather than none of dedicated training in regards to a policy. The policy is published from both flight and relevant maintenance staff and they are required to apply the policy accordingly. We have already seen an improvement in the preservation of cockpit recordings and as such the only consideration we feel is appropriate is communication of the changes. Relevant communication has been passed to the Flight Crew community and to the Maintrol staff to ensure the appropriate awareness rather than a specific training package in the true sense of training.

Status - Accepted - closed

SAFETY RECOMMENDATION - 2010-012

It is recommended that the Civil Aviation Authority review the relevant procedures and training for UK operators, to ensure the timely preservation of Cockpit Voice Recorder recordings of a reportable occurrence is achieved in accordance with the requirements of ICAO Annex 6 Part I, 11.6 and EU- OPS 1.160.

Response

The CAA accepts this Recommendation. Following publication of EASA Safety Information Bulletin 2009-28 detailing the maintenance requirements for CVR and FDR systems, a review of CAP 731 is being undertaken. This review has highlighted a need to introduce a new chapter in CAP731 on CVR maintenance requirements. As a result of this Safety Recommendation, the need will also be emphasised to ensure preservation of recorded data, by securing the power supply to the CVR / FDR in the event of an incident or accident. The proposed timescale for publication of the revised CAP 731 is end of October 2010. To cover the maintenance / continuing airworthiness management aspects of this recommendation, CAA will publish an AIRCOM to highlight the need for Operators, and their Part M subpart G organisations, to include procedures for preservation of CVR and FDR data in their Continuing Airworthiness Management Exposition. The AIRCOM will include reference to the need to ensure this subject is also appropriately covered in the Ops manual. The proposed timescale for publication of the AIRCOM is end of August 2010.

Status - Accepted - closed

Boeing 737-800	London Stansted Airport	17 July 2009	Incident
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AAIB Bulletin: 8/2010

FACTOR: N/A

Synopsis

Whilst boarding the aircraft using the forward airstairs, a small child fell through the gap between the handrail and the top platform, on to the ground. The child was airlifted to hospital for further treatment and was released 24 hours later.

Three Safety Recommendations have been made as a result of this investigation.

SAFETY RECOMMENDATION - 2010-017

It is recommended that Boeing establish a process to inform the operators of all Boeing commercial aircraft of changes to the relevant Flight Attendants Manual.

Response

Boeing has reviewed this recommendation and we believe that we meet the intent of this recommendation under our current process established before this event. Our current process is to publish revisions to the Non-customized Flight Attendant Manual (FAM) for the airplane model affected on myboeingfleet.com using a scheduled revision cycle for each manual. Operators are aware of this schedule and if they would like a copy of the Non-customized manual, they simply access myboeingfleet.com, download a copy to identify revisions to the manual and compare it to their current customized manual. If an Operator subscribes to Boeing revision service for their customized manuals, they will continue to receive revisions to each manual under that service using schedules that have been determined between the Operator and Boeing.

Status - Accepted - closed

SAFETY RECOMMENDATION - 2010-018

It is recommended that Ryanair review their current passenger boarding and disembarking procedures so that assistance is made available to passengers accompanied by children, and those with special needs.

Response

Ryanair Ground Operations, the department responsible for oversight of ground handling, response:

1. Ground Crew instruction 11.10 detailing the assembly / boarding calls. These include a reference to adults with young children.
2. Extract from the SEP manual:

'Passengers accompanying young children should be instructed to hold their hands when descending the stairs and on the ramp.'

You will be aware that Ryanair has also embodied two modifications on all aircraft, a tensator strap and, more recently, a solid rod that both reduce the risk of a child, falling through the gap in the rails of the aircraft integral steps. .

Status - Accepted - closed

SAFETY RECOMMENDATION - 2010-019

It is recommended that Boeing review the design of the Boeing 737 forward airstairs with the intention of adding a removable barrier to minimise the possibility of a child falling through the gap between the extendable handrail and its upper platform.

Response

The Boeing Company has evaluated the relevant incident. This review considered the design and operational aspects of the subject aircraft and its equipment. The results of this review were that the existing action that Boeing took in 2007 and the subsequent recommendations by the FAA in the reference FAA SAIB NM-07-47 provide an adequate mitigation. The recommendations in the reference FAA SAIB NM-07-47 include the addition of warning placards, the addition of anti-skid material, and updates to the flight attendant manual to add a warning "As passengers are boarding or deplaning, pay particular attention to persons with

small children or those with special needs. Small children on airstairs should be attended by an adult or responsible person.”

It is the opinion of Boeing that having small children ‘attended by an adult or responsible person’ is the primary means to ensure safety while ascending or descending the air stairs. Without attending appropriately to small children, the addition of a removable barrier does not provide a significant increase in the level of safety.

Boeing will continue to monitor this issue as part of our safety process, and take additional action if and as appropriate.

Status - Partially Accepted - open

Boeing 777-300ER Citation-525	London TMA (terminal control area)	27 July 2009	Incident
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**AAIB Bulletin: 9/2010
FACTOR: F6/2010**

Synopsis

The crew of D-ITAN were cleared to depart London City Airport on a DVR 4T SID, which required them to climb initially to 3,000 ft amsl. They read back their cleared altitude as 4,000 ft, an error that was not noticed by the Tower controller. TC-JJA was cleared to descend to an altitude of 4,000 ft while turning on to a southerly heading prior to intercepting the ILS for Runway 27R at Heathrow Airport. D-ITAN climbed through 3,000 ft while turning right and passed TC-JJA on a nearly reciprocal heading approximately 0.5 nm away and 100 to 200 ft below. TC-JJA generated three TCAS RAs in short succession but the aircraft did not follow the commands. D-ITAN was unable to generate RAs. The crew of D-ITAN saw TC-JJA in time to take effective avoiding action.

Four Safety Recommendations are made.

SAFETY RECOMMENDATION - 2010-056

It is recommended that NATS demonstrates to the Civil Aviation Authority (CAA) that appropriate mitigation has been put in place to significantly reduce the risk of an accident resulting from a level bust by an aircraft departing London City Airport or on the base leg turn positioning to land at Heathrow Airport.

Response

The report shows that the CAA and NATS have been working closely to mitigate the risk of collision in the London TMA and this meets the requirement of the recommendation.

Status - Accepted - closed

SAFETY RECOMMENDATION - 2010-057

It is recommended that London City Airport amends all Standard Instrument Departures (SIDs) so that they terminate at an altitude of 3,000 ft.

Response

The SIDs from London City Airport no longer contains step-climbs and they all terminate at 3,000 ft. This satisfies our recommendation.

Status - Accepted - closed

SAFETY RECOMMENDATION - 2010-058

It is recommended that London City Airport removes Step Climb procedures from its Standard Instrument Departures (SIDs).

Response

The SIDs from London City Airport no longer contain step-climbs and they all terminate at 3,000 ft. This satisfies our recommendation.

Status - Accepted - closed

SAFETY RECOMMENDATION - 2010-059

It is recommended that the Directorate General of Civil Aviation of Turkey ensures Turkish Airlines TCAS training complies with the Airborne Collision Avoidance System Training Guidelines contained in 'ICAO PANS-OPS (Doc 8168)'.

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-060

It is recommended that the Civil Aviation Authority considers whether the carriage of TCAS II should be mandated for aircraft operating in those parts of the London TMA where London City Airport SIDs interact with traffic positioning to land at Heathrow Airport.

Response

The CAA accepts this recommendation and will consider its response relating to the carriage of TCAS II within the London TMA in the context of local need and international regulation. This review will be led by the Directorate of Airspace Policy (DAP), with support from Safety Regulation Group (SRG) as appropriate, with a final report submitted by 31 March 2011.

The CAA has considered its response to the AAIB's recommendation in the context of local need and international regulation. Its investigations have led it to conclude that mandating ACAS carriage for London City traffic is not appropriate:

- It would present a disproportionate impact on the very small number of operators that, in turn, constitute a very small percentage of the overall traffic in an area where the risk has been reduced through a wide range of other, more appropriate, measures. An examination of ACAS carriage requirements for aircraft operating to and from London City revealed that the proportion of non ACAS II-equipped aircraft operating out of London City was very low, and that a significant proportion of such aircraft are equipped to carry TCAS I.
- If such a mandate were to be put in place, it is highly likely that this traffic would be displaced to other airports in the LTMA such that the problem is more likely to be moved rather than resolved.
- There are potential cost and technical difficulties with equipping smaller turbine-powered aeroplanes with ACAS II equipment.

- Having regard for the nature of the traffic that is likely to be captured by such a mandate (i.e. smaller turbine-powered aeroplanes), the UK considers this to be an international issue. Unilateral action is unlikely to prove effective; hence the UK will continue to work with international bodies including Eurocontrol, EASA and ICAO to find common solutions

Status - Accepted - closed

Dornier 328-100	Dundee, Fife	23 September 2009	Incident
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AAIB Bulletin: 1/2011

FACTOR: N/A

Synopsis

The aircraft had not been in regular use for almost 2 years and was being repositioned from Dundee to a maintenance facility in Germany, in preparation for sale. The crew experienced a variety of system malfunctions during the takeoff and initial climb, followed by a loss of oil pressure on the left engine. The crew declared an emergency with Leuchars ATC and were receiving radar vectors to return to Dundee when the oil pressure on the right engine also began to fluctuate. The crew advised ATC that they were experiencing problems with both engines and manoeuvred the aircraft to land at RAF Leuchars, an airfield with which they were not familiar.

After landing there was no external evidence of an oil leak, but the left and right engines had lost approximately seven and four quarts of oil respectively. The subsequent engineering investigation revealed that in both engines the air-switching valve had seized due to the presence of corrosion, which allowed the oil system to become over pressurised and caused oil to be vented overboard.

SAFETY RECOMMENDATION - 2010-094

It is recommended that Pratt and Whitney Canada amend the maintenance requirements for the PW100 series of engines, to ensure the continued serviceability of the air-switching valve on engines installed on aircraft in storage.

Response

Inspection of both engines at the Lufthansa Aero shop in Alzey, Germany revealed multiple areas of corrosion, including the front inlet case, rear inlet case and the low pressure diffuser case internal bores. The air switching valves were also found to have internal corrosion with the piston "jammed" in the P3 or normal starting position. The corroded valve was determined to have caused the oil being discharged overboard from the engine due to over pressurized oil cavities as a result of the prolonged storage of the aircraft and engine inactivity.

A review of all PW100 engine maintenance manuals identifies the inactive or storage requirements for engines out of service for varying timeframes. It was determined, however, that these may not necessarily clearly identify an engine with a corroded or seized air switching valve. This issue has been reviewed with Transport Canada at our November 2010 Service Difficulty Review Meeting. P&WC have identified additional inspections steps which are being incorporated into the engine maintenance manual. This will include a physical strip of the switching valve, after a certain period of time of engine in-activity to inspect for any

evidence of corrosion and/or sticking valve. The manual changes will be forwarded in the coming weeks to 328 Support Services GmbH for inclusion into their AMM.

Status - Accepted - closed

Boeing 777-236	St Kitts Airport, Caribbean	26 September 2009	Incident
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AAIB Bulletin: 4/2010

FACTOR: N/A

Synopsis

The crew received the aircraft's take off performance figures for a take off from Intersection Alpha on Runway 07 at Robert L Bradshaw International Airport, St Kitts, West Indies. Having received taxi clearance to Intersection Alpha, the aircraft taxied to Intersection Bravo from where it subsequently took off; the crew believed they were at Intersection Alpha. Intersection Bravo on Runway 07 is not an authorised takeoff intersection for the Boeing 777. The estimated Take-off Run Available from Intersection Bravo was approximately 1220 m, which was 695 m less than the planned takeoff run from Intersection Alpha.

SAFETY RECOMMENDATION - 2010-047

It is recommended that the Eastern Caribbean Civil Aviation Authority ensure that Robert L Bradshaw International Airport, St Kitts, establishes a Safety Management System for its airfield operations.

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-048

It is recommended that the Eastern Caribbean Civil Aviation Authority ensures that the infrastructure of Robert L Bradshaw International Airport, St Kitts, complies with ICAO Annex 14 Standards and Recommended Practices or any differences are filed. In the interim a NOTAM of outstanding deficiencies should be published.

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-049

It is recommended that British Airways review the process by which all new destination airfields are inspected to identify any operational issues.

Response

In response to this incident the Flight Operations Policy Group (FOPG) reviewed both the assessment content and level of oversight relating to the NDA process.

The Assessment Responsibility Document was amended to:

- clarify Flight Manager Technical responsibility,
- identify changes required to the Route Information Manual (RIM),
- consideration of birdstrike risks,
- consider contacting other Airlines,

- consideration of airfield visits by person with appropriate knowledge & expertise, briefing category defined iaw Part A, including a 3-month review,
- and the introduction of New Destination Feedback Form.

The oversight process was made more robust by requiring FMTs to review draft New Destination Assessments (NDA) at monthly Chief Pilot Technical Meeting, then when complete take to FOPG for approval and finally all completed NDA are notified to Flight Operations Standards Group (FOSG).

Status - Accepted - closed

DHC-8-402	London Gatwick Airport	11 January 2009	Accident
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AAIB Bulletin: 7/2010
FACTOR: N/A

Synopsis

During an ILS approach to Runway 08R at London Gatwick, the aircraft had a tailstrike. The tailstrike was caused by the aircraft’s rate of descent not being arrested by the landing flare. The commander had closed the power levers shortly before the flare due to an increase in airspeed probably caused by windshear.

One Safety Recommendation was made.

SAFETY RECOMMENDATION - 2010-028

It is recommended that Bombardier Aerospace modify the DHC 8-Q-400 (Aeroplane Operating Manual), “Touched Runway” Emergency check list to include the action “advise ATC”

Response

Bombardier Aerospace has received the AAIB, Final Report, (EW/C2009/11/01) and concurs with Safety Recommendation 2010-028. The Aircraft Flight Manual (AFM), Section 3 - Emergency Procedures, Paragraph 3.17 - Fuselage Contact with Runway (Illumination of Touched Runway Warning Light), 3.17.1 - Landing, will be amended to read the following:

Due to the possibility of runway debris:

1. Advise ATC and airport operations of the fuselage/runway contact.
2. Aircraft must not be flown prior to inspection and maintenance approval.

The AFM revision has been seen to Transport Canada for final approval.

Status - Accepted - closed

Falcon 2000

Biggin Hill Airport,
Kent

11 November 2009

Incident

AAIB Bulletin: 12/2010

FACTOR: N/A

Synopsis

The aircraft had been undergoing a technical investigation to identify the cause of a braking defect. A flight crew were requested by the on-site maintenance team to carry out high speed taxi trials as part of the troubleshooting process. The crew conducted a series of seven accelerate/stop runs along the main runway, at gradually increasing reject speeds. At the commencement of the eighth run, the crew felt that a tyre had deflated and brought the aircraft to a stop. They were informed by ATC that there was a fire under the left wing; the crew and passengers then abandoned the aircraft safely. The fire was caused by damage to the brakes from excessive temperature, this released hydraulic fluid under pressure, which then ignited.

Four Safety Recommendations have been made as a result of the investigation.

SAFETY RECOMMENDATION - 2010-061

It is recommended that the European Aviation Safety Agency review the Falcon 2000 landing gear and hydraulic system with a view to ensuring that, the event of a leak, the system is protected so as to limit the loss of fluid in the vicinity of the brakes.

Response

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

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-062

It is recommended that the European Aviation Safety Agency require Dassault Aviation to review and amend the Falcon 2000 Airplane Flight Manual to ensure that the brake energy limitations quoted in all sections of the manual are consistent and reflect what has been satisfactorily demonstrated on the aircraft as a safe limit.

Response

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

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-063

It is recommended that the European Aviation Safety Agency require Dassault Aviation to review and amend the Falcon 2000 Airplane Flight Manual to ensure that the guidance provided to flight crews relating to accumulated brake energy and minimum turnaround times is clear, consistent and takes account of all aspects of the aircraft's operation.

Response

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

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-064

It is recommended that NetJets Transportes Aereos introduce maintenance procedures which document the tasks, roles and responsibilities of all maintenance personnel when requesting and participating in operational/functional check flights or flight crew operated ground tests.

Response

In response to Safety Recommendation 2010-064 issued to NetJets Transportes Aéreos in AAIB Bulletin 12/2010 (Ref. EW/C2009/11/03), I would like to draw your attention to the workflow diagram on page 8 of our Maintenance procedure NJMP1.15 which, “document[s] the tasks, roles and responsibilities of all maintenance personnel when requesting and participating in operational/functional check flights or flight crew operated ground tests”.

Status - Partially Accepted - open

Airbus A321-231	En route Khartoum to Beirut	24 August 2010	Incident
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AAIB Special Bulletin: S2/2010

FACTOR: N/A

Synopsis

The aircraft suffered an electrical malfunction during a scheduled night flight between Khartoum (Sudan) and Beirut (Lebanon). The more significant symptoms included the intermittent failure of the captain and co-pilot’s electronic displays and the uncommanded application of left rudder trim; the flight crew also reported that the aircraft did not seem to respond as expected to control inputs. A large number of ECAM1 messages and cautions were presented. The uncommanded rudder trim caused the aircraft to adopt a left-wing-low attitude and deviate to the left of the planned track. Normal functions were restored after the flight crew selected the No 1 generator to OFF in response to an ECAM ‘ELEC GEN 1 FAULT’ message. The aircraft landed safely at Beirut.

SAFETY RECOMMENDATION - 2010-092

It is recommended that Airbus alert all operators of A320-series aircraft of the possibility that an electrical power generation system fault may not be clearly annunciated on the ECAM, and may lead to uncommanded rudder trim operation.

Response

The OIT has been issued.

Status - Accepted - closed

Cessna 680	During climb, after departure from London Luton Airport	30 September 2010	Incident
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AAIB Bulletin: 8/2011

FACTOR: N/A

Synopsis

The crew experienced an uncommanded transfer of fuel from the right to the left fuel tank after following the checklist procedures for a left main electrical bus fault indication. The aircraft subsequently became left wing heavy and exceeded the lateral imbalance limits. It returned to Luton Airport where a flapless landing was completed without further incident. As a result of this incident, Special Bulletin S1/2010 was published on 8 October 2010, containing two Safety Recommendations. The investigation established that the isolation of the left main bus had caused a false fuel cross-feed command which resulted in the uncommanded fuel transfer. The aircraft manufacturer has published a temporary flight crew procedure to mitigate the effects of a recurrence and has also issued a service bulletin to incorporate a design solution.

Eight further Safety Recommendations are made in this bulletin, relating to aircraft certification processes and flight recorder documentation.

SAFETY RECOMMENDATION - 2010-090

It is recommended that the Cessna Aircraft Company immediately informs all operators of Cessna Citation 680 Sovereign aircraft that uncontrolled fuel migration from the right to the left tank will occur during aircraft operation if the left main electrical bus is not powered.

Response

In response to this Safety Recommendation, the Cessna Aircraft Company issued a briefing to Cessna Citation Sovereign operators on 14 October 2010. This briefing included the temporary mitigating action of pulling the appropriate FUEL BOOST circuit breaker to prevent fuel transfer should a similar condition occur. A temporary change to the Airplane Flight Manual and checklist was approved by the FAA on 15 October 2010 and this was subsequently e-mailed to the operator on 08 November 2010.

Status - Accepted - closed

SAFETY RECOMMENDATION - 2010-091

It is recommended that the Federal Aviation Administration (FAA) require the Cessna Aircraft Company to take suitable actions for the Cessna Citation 680 Sovereign, to prevent uncontrolled fuel migration from the right to the left tank during aircraft operation when the left main electrical bus is not powered.

Response

We worked with Cessna Aircraft to develop changes to address possible uncommanded fuel transfer when the left main electrical bus is not powered. The approved design changes incorporate two additional diodes to prevent a sneak ground path in either a left or right electrical emergency when the respective main bus is not powered.

To address new production aircraft, Cessna ECR 70612 680 Fuel Crossfeed Improvement for Production was approved in October of 2010. ECR 70612 is applicable to

serials 680-0290 and 680-0297 and on. All new aircraft deliveries since October 2010 have included the diode installation fix.

To address aircraft in the field, ECR 70611 680 Fuel Crossfeed Improvement for Field - Service Bulletin was approved December 2010 and is applicable to serial s680-0001 thru 6800289 and 680-0291 thru 680-0296. Cessna issued Mandatory Service Bulletin SB690-24-11 in December 2011 requiring installation of the diodes for all fielded aircraft and the FAA will initiate an Airworthiness Directive to mandate Service Bulletin Sb680-24-11 for all fielded. We expect to provide a follow-on response by October 2011.

Status - Partially Accepted - open

Aeroplanes <> 2,250kg and 5,700kg MTWA

BN2B-26 Islander	7.7 nm west-north- west of Cambeltown Airport, Argyll	15 March 2005	Accident
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AAIB Bulletin: 2/2006

FACTOR: F39/2006

Synopsis

The watch supervisor at the Scottish and Oceanic Area Control Centre notified the accident to the Air Accidents Investigation Branch (AAIB) at 0115 hrs on 15 March 2005.

The Glasgow based Islander aircraft was engaged on an air ambulance task for the Scottish Ambulance Service when the accident occurred. The pilot allocated to the flight had not flown for 32 days; he was therefore required to complete a short flight at Glasgow to regain currency before landing to collect a paramedic for the flight to Campbeltown Airport on the Kintyre Peninsula.

Poor weather at Campbeltown Airport necessitated an instrument approach. There was neither radar nor Air Traffic Control Service at the airport, so the pilot was receiving a Flight Information Service from a Flight Information Service Officer in accordance with authorised procedures. After arriving overhead Campbeltown Airport, the aircraft flew outbound on the approach procedure for Runway 11 and began a descent. The pilot next transmitted that he had completed the 'base turn', indicating that he was inbound to the airport and commencing an approach.

Nothing more was seen or heard of the aircraft and further attempts at radio contact were unsuccessful. The emergency services were alerted and an extensive search operation was mounted in an area based on the pilot's last transmission. The aircraft wreckage was subsequently located on the sea bed 7.7 nm west-north-west of the airport; there were no survivors.

The investigation identified the following causal factors:

1. The pilot allowed the aircraft to descend below the minimum altitude for the aircraft's position on the approach procedure, and this descent probably continued unchecked until the aircraft flew into the sea.
2. A combination of fatigue, workload and lack of recent flying practise probably contributed to the pilot's reduced performance.
3. The pilot may have been subject to an undetermined influence such as disorientation, distraction or a subtle incapacitation, which affected his ability to safely control the aircraft's flight path.

Three Safety Recommendations have been made.

SAFETY RECOMMENDATION - 2006-102

Considering the unique circumstances of air ambulance flights, the Civil Aviation Authority, in conjunction with the Joint Aviation Authorities should review the circumstances in which a second pilot is required for public transport flights operating air ambulance services.

Response

Recommendations 2006-102 and 2006-103 were addressed to both the CAA and the JAA. The CAA wrote to the JAA on 21 November 2006, confirming that they were ready to carry out the required actions.

On 13 March 2007, the JAA responded that they were no longer in a position to undertake any work on these topics and responsibility must now lie with EASA. On 28 March 2007, the CAA representative briefed the Operations Sectorial Team on the issues involved in these recommendations: this team is overseen by EASA. In addition, the JAA agreed to write to EASA to ask them how these recommendations should best be addressed.

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

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

Status - Accepted - closed

SAFETY RECOMMENDATION - 2006-103

The Civil Aviation Authority, in conjunction with the Joint Aviation Authorities, should consider mandating the carriage of a radio altimeter, or other independent low height warning device, for public transport IFR flights operating with a single pilot.

Response

Recommendations 2006-102 and 2006-103 were addressed to both the CAA and the JAA. The CAA wrote to the JAA on 21 November 2006, confirming that they were ready to carry out the required actions.

On 13 March 2007, the JAA responded that they were no longer in a position to undertake any work on these topics and responsibility must now lie with EASA. On 28 March 2007, the CAA representative briefed the Operations Sectorial Team on the issues involved in these recommendations: this team is overseen by EASA. In addition, the JAA agreed to write to EASA to ask them how these recommendations should best be addressed.

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

Status - Accepted - closed

Beech B200	Within the Scottish Terminal Manoeuvring Area (TMA)	28 March 2006	Incident
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AAIB Bulletin: 6/2007

FACTOR: F21/2007

Synopsis

After take off and whilst in IMC, the commander noticed a gradual and progressive loss of information on his flight instruments; this was followed by a loss of radio communications and the commander concluded that the aircraft had suffered a major avionics failure. When ATC became aware of the loss of communications, they arranged for an RAF Tornado aircraft to

intercept G PCOP. While attempting to guide the aircraft below cloud, the RAF crew saw it enter cloud in an apparently uncontrolled fashion and they transmitted a ‘MAYDAY RELAY’ message. However G PCOP re-appeared from the cloud. Eventually G-PCOP descended to VMC below cloud and landed at RAF Leuchars.

On the ground, with an electrical source attached to the aircraft, the instruments and radios worked correctly. After inspection, the aircraft was ferried by another pilot to Blackbushe the next day for further examination. On arrival at Blackbushe, inspection revealed damage to the outer wing skins and wing leading edges. The damage to the aircraft was characteristic of it having been subjected to abnormally high flight loads and the outer wing panels had to be replaced. Despite extensive investigation, no defects were found with the electrical generation and distribution systems of the aircraft. Recommendations were made relating to information in the Airplane Flight Manual and to the certification standards of the aircraft.

SAFETY RECOMMENDATION - 2007-022

The Raytheon Aircraft Company should amplify the information in the Beech 200 series Airplane Flight Manuals to reflect that the generators can be reset regardless of battery voltage but they cannot be reset if the IGNITION AND ENGINE START switches are in the ON position.

Status - No longer applicable - closed

Cessna T303- Crusader	Denham Green, Buckinghamshire	5 August 2006	Accident
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AAIB Bulletin: 10/2007
FACTOR: N/A

Synopsis

The aircraft was completing a day VFR flight from Durham Tees Valley Airport to Denham Airfield. As the pilot turned on to the final approach for Runway 06, the right engine ran down. The pilot attempted to increase power on the left engine but it did not appear to respond. The airspeed decayed and the right wing dropped. The aircraft descended into a wooded area short of the runway, seriously injuring all those of board.

The investigation identified that fuel starvation of both engines was the cause of the accident. One Safety Recommendation is made.

SAFETY RECOMMENDATION - 2007-086

The Federal Aviation Administration should review the Cessna T303 Crusader Information Manual and Checklists to ensure that clear and unambiguous information is provided for the operation of the fuel crossfeed system.

Response

Small Airplane Directorate Response:

We have reviewed the multiple Cessna Model T303 Pilots Operating Handbook and FAA Approved Airplane Flight Manual (POH/AFM) Temporary Revisions formally presented and provided as enclosures to Cessna letter L390-09-1089, dated 3/13/09. FAA finds the additions and clarifications made to the POH/AFM to be acceptable and recommends closure of this Safety Recommendation, and classification of Closed - Acceptable Action

Status - Accepted - closed

Nomad N22B

Chatteris Airfield

12 August 2007

Accident

AAIB Bulletin: 8/2008**FACTOR: N/A**

Synopsis

The aircraft, with 13 parachutists on board, inadvertently entered cloud as it climbed through about 8,500 ft. The pilot descended the aircraft and regained VMC at about 4,000 ft; however one of the engines ran down due to icing before the engine anti ice system was selected on. The pilot was unable to restart the engine and returned to his departure airfield, where he flew a faster than normal approach in accordance with training he had received for single-engine landings. The aircraft landed long and the pilot was unable to stop it before the end of the runway. During the subsequent overrun, the nose wheel entered a ditch causing the nose leg to collapse.

The pilot did not hold a type rating for the aircraft, as required under CAA and JAR's, however he was operating under his FAA licence, (based on his CAA licence) and he incorrectly believed he did not require a specific type rating.

SAFETY RECOMMENDATION - 2008-031

It is recommended that the Federal Aviation Administration (FAA) clarify the implications of FAA pilot certification rule 61.75 (e)(3) to those in possession of FAA licences that are based on foreign state licences.

Response

From the summary information we have received concerning this accident, the person's United Kingdom pilot license did not have any limitation/restriction that would specifically prohibit him from operating the Nomad N22B airplane. If the person's United Kingdom pilot license had such a limitation/restriction, then 14 CFR section 61.75(e)(3) would apply, and the pilot would have been prohibited from flying the Nomad N22B without the appropriate pilot type rating.

The United Kingdom's AAIB Bulletin No. 8/2008 reports that the accident involved a pilot who held a U.S. 14 CFR section 61.75 private pilot certificate issued on the basis of his United Kingdom pilot license. The accident involved a U.S.-registered Nomad N22B, which is a turbo-propeller driven multiengine land airplane. The Nomad N22B has a maximum gross takeoff weight of only 8,500 pounds. Under the Nomad N22B's type certification data sheet (No. A7PC, Revision 4, dated March 31, 1999), it only requires one pilot.

We believe the essence of this safety recommendation is that the United Kingdom's civil aviation rules require pilots to hold an appropriate pilot type rating to fly the Nomad N22B. In the United States, pilots are only required to hold an Airplane Multiengine Land rating to fly the Nomad N22B.

In reading the United Kingdom Air Accidents Investigation Branch's AAIB Bulletin No. 8/2008, it appears that the bulletin is linking the difference in their pilot licensing requirements versus our pilot certification requirements as a causal factor for the accident. The report concludes that "The pilot did not hold a type rating for the aircraft as required under CAA and JAR's, however he was operating under his FAA license, (based on his CAA licence) and he incorrectly believed he did not require a specific type rating The investigation revealed that the pilot was operating to a level of qualification that would not be accepted under CAA or JAR standards. Had the pilot completed the JAR type rating it is possible that the correct single engine approach profile would have been flown which makes the issue of FAA license restrictions more significant. ..."

This is a case where there is a fundamental difference between how the United Kingdom requires a pilot type rating for its pilots to operate certain multiengine airplanes and how the United States certifies its pilots for flying multiengine airplanes. Per 14 CFR section 61.5(b)(7), the FAA requires a pilot type rating for:

(7) Aircraft type ratings

- (i) Large aircraft [means aircraft of more than 12,500 pounds, maximum certificated takeoff weight] other than lighter-than-air.
- (ii) Turbojet-powered airplanes.
- (iii) Other aircraft type ratings specified by the Administrator through the aircraft type certification procedures.
- (iv) Second-in-command pilot type rating for aircraft that is certificated for operations with a minimum crew of at least two pilots.

Thus under our rules, pilots are only required to hold an Airplane Multiengine Land rating to fly the Nomad N22B. Whereas in the United Kingdom, it requires pilots to hold the appropriate pilot type rating to fly the Nomad N22B. However, both our countries' licensing/certification rules do not conflict with any International Civil Aviation Organization's standards.

Based on the information provided, the pilot of Nomad N22B was properly certificated for pilot in command duties. We also conclude 14 CFR section 61.75(e)(3) clearly states the intended limitations for exercising the privilege of a U.S. pilot certificate issued under 14 CFR section 61.75.

As a result of the information contained in the United Kingdom Air Accidents Investigation Branch's AAIB Bulletin No. 8/2008, we have instructed our New York International Field Office about the contents of this memorandum and the AAIB Bulletin No. 8/2008, and they will be contacting Mr. Conradi for the identification of the pilot. Since the pilot was exercising the privileges of his U.S. pilot certificate, he would be subject to Title 49 of the United States Code (49 U.S.C.) section 44709 for re-examination of his pilot certificate. However, in the United States if a person were exercising the privileges of his foreign pilot license and we were to learn the pilot also held a U.S. pilot certificate, he would still be subject to 49 U.S.C. section 44709 for re-examination of his pilot certificate.

Status - Accepted - closed

Cessna Citation 500	Romsey Close, Farnborough, Kent	30 March 2008	Accident
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AAIB Bulletin: 3/2010

FACTOR: N/A

Synopsis

Biggin Hill Airport notified the Air Accidents Investigation Branch (AAIB) of the accident on 30 March 2008 and the investigation began the same day. The following inspectors participated in the investigation:

- Mr K Conradi Investigator-in-Charge
- Mr M Cook Operations
- Mr N Dann Operations
- Mr M Jarvis Engineering
- Mr A Burrows Flight Recorders

The aircraft departed Biggin Hill for a private flight to Pau, France but shortly after takeoff initiated a return to Biggin Hill after reporting engine vibration. During the downwind leg for Runway 21, the aircraft descended. The flightcrew reported a major power problem just before it struck the side of a house. An intense fire developed. None of the two flight crew and three passengers survived.

The following contributory factors were identified:

1. It is probable that a mechanical failure within the air cycle machine caused the vibration which led to the crew attempting to return to the departure airfield.
2. A missing rivet head on the left engine fuel shut-off lever may have led to an inadvertent shutdown of that engine.
3. Approximately 70 seconds prior to impact, neither engine was producing any thrust.
4. A relight attempt on the second engine was probably started before the relit first engine had reached idle speed, resulting in insufficient time for enough thrust to be developed to arrest the aircraft's rate of descent before ground impact.

Three Safety Recommendations have been made.

SAFETY RECOMMENDATION - 2010-014

It is recommended that the Federal Aviation Administration require that Cessna Aircraft Inc introduce a scheduled inspection of the Cessna Citation 1 throttle quadrant assembly to ensure the integrity of the riveted joints securing the fuel shut-off levers to the throttle levers.

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-015

It is recommended that the Federal Aviation Administration require Cessna Aircraft Inc to amend the 'EMERGENCY RESTART – TWO ENGINE' checklist to emphasise the significance of only restarting one engine at a time.

Response

We have shared this recommendation with the Cessna Aircraft Company and are investigating the issue and developing an appropriate course of action.

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-016

It is recommended that the International Civil Aviation Organisation adopt the proposals of its Flight Recorder Panel for the requirement to install flight recorders on turbine-engine powered aeroplanes of a maximum certified takeoff mass of 5,700 kg or less.

Status - Response Awaited - open

Raytheon 390	En route Copenhagen, Denmark to Farnborough	7 August 2008	Incident
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AAIB Bulletin: 2/2010

FACTOR: N/A

Synopsis

During descent the crew reported experiencing the loss of airspeed information followed by the loss of all three electronic flight instrument system (EFIS) displays. The investigation concluded that the loss of air data information was due to a blockage in the right pitot system caused by moisture ingress which subsequently froze. However, despite exhaustive testing, it was not possible to determine the cause of the loss of all three EFIS displays.

One Safety Recommendation is made.

SAFETY RECOMMENDATION - 2009-109

It is recommended that the Federal Aviation Administration should require Hawker Beechcraft Corporation to review and modify, if necessary, the design of the pitot and static drainage on the Premier 1 aircraft in order that its pitot/static systems cannot become blocked as a result of trapped moisture.

Response

The Wichita ACO has worked with HBC through the Continued Operational Safety (COS) process to resolve the issues with the 390 pitot/static system drainage. HBC released Model Communique 23 and Mandatory Service Bulletin 31-3972 in June 2009. This service bulletin and Communique require modifications to the right side pitot/static system to prevent the drain valves from unintentionally being locked open. Also included in the service bulletin are new Airplane Flight Manual (AFM) procedures requiring pre-flight pitot/static system drainage as well as new emergency procedures which address approach and landing in the event of a loss of all airspeed indications.

Status - Accepted - closed

Cessna 402C Rand KR-2	Near Coombe Abbey, Brinklow Road, Binley, Near Coventry	17 August 2008	Accident
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AAIB Bulletin: 8/2010

FACTOR: F9/2010

Synopsis

The accident was notified to the Air Accidents Investigation Branch (AAIB) by Warwickshire Police shortly after it occurred; an AAIB field investigation was commenced immediately.

Cessna 402C aircraft G-EYES was engaged in flight calibration training and was making an ILS approach to Runway 23 at Coventry Airport when it was involved in a mid-air collision with a Rand KR-2 aircraft, G-BOLZ, operating in the visual circuit. The collision occurred in

Class G (uncontrolled) airspace. The four occupants of G-EYES and the single occupant of G-BOLZ received fatal injuries.

The investigation identified the following primary causal factor:

The two aircraft collided because their respective pilots either did not see the other aircraft, or did not see it in time to take effective avoiding action.

The investigation identified the following contributory factors:

1. The likelihood that the crew of G-EYES would see G-BOLZ in time to carry out effective avoiding action was reduced by the small size of G-BOLZ, its position relative to G-EYES and the high rate of closure between the aircraft.
2. Insufficient or inaccurate information was provided to the pilots, which did not assist them in fulfilling their duty to take all possible measures to avoid collisions with other aircraft.
3. The Aerodrome Controller's sequencing plan, which was based on an incomplete understanding of the nature of G-EYES' flight, was unlikely to have been successful. By the time the risk of a collision was identified, it was too late to devise an effective method of resolving the situation.
4. There were no effective measures in place to give G-EYES priority over traffic in the visual circuit.

As a result of this accident one Safety Recommendation was made.

SAFETY RECOMMENDATION - 2010-003

It is recommended that the Civil Aviation Authority ensures that the requirement in Part 1 of the Manual of Air Traffic Services for aerodrome control to issue 'information and instructions to aircraft under its control to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions' is suitable, sufficient and complied with.

Response

The CAA accepts this Recommendation. The CAA will review the content of the Manual of Air Traffic services Part 1 in respect of the requirement for controllers to issue 'information and instructions to aircraft under its control to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions'. Thereafter, the CAA will ensure that compliance with this requirement is maintained through the competency checking of civil air traffic controllers and Local Competency Examiners.

The CAA has undertaken a review of the Manual of Air Traffic Services Part 1 in respect of information provision and is satisfied that suitable and sufficient basic guidance exists. Additionally, it has found that there are opportunities to enhance the content, particularly in respect of clarity and understanding. The Airspace Safety Initiative (ASI), which has representation from all the key civil and military stakeholders, is coordinating a program of safety enhancements and improvement of service provision arrangements outside controlled airspace, to meet National requirements and facilitate closer alignment with ICAO. Therefore, a second review has commenced that will take into account aligned military and Functional Airspace Block interests. The first phase of this work is scheduled for completion by the end of summer 2011.

Whilst this work progresses, CAA ATS Examiners are ensuring compliance with the requirement in the Manual of Air Traffic Services Part 1 for Aerodrome Control to issue information and instructions to aircraft under its control to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions.

Status - Partially Accepted - open

DHC-6

London Gatwick
Airport

24 February 2010

Accident

AAIB Bulletin: 11/2010
FACTOR: N/A

Synopsis

During a ferry flight from Calgary, Canada to the Maldives, an electrical fire started in the power distribution and generator control box located in the roof of the passenger cabin. The crew isolated the electrical systems and successfully diverted to London Gatwick Airport. The source of the fire was traced to the left generator reverse current relay, which was found to have a different part number to the relays authorised for use on the DHC-6 series of aircraft.

Five Safety Recommendations were made.

SAFETY RECOMMENDATION - 2010-083

It is recommended that Transport Canada reviews the design and efficacy of the heat shields fitted around the Reverse Current Relays on De Havilland DHC-6 aircraft that were introduced as a result of Airworthiness Directive CF-77-08.

Response

Transport Canada Civil Aviation specialists have reviewed the design of the heat shield as specified in Service Bulletin 6/353 (Modification 6/1598) and as mandated by Airworthiness Directive (AD) CF-77-08. The material of the heat shield panels (0.016 in) MIL-S-6721 Comp 321 that appears to withstand a continuous temperature up to 950°C (1742°F). Although the current standard specifies a higher capacity of 2000°F for fire resistant materials, the Service Difficulty Report database shows no defect reports related to a breach of the reverse current relay (RCR heat shields. Since the issuance of CF-77-08, UK AAIB EW/C2010/02/01 (TSB# A10F0024) is the only report Transport Canada, National Aircraft Certification is aware of documenting a breach of the heat shields and the report suggests the aircraft may have been operating out of conformance with the type design. Accordingly, it is our engineering evaluation that the heat shield installation is effective for its intended function.

Transport Canada is satisfied with the design and adequacy of the heat shields fitted around the DHC-6 aircraft reverse relays, therefore no further action is planned at this time.

Status - Partially Accepted - open

SAFETY RECOMMENDATION - 2010-084

It is recommended that Transport Canada takes appropriate action to ensure that only approved Reverse Current Relays are fitted to De Havilland DHC-6 aircraft.

Response

The type certificate holder (Viking Air Ltd.) has advised Transport Canada that they will be issuing an All Operators Message (AOM), which will include advising operators to check their RCRs to ensure they are using approved parts.

Transport Canada is satisfied that issuance of the AOM along with the associated actions will satisfy the intent of recommendation 2010-084 therefore no further action is planned at this time.

Status - Accepted - closed

SAFETY RECOMMENDATION - 2010-085

It is recommended that Transport Canada require the replacement of existing Reverse Current Relays (part number A-700AP and A-700AAP) fitted to De Havilland DHC-6 aircraft with relays of a higher current rating and improved design of the electrical contacts.

Response

Transport Canada Civil Aviation specialists are not convinced by the report that this incident would have been migrated with the use of 400 amp RCRs. Viking's AOM will recommend upgrading to the 400 amp RCR and, since the vendor is no longer producing the part numbers A-700AP and A-700AAP, they will also be subject to replacement through attrition. Transport Canada believes the aforementioned actions will satisfy the intent of recommendation 2010-085 therefore Transport Canada will take no further action at this time.

Status - Partially Accepted - open

SAFETY RECOMMENDATION - 2010-086

It is recommended that Transport Canada reviews the maintenance requirements for the Reverse Current Relay fitted to De Havilland DHC-6 aircraft and considers requiring the relay to be overhauled on a regular basis.

Response

Both Transport Canada and Viking Air Ltd. have reviewed the maintenance requirements for the RCRs fitted on the DHC-6 aircraft. Actions planned by Viking include:

- Replacing the 1200 hr. inspection for the 300 amp relay with a 1600 cycle inspection and introducing a 6000 cycle inspection for both the 300 and 400 amp relays;
- Recommend RCR inspection following a cross generator start;
- Incorporate an overhaul requirement should relay contact inspection reveal burned or pitted contact faces; and,
- Update the maintenance manual, detailing acceptable conditions for the relay contacts.

Transport Canada believes the aforementioned actioned actions will satisfy the intent of 2010-086.

Status - Accepted - closed

SAFETY RECOMMENDATION - 2010-087

It is recommended that Transport Canada conduct an audit of Condor Aircraft Accessories Inc's internal processes to ensure that work recorded on the Authorized Release Certificate accurately reflects the work carried out on the component.

Response

A full Audit of Condor was conducted April 6-9, 2009. Findings were actioned through the normal Corrective plan process. A post Audit on sight follow-up was conducted February 3, 2010 and the Audit was closed.

A Program Validation Inspection was conducted July 5-9, 2010. The Corrective Action Plan was accepted September 15, 2010.

An on sight follow-up inspection was conducted December 22,2010. During this follow-up, Process Inspections conducted focused specifically on the following company activities. Quality Assurance; Maintenance Process and Control; Technical Publications; and, Maintenance Release. Corrective Action Plans have been approved and are being monitored.

Status - Accepted - closed

Aeroplanes = or < 2,250kg MTWA

Stampe SV4C(G)	Redhill, Surrey	26 July 2003	Accident
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AAIB Bulletin: 10/2004
FACTOR: F46/2004

Synopsis

The pilot, who was also the owner of the aircraft, departed from Runway 19 at Redhill Aerodrome, turned left onto a northerly heading and levelled off at 1,000 feet, with the engine at 1,900 rpm. The pilot's intention was to practise aerobatics to the north of the M25 but, about one mile to the north of the airfield, the engine faltered and the pilot saw an object fly off from around the propeller hub. This was followed almost immediately by the pilot observing the propeller detach itself from the engine. He closed the throttle, turned off the engine switches and made a MAYDAY call to Redhill, stating that he had lost his propeller and was making a forced landing.

Looking for a suitable landing area, the pilot found his options were very limited by standing crops. He then noticed a green area which was upwind and he was able to make a successful 'three point' landing. He found that he had landed in a former quarry which had been filled and grassed over. The pilot made his way by foot to the security guard at the gate and he was able to contact the airfield by telephone. The police arrived soon afterwards.

SAFETY RECOMMENDATION - 2004-075

It is recommended that the UK Civil Aviation Authority specifies a calendar time limitation for Gipsy engines, at least for those aircraft operating in the Public Transport and Aerial Work categories, to cover areas where periodic predictive inspections are not effective.

Response

The CAA partially accepts this recommendation. The CAA will assess all related data and consult with known owners and operators to consider the need to define appropriate calendar time limits for Gipsy engines to cover areas where periodic predictive inspections are not effective. This will be complete by March 2005.

Following consultation with affected owners and operators, the CAA amended, on 29 May 2009, CAP 747 Generic Requirement (GR) 24, to introduce a maximum calendar interval between workshop inspections of Gipsy engine crankshafts fitted to aircraft used for Public Transport or Aerial work applications as defined in the Air Navigation Order. An additional limitation of a maximum calendar period of 20 years between workshop crankshaft inspections will be required for all Gipsy marks. If an engine is fully overhauled within 20-year periods, then no further action would be required, since the inspection proposed is already called up as part of a full overhaul. If the hours limitation requiring overhaul is not reached within the calendar period specified, or if examination of the engine records does not indicate when the last inspection was performed, then under this proposal a separate inspection of the crankshaft would be required. A transition period will be allowed for the introduction of this additional limitation. Any engines affected will need to be compliant with this additional requirement by 1 January 2011. To highlight this amendment, the CAA also published an article in the General Aviation Safety Information Leaflet (GASIL). De Havilland Support Ltd featured this amendment in the July 2009 issue of their DH Gazette newsletter.

Status - Accepted - closed

Mooney M20J

Jersey Airport

16 October 2004

Accident

AAIB Bulletin: 11/2006

FACTOR: F42/2006

Synopsis

Shortly after take-off, the aircraft suffered an engine malfunction and the pilot attempted to return to the airfield. During the turn, the aircraft appeared to stall and impacted the ground in a nose low attitude, fatally injuring the pilot. A defect was discovered within the engine's dual magneto, which had recently been refitted following a 500 hr inspection, affecting both ignition systems. This led to a loss of power, accompanied by misfiring, that was consistent with aural evidence from witnesses. Issues concerning quality control of maintenance activities and maintenance data were identified during the investigation.

SAFETY RECOMMENDATION - 2006-030

It is recommended that the European Aviation Safety Agency (EASA) should amend the EASA Part 145 Regulation to require that EASA Part 145 approved maintenance and component overhaul organisations use pre-planned work/process sheets when carrying out work on safety critical components.

Response

The Agency partially agrees with this recommendation keeping in mind that the current regulation already covers the following aspects

Operator responsibility:

Part M.A.402(a) and AMC M.A402(a) already impose an independent duplicate inspection after any flight sensitive maintenance task (such as those affecting flight controls). They provide a description of what systems should be checked and the corresponding procedure. However, AAPENDIX V to AMC M.A.704 doesn't call out for a specific procedure to be included in the Continuous Airworthiness Maintenance Exposition in order to deal with these issues. Therefore, the Agency may consider clarifying such procedures as part of the task referenced MDM-020.

Moreover, the Maintenance Organisation responsibility:

145.A.60(b) and AMC 145.A.65(b) also impose special requirements regarding:

- Installation of identical components, that could be improperly installed, compromising more than one system.
- Maintenance of critical systems.
- Procedures for completion of paperwork in order to avoid omissions when performing maintenance.

Besides, 145.A.60(b) and AMC 145.A.60(b) also prescribe the need for an internal occurrence reporting system that identifies factors contributing to maintenance errors and ensures appropriate action is taken to avoid them.

Also, Human Factors training is an important tool in order to prevent maintenance errors, which is covered by 145.A.30(e).

AMC 145.A.70(a) calls out for the following specific procedures to be included in the corresponding MOE:

- . 2.23: Control of critical tasks.
- . 2.25: Procedures to detect and rectify maintenance errors.
- . 2.26: Shift/task handover procedures.
- . L-2.7: Line procedures for control of critical tasks.
- . 3.13: Human Factors training.

Status - Accepted - closed

Cessna FR172E	Bracklesham Bay, West Sussex	7 August 2005	Accident
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AAIB Bulletin: 6/2006

FACTOR: F24/2006

Synopsis

The pilot and aircraft had been involved in two consecutive days of banner towing operations. The accident occurred on a positioning flight towards the end of the second day. Shortly after takeoff the aircraft was seen to turn left, with an increasing angle of bank, until it stalled and impacted the ground after turning through approximately 310°. Although the banner hook installation showed evidence of interference with the rudder it was considered that this was not a factor in the accident and the most likely cause was a stall following the turn to the left with an increasing bank angle. This may have resulted from an attempt to maintain visual contact with a point on the ground, and would have been exacerbated by an increasing tailwind. It was also considered that the pilot may have been affected by fatigue after the two intensive days of banner towing.

SAFETY RECOMMENDATION - 2006-043

It is recommended that the Civil Aviation Authority initiate a study into the fatigue aspects associated with flying operations such as banner towing and provide guidance on duty and flying hour's limitations to such operators.

Response

The CAA does not accept this recommendation. There is little evidence in the report showing that fatigue or cumulative fatigue had a direct bearing on this accident, which occurred after all banner towing operations had been completed. The Air Navigation Order (Article 32(4) is clear regarding a pilot's responsibilities for his own fitness for flying. Further, although banner towing is not explicitly referenced in CAA publications, all published guidance is believed to provide sufficient material for pilots to reach a considered judgement on their fitness to fly.

Status - Rejected - closed

**Reims Cessna
F172N****900 ft above
Snetterton,
Norfolk****28 October 2006****Accident****AAIB Bulletin: 7/2007****FACTOR: F26/2007****Synopsis**

An electrical system failure which occurred in-flight, but close to an airfield, resulted in flames and smoke emanating from behind the left instrument panel, after the pilot attempted to re-set the alternator circuit breaker. During short final approach to the airfield for a precautionary landing, the engine stopped and the aircraft landed in a field close to the runway.

A combination of a defective battery and a failure of the voltage regulator was identified as the main causal factor of this event.

Two Safety Recommendations are made.

SAFETY RECOMMENDATION - 2007-048

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

Response

EASA issued Safety Information Bulletin 2009-007 titled 'Resetting Tripped Circuit Breakers'.

The CAA accepts this Recommendation. The CAA will publish, at the next issue of the General Aviation Safety Information Leaflet (GASIL) in September 2007, an article highlighting the potential problems in resetting high power circuit breakers on light aircraft, using this occurrence as an example of the dangers of this practice. The CAA will also provide a copy of this GASIL article to the European Aviation Safety Agency.

An article on the subject was published in GASIL 3/2007 in September 2007.

Status - Accepted - closed**SAFETY RECOMMENDATION - 2007-049**

It is recommended that the European Aviation Safety Agency, in conjunction with Civil Aviation Authority, promulgate the information contained in FAA Special Airworthiness Information Bulletin CE-04-72, so that European operators of single engine Cessna aircraft, together with their maintenance organisations, can ensure that the aircraft electrical systems have the required level of over-voltage protection.

Response

After reviewing the available information, EASA concurred with the recommendation and decided to release the Safety Information Bulletin SIB 2008-54 on 26 June 2008 to ensure that all owners and operators of affected aircraft, registered in European Union Member States or associated countries, are aware of the content of Federal Aviation Administration (FAA) Special Airworthiness Information Bulletin (SAIB) CE-04-72R1 dated 18 August 2004 & incorporating Cessna Owner Advisory SEB03-3 dated 28 July 2003, incorporating Cessna Owner Advisory SEB03-3A and Service Kit SK210-170 instructions.

We deem that the SIB publication fulfils the intent of the Safety Recommendation.

The CAA accepts this Recommendation. The CAA will publish a Letter to Operators (LTO) highlighting the existence of Federal Aviation Administration Special Airworthiness Information Bulletin CE-04-72 and the related Cessna Service Bulletin SEB03-3 that recommends the installation of Cessna Service Kit SK210-170 which replaces the problematic voltage regulator and re-installs the over voltage sensor in accordance with the original manufacturer's configuration. The LTO was published in June 2008.

Status - Accepted - closed

Slingsby T67M260	Near Cambridge Airport, Bedfordshire	23 November 2006	Incident
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AAIB Bulletin: 11/2007

FACTOR: N/A

Synopsis

Whilst attempting to recover from a spin during an aerobatic training flight, the instructor was initially unable to move the rudder pedals from their fully pro-spin position. He managed to free the pedals by applying a high pedal force and was then able to recover from the spin. The restriction delayed recovery by an estimated two and a half turns. The restriction had probably been caused when one of the pedals contacted a fixed bracket, probably due to a relatively small lateral displacement of the rudder pedal mechanism, deformation of a bracket supporting the mechanism and/or displacement of the bracket because of cracking of the floor structure to which it was mounted.

Adequate checks aimed at ensuring sufficient clearance had not been specified, but detailed repetitive inspections mandated following the incident may be effective in detecting progressive deterioration of the mechanism. The inspection programme would not preclude the possibility of damage to the support bracket or its mountings, potentially allowing interference to free movement of the pedals, from remaining undetected until the subsequent inspection.

Two Safety Recommendations have been made.

SAFETY RECOMMENDATION - 2007-078

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

Response

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

that the required actions by means of AD 2009-0013 meet the intent of Safety Recommendation.

Status - Accepted - closed

Cessna F177RG	Popham Airfield, Hampshire	29 March 2009	Accident
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AAIB Bulletin: 8/2010

FACTOR: N/A

Synopsis

The pilot selected the gear for landing, observed that the single DOWN AND LOCKED light illuminated and visually checked that the landing gear was extended. On touchdown, the main landing gear folded rearwards and the aircraft came to rest with the nose landing gear extended. The green DOWN AND LOCKED light remained illuminated. An engineering examination found that both main landing gear DOWN AND LOCKED magnetic proximity switches were 'stuck' in their DOWN AND LOCKED positions due to a lack of lubrication and weak return springs.

Two Safety Recommendations are made.

SAFETY RECOMMENDATION - 2010-050

It is recommended that the Cessna Aircraft Company introduce a specific maintenance requirement for F177RG aircraft to lubricate the main landing gear downlock proximity switch pivot (part number MS20392-3C15).

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-051

It is recommended that the Cessna Aircraft Company specify a calendar life for the main landing gear downlock proximity switch return spring (part number 2041064) fitted to F177RG aircraft.

Status - Response Awaited - open

Aero AT-3 R100	Old Sarum Airfield, Wiltshire	12 June 2009	Incident
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AAIB Bulletin: 9/2010

FACTOR: N/A

Synopsis

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

The AAIB makes three Safety Recommendations addressing the parking brake system design and information provided to the pilot about its limitations.

SAFETY RECOMMENDATION - 2010-053

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

Response

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

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-054

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

Response

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

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-055

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

Response

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

Status - Response Awaited - open

Grob G115E Standard Cirrus	Sutton Courtenay / Drayton / South of Abingdon	14 June 2009	Accident
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AAIB Bulletin: 5/2010

FACTOR: N/A

Synopsis

A Grob 115E Tutor aircraft, operated by the Royal Air Force (RAF), was undertaking a cadet air experience flight from RAF Benson. The visibility was good and the aircraft was conducting aerobatics, in uncontrolled airspace, when it collided with a glider. The left wing of the Tutor struck the fin of the glider causing the tail section to break away. The glider pilot parachuted to safety. The Tutor entered a spiral / spinning manoeuvre before diving steeply into the ground. The Tutor pilot and cadet were both fatally injured.

The Tutor pilot had a long term medical condition, which restricted the movement of his head and affected his ability to conduct an effective look out; this condition also made him more vulnerable to impact fractures of the spine. Following the collision it is probable that the Tutor remained controllable, suggesting that the pilot had become incapacitated.

The cadet's harness had been released and the canopy operating handle had been moved to the open position before the Tutor impacted the ground. The canopy jettison mechanism had not been operated.

The accident was notified to the Air Accidents Investigation Branch (AAIB) at 1350 hrs on 14 June 2009 and an AAIB field investigation was commenced immediately. The investigation was conducted by:

Mr P Claiden	Investigator-in-charge
Mr A Blackie	Operations
Mr B D McDermid	Engineering
Mr M Ford	Flight Data Recorders

The investigation identified the following causal and contributory factors:

Causal factor

1. Neither pilot saw each other in sufficient time to avoid the collision.

Contributory factors

1. The Tutor pilot's medical condition, Ankylosing Spondylitis, limited his ability to conduct an effective look out
2. The high density of traffic, in an area of uncontrolled airspace increased the risk of a collision.

Thirteen Safety Recommendations have been made.

SAFETY RECOMMENDATION - 2010-032

It is recommended that the Royal Air Force standardise the terminology used to describe the canopy 'jettison' handle (locking lever) fitted to the Grob 115E (Tutor) in order to avoid confusion and to clarify its function.

Response

The Grob Flight Manual describes the part used to enable jettison of the Tutor canopy as "the red locking lever". In the latest version (V3) of the Tutor Pre-Flight Video, passengers are instructed to remove "the red handle from the latch" to jettison the canopy. This is consistent with the advice given in the Tutor Operating Guide. To avoid suggesting that operation of the red handle alone would be sufficient to remove the canopy in flight, the word "jettison" is now deliberately excluded from any description of this handle.

Status - Accepted - closed

SAFETY RECOMMENDATION - 2010-034

It is recommended that the European Aviation Safety Agency review the certification of the canopy jettison system on the Grob 115 E, to ensure that it complies with the requirements of CS 23.807 with specific regard to the jettison characteristics up to VDO and simplicity and ease of operation.

Response

The review of the canopy jettison system was carried out by Grob Aircraft by reference to their report "SR-G115E-520002" dated 5 March 2009. This report details the compliance with 23.807(b)(5), (c) for post-Mod MAM1078-107 (Major Change) canopies.

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-035

It recommended that the Royal Air Force consider standardising the position and operation of the D-ring on parachutes used in Tutor, Viking and Vigilant aircraft.

Response

The D-ring is on left-hand side for Viking and Vigilant parachutes. The D-ring is on the right-hand side for Tutor parachutes so as not to interfere with the Life Saving Jacket. Moving the D-ring for all parachutes to the right-hand side was considered, but deemed to be too expensive as it would involve the purchase of about 400 new parachutes. Furthermore, any plan to phase in new parachutes would impose its own risks as crews transitioned to the new parachute with reversed operation. To reduce any risks posed by the location of parachute deployment handles to As Low As Reasonably Practicable, the following measures have been adopted:

- (1) The position of the parachute D-ring is demonstrated several times during mandatory Egress training. This is delivered to all cadets by a qualified staff pilot prior to all flights.
- (2) Immediately prior to take-off on all cadet flying sorties, while seated in the cockpit, aircraft commanders review cadets' understanding of their abandonment training. This review includes the location and operation of the parachute D-ring.
- (3) To aid identification, all Tutor parachute D-rings are marked with high visibility black and yellow tape.
- (4) Egress Trainers are being procured for all 22 (Trg) Gp units that operate the Tutor. Installation at all units will be complete by 31 Dec 11. Prior to flying in Tutor aircraft, cadets will practice the abandonment procedure and parachute deployment using these Trainers.

Status - Rejected

SAFETY RECOMMENDATION - 2010-036

It is recommended that the Royal Air Force ensure that the medical history of pilots is reviewed when they initially apply to join an Air Experience Flight.

Response

AP1269A Leaflet 4-02 requires that AEF staff pilots (whether full or part-time) selected to undergo flying training attend a medical board at OASC to establish their fitness for their proposed flying duties.

Status - Accepted - closed

SAFETY RECOMMENDATION - 2010-037

It is recommended that the Royal Air Force ensures that all medical limitations relating to Air Experience Flight pilots are recorded in their F5000 (record of flying training).

Response

RAF policy for recording an individual's fitness to undertake specific duties laid down in AP1269. AP 1269 mandates the use of a Joint Medical Employment Standard (JMES) which indicates any restrictions on employment that may be placed on the duties of an individual. JMES is recorded in the individual's Form 5000 and Flying Logbook. During the last year, a 100% check of AEF records was conducted during pre-AFV inspections to ensure that all limitations on employment have been captured in the JMES.

Status - Accepted - closed

SAFETY RECOMMENDATION - 2010-038

It is recommended that the Royal Air Force review their policy on pilots flying with Ankylosing Spondylitis.

Response

The policy on the management of pilots with Ankylosing Spondylitis (AS) has been reviewed and is laid down in AP1269A Leaflet 5-08. This policy stipulates that aircrew with AS can be retained, but should attend annual review by the Consultant Advisor in Rheumatology and Rehabilitation.

Status - Accepted - closed

SAFETY RECOMMENDATION - 2010-039

It is recommended that the Royal Air Force review their policy for the retention of the complete flying training records of Volunteer Reserve pilots, so that they are available to their supervising officers.

Response

Annex B to Training Group Order TE115 requires that Training folders are opened and maintained for all AEF pilots. These folders are to include a record of all conversion training and supervisory checks, and are available to supervising officers. In addition, CFS reports (Form 5363) are to be inserted in F5200 for all pilots.

Status - Accepted - closed

SAFETY RECOMMENDATION - 2010-040

It is recommended that 1 Elementary Flying Training School review their risk assessment for Air Experience Flight aircraft operating in areas of high traffic density.

Response

The risks associated with operating in congested airspace have been reviewed. The following changes have been implemented:

- (1) Traffic Avoidance System (TAS). All 22 (Trg) Gp Tutor aircraft are to be fitted with TAS. TAS is currently fitted to 61 of the 119 Tutor aircraft. It is expected that the installation programme will complete by 31 Dec 11.
- (2) Training Group Orders. Training Group Order TE307 states that Supervisors are to assess the level of aerial activity in the local operating area, particularly glider activity, and are to restrict or suspend operations if the degree of congestion constitutes an unacceptable risk of collision. In addition, at sites where local air traffic units are able to provide Air Traffic Services, Air Cadets and passengers sorties are to be conducted under a Traffic Service or higher

Status - Accepted - closed

SAFETY RECOMMENDATION - 2010-041

It is recommended that the Civil Aviation Authority, in light of changing technology and regulation, review their responses to AAIB safety recommendations 2005-006 and 2005-008 relating to the electronic conspicuity of gliders and light aircraft.

Response

The CAA accepts this recommendation and will review its response to the recommendations 2005-006 and 008, reproduced below, relating to the electronic conspicuity of gliders and light aircraft, as well as previous and current work on this topic. The review will be led by the Directorate of Airspace Policy (DAP), with support from Safety Regulation Group (SRG) as appropriate, with a final report submitted by 31 January 2011. Worthy of note at this stage is that since the 2005 recommendations the CAA has mandated the wider, but not universal use, of Mode S transponders and has produced and published a Concept of Operations document for a lightweight Mode S transponder.

Recommendation 2006-006: It is recommended that the Civil Aviation Authority should initiate further studies into ways of improving the conspicuity of gliders and light aircraft, to include visual and electronic surveillance means, and require the adoption of measures that are likely to be cost-effective in improving conspicuity.

CAA Response: The CAA does not accept this Recommendation. However, the CAA will review its ongoing work on the use of visual and electronic measures to enhance the conspicuity of General Aviation aircraft, particularly in the light of impending wider transponder carriage. The review will be completed by the 31 December 2005 and the CAA will then consider whether the adoption of such measures should be required. In respect of gliders the CAA has no regulatory powers to require that adoption of any recommended measures. The CAA will forward details of any recommended measures to the British Gliding Association (BGA) and the European Aviation Safety Authority (EASA) for their information.

Recommendation 2005-008: It is recommended that the Civil Aviation Authority should promote international co-operation and action to improve the conspicuity of light aircraft through visual and electronic measures will depend upon the outcome of the review noted in Recommendation 2005-006. The CAA cannot accept the Recommendation in respect of gliders since it has no regulatory powers to require adoption of recommended measures. Details of recommended measures will be forwarded to the British Gliding Association (BGA) and the European Aviation Safety Authority (EASA) for their information and use for any international promotion that these agencies might believe appropriate.)

Status - Accepted - closed

SAFETY RECOMMENDATION - 2010-042

The Civil Aviation Authority liaise with the Sporting Associations and the Ministry of Defence, with a view to developing a web-based tool to alert airspace users to planned activities that may result in an unusually high concentration of air traffic.

Response

The CAA accepts this recommendation and will liaise on this issue with the Sporting Associations and the Ministry of Defence, as a workstream under the auspices of the Airspace Safety Initiative. Liaison will be primarily aimed at a web-based solution but will also consider other potential options to alert airspace users to planned activities that may result in an unusually high concentration of air traffic. A report, including, if appropriate, recommendations for further work, will be completed by 31 January 2011.

Status - Accepted - closed

SAFETY RECOMMENDATION - 2010-043

It is recommended that the Royal Air Force review the communication procedures between military Air Traffic Control units and Air Experience Flights to ensure that the supervising officer is made of aware significant changes to the local flying environment.

Response

All units operating AEF have been made aware of the need to ensure regular liaison with local military Air Traffic Units. Training Group Order TE305 mandates that flying supervisors must be available to the Duty Air Traffic Controller at all times.

Status - Accepted - closed

SAFETY RECOMMENDATION - 2010-065

It is recommended that the Royal Air Force review their policy concerning cockpit checks undertaken to support medical assessments.

Response

All units operating AEF have been made aware of the need to ensure regular liaison with local military Air Traffic Units. Training Group Order TE305 mandates that flying supervisors must be available to the Duty Air Traffic Controller at all times.

Status - Accepted - closed

P56 Provost T1	1.3 nm east of Bishop Norton, Lincolnshire	8 July 2009	Accident
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AAIB Bulletin: 10/2010

FACTOR: F7/2010

Synopsis

While cruising at 2,500 ft the aircraft suffered a mechanical engine failure which led to an in-flight fire. The pilot was probably rendered unconscious by the smoke and fumes from the fire; the aircraft crashed into a field and the pilot was fatally injured. The engine failure was initiated by a fatigue crack of the No 6 piston gudgeon pin. The cause of the fatigue crack initiation could not be determined but it is likely that a high-load event, such as a partial or full hydraulic lock, initiated the crack in the pin. The presence of corrosion pits on the inner surface of the pin was probably a contributory factor and the aircraft's low utilisation rate during the previous 45 years probably contributed to the formation of corrosion. In addition to the initial CAA safety actions, three AAIB Safety Recommendations are made.

SAFETY RECOMMENDATION - 2010-029

It is recommended that the Civil Aviation Authority consider implementing calendar time limits between overhauls for Alvis Leonides series engines, and other historic aircraft engines that do not have manufacturer-recommended calendar limits.

Response

The CAA accepts this Recommendation. The CAA is currently reviewing the need for additional limits on other historic engine designs and will include the Alvis Leonides engines in this review. It is intended to complete this review by 31 March 2011.

The CAA has reviewed the experience gained on a wide variety of historic engines that do not have a mandatory calendar overhaul requirement prescribed by the original type certificate holder/manufacture. The review carefully considered the existing policy and has identified that the maintenance requirements for the engine should continue to be as prescribed by the original type certificate holder/manufacture, supplemented by programmes developed by the owner / operator to improve reliability and performance. In the specific issue of low utilisation, CAA mandating of an engine overhaul is not considered to be proportionate to the risk, and would almost certainly impose a significant operational and cost burden on the owner / operator. The CAA therefore plans to propose additional guidance / recommendations to owners / operators of certain engines affected by low utilisation and thereby encourage them through their own safety and reliability systems to ensure continued reliability levels in line with accepted experience. This will be subject to consultation with industry by September 2011; thereafter the agreed change will be published

Status - Accepted - closed

SAFETY RECOMMENDATION - 2010-030

It is recommended that the Civil Aviation Authority notify operators of piston radial engines of the correct technique for clearing a hydraulic lock.

Response

The CAA accepts this Recommendation. Accordingly, CAA will issue generic information in an AIRCOM, by 31 December 2011, regarding the appropriate techniques for clearing hydraulic lock on radial engine aircraft.

The CAA issued AIRCOM 2010/14 on 01 November 2010 which highlighted the issue of hydraulic lock, most notably on radial piston engines, and provided to operators and maintenance organisations the recommended action necessary to prevent mechanical damage.

Status - Accepted - closed

SAFETY RECOMMENDATION - 2010-031

It is recommended that the Civil Aviation Authority consider introducing a requirement to inspect the gudgeon pins on Alvis Leonides series engines.

Response

The CAA accepts this Recommendation. The CAA will consider, by 31 March 2011, the need for specific inspections of the pins as part of the review carried out to the introduction of calendar time limits (in accordance with Recommendation 2010-029), which may itself lead to the need for specific inspections during shop visit.

This recommendation is being reviewed under 2010-029, as part of the need for specific measures which may be required for operation of high calendar time engines.

Status - Accepted - closed

Mooney M20F**Wellesbourne
Mountford Airfield,
Warwickshire****8 August 2009****Accident****AAIB Bulletin: 8/2010****FACTOR: N/A****Synopsis**

The flight was for the pilot/owner to verify the satisfactory operation of the landing gear system following the replacement and subsequent adjustment of a landing gear limit switch. After a successful test flight, during which the landing gear was cycled three times, the pilot returned to the departure airfield. A final landing check was carried out during which the pilot confirmed that the landing gear was DOWN AND LOCKED. A normal flare and touchdown on the mainwheels was carried out and the nosewheel gently lowered onto the runway. After a short period (a second or two) the propeller struck the runway, stopping the engine. The pilot noticed that neither the green landing gear DOWN AND LOCKED nor the amber IN TRANSIT lights were illuminated. The aircraft slid along the runway centreline on its lower fuselage for about 100 metres before swinging through 90° to the left and coming to rest.

Examination of the aircraft revealed that the retention link, part number 53001-013, an item in the landing gear downlock system, had been fitted upside down.

SAFETY RECOMMENDATION - 2010-044

It is recommended that the Federal Aviation Administration require the aircraft manufacturer, Mooney Airplane Company, to publish guidance material on the correct orientation of the nose landing gear Retraction Link part number 530003-013.

Status - Response Awaited - open**Grob G115E****RAF Leeming,
North Yorkshire****12 September
2009****Accident****AAIB Bulletin: 1/2011****FACTOR: N/A****Synopsis**

During the rollout from a three aircraft 'stream' landing, the pilot and passenger of the rear aircraft had to apply full brake pressure to avoid a collision with the aircraft in front. Although the aircraft did not collide, the resulting loads experienced by the wing structure supporting the landing gear, caused it to fail in overload. Subsequent analysis of the failed structure identified possible manufacturing issues, which may have contributed to the failure. The accident was also subject to an RAF Unit Inquiry.

Five Safety Recommendations have been made.

SAFETY RECOMMENDATION - 2010-078

It is recommended that the European Aviation Safety Agency in cooperation with the Luftfahrt-Bundesamt (LBA) conduct an audit of Grob Aircraft AG's design and quality standards, manufacturing processes and facilities to ensure that they meet current regulatory standards.

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-079

It is recommended that the European Aviation Safety Agency require Grob Aircraft AG to introduce an inspection of all G115E aircraft to ensure their structural integrity complies with regulatory airworthiness standards and that design assumptions relating to fabrication techniques and material properties used during aircraft certification remain valid.

Response

EASA has reviewed the design of the Grob 115E aircraft and confirms that the aircraft complies with its certification basis; that is, application of brakes in accordance with the Approved Flight Manual at groundspeeds within the normal operating envelope will not result in structural failure.

Status - Rejected - open

SAFETY RECOMMENDATION - 2010-080

It is recommended that the European Aviation Safety Agency in conjunction with the Federal Aviation Administration review the Grob G115E aircraft design to ensure that rapid, full and continuous application of the brakes at groundspeeds within the normal operating envelope, does not result in failure of the aircraft's structure.

Response

EASA has reviewed the design for the Grob 115E aircraft, and confirms that the aircraft complies with its certification basis; that is, application of brakes in accordance with the Approved Flight Manual at groundspeeds within the normal operating envelope will not result in structural failure.

The United States is not the state of design of the subject aircraft. Additionally, there are no Grob G115E aircraft registered in the United States. There is no FAA type certificate for the Grob 115E; however, the FAA validated the Grob G115EG, on February 2001 in accordance with our bilateral Airworthiness Agreement with the Federal Republic of Germany. The aircraft type certificate holder, as shown on FAA Type certificate A57EA, is:

GROB-WERKE
Dr. h.c. mult, Dipl.-Ing. Burkart Grob e.K.
Unternehmensbereich Luft- und Raumfahrt
Lettenbachstrasse 9
86874 Tussenhausen-Mattsies
Germany

The FAA does not possess the type design data, nor any compliance reports for the subject airplane. The appropriate airworthiness authority to conduct the design review is the Luftfahrt Bundesamt (LBA), acting in conjunction with the European Aviation Safety Agency (EASA).

The accident aircraft exhibited the following manufacturing issues:

- significant interlaminar pores/voids within thick laminates.
- Inconsistent fiber alignment and surface wrinkling on composite sections.
- Foreign object inclusion within a thick laminate section.
- High levels of adhesive porosity.
- significant pores/voids within the adhesive joints.
- Excessive and inconsistent adhesive bondline thickness.
- Fiber breakout at machined holes in the carbon fiber structures resulting in galvanic corrosion of metallic fasteners and delamination of the composite.
- Low quality welding of metallic parts resulting in cracking and corrosion at the joints.

The existing regulatory requirements in 14 CFR Part 23 has been shown to provide an excellent level of safety. The Small Airplane Directorate and the FAA has reviewed the National Transportation Safety Board (NTSB) accident database covering a 25 year period between 1982 and 2007. The following keywords were used for the search:

- Gear Collapsed
- Main gear collapsed
- Nose gear collapsed
- Tail gear collapsed
- Complete gear collapsed
- Other gear collapsed
- Gear not extended
- Gear not retracted
- Gear retraction on ground

There were over 480 accidents during the review period, and no fatalities due to landing gear collapse.

Given the fact that the Grob G115E is a German state of design product, the subject accident aircraft had several manufacturing issues and the excellent safety record provided by the existing regulatory requirements, we do not feel that any further action is warranted; therefore, we propose these recommendations be classified as 'Closed - No Action.'

Status - Partially Accepted – open

SAFETY RECOMMENDATION - 2010-081

It is recommended that the European Aviation Safety Agency consider the introduction of a specific requirement, for CS 23 certified aircraft, to ensure that theoretical maximum landing gear dynamic loads under braking, calculated during the design process, are validated by dynamic testing and the capacity of the aircraft structure to withstand them is demonstrated as part of the certification process.

Response

The design addresses full use of brakes within the normal operating envelope. It is confirmed that the structure of the aircraft was designed to withstand the loads generated by a normal braking event.

Regarding amendment of CS-23, characterising vibration frequencies and amplitudes would be complex to determine or establish because there are many variables. Selecting an appropriate representative test condition would not demonstrate a significant benefit. In addition, light aircraft often land on grass surfaces, which will further broaden and complicate the input to the problem because the roughness will be complex to characterise.

Status - Rejected

SAFETY RECOMMENDATION - 2010-082

It is recommended that the Federal Aviation Administration consider the introduction of a specific requirement, for FAR 23 certified aircraft, to ensure that theoretical maximum landing gear dynamic loads under braking, calculated during the design process, are validated by dynamic testing and the capacity of the aircraft structure to withstand them is demonstrated as part of the certification process.

Response

The United States is not the state of design of the subject aircraft. Additionally, there are no Grob G115E aircraft registered in the United States. There is no FAA type certificate for the Grob 115E; however, the FAA validated the Grob G115EG, on February 2001 in accordance with our bilateral Airworthiness Agreement with the Federal Republic of Germany. The aircraft type certificate holder, as shown on FAA Type certificate A57EA, is:

GROB-WERKE
Dr. h.c. mult, Dipl.-Ing. Burkart Grob e.K.
Unternehmensbereich Luft- und Raumfahrt
Lettenbachstrasse 9
86874 Tussenhausen-Mattsies
Germany

The FAA does not possess the type design data, nor any compliance reports for the subject airplane. The appropriate airworthiness authority to conduct the design review is the Luftfahrt Bundesamt (LBA), acting in conjunction with the European Aviation Safety Agency (EASA).

The accident aircraft exhibited the following manufacturing issues:

- significant interlaminar pores/voids within thick laminates.
- Inconsistent fiber alignment and surface wrinkling on composite sections.
- Foreign object inclusion within a thick laminate section.
- High levels of adhesive porosity.
- significant pores/voids within the adhesive joints.
- Excessive and inconsistent adhesive bondline thickness.
- Fiber breakout at machined holes in the carbon fiber structures resulting in galvanic corrosion of metallic fasteners and delamination of the composite.
- Low quality welding of metallic parts resulting in cracking and corrosion at the joints.

The existing regulatory requirements in 14 CFR Part 23 has been shown to provide an excellent level of safety. The Small Airplane Directorate and the FAA has reviewed the National Transportation Safety Board (NTSB) accident database covering a 25 year period between 1982 and 2007. The following keywords were used for the search:

Gear Collapsed
Main gear collapsed
Nose gear collapsed
Tail gear collapsed
Complete gear collapsed
Other gear collapsed
Gear not extended
Gear not retracted
Gear retraction on ground

There were over 480 accidents during the review period, and no fatalities due to landing gear collapse.

Given the fact that the Grob G115E is a German state of design product, the subject accident aircraft had several manufacturing issues and the excellent safety record provided by the existing regulatory requirements, we do not feel that any further action is warranted; therefore, we propose these recommendations be classified as 'Closed - No Action.'

Status - Rejected

Piper PA-28-140	Humberstone Airport, North Lincolnshire	26 September 2009	Accident
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AAIB Bulletin: 7/2010

FACTOR: N/A

Synopsis

The aircraft was making an approach to land on Runway 26. During the flare the aircraft rolled uncontrollably to the right and struck the ground. The aircraft came to rest inverted beside the runway, close to the fire training facility. The most probable reason for the uncommanded roll is that G-BRWO had flown through the wake vortex generated by a Sikorsky S76 which had landed immediately before it.

One Safety Recommendation has been made as a result of this investigation.

SAFETY RECOMMENDATION - 2010-026

It is recommended that the Civil Aviation Authority review CAP 493 Section 1, Chapter 3 and AIC P64/2009 and provide clear advice regarding the potential hazards to fixed wing aircraft when following a helicopter in the same wake turbulence weight category.

Response

The CAA accepts this Recommendation and has reviewed CAP 493 Section 1, Chapter 3 and AIC Pink 64/2009. Amendments of the CAP are in preparation to amplify its guidance in relation to how air traffic services communicate and deal with wake vortex hazards. The AIC will be re-issued and will contain additional guidance and information concerning the avoidance of helicopter wake turbulence by other aircraft, particularly light aircraft. These amendments and the AIC re-issue are expected to be published by the end of October 2010.

In addition, Safety Sense Leaflet 15c, which provides wake vortex advice and information aimed at general aviation pilots, has also been reviewed. It will be amended so that the advice it contains is, to the maximum extent possible, harmonized with that in the CAP and AIC. The Safety Sense leaflet revision is expected to be complete and the leaflet re-published, by the end of October 2010.

Status - Accepted - closed

Extra EA 300	White Waltham Airfield, Berkshire	7 April 2010	Accident
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AAIB Bulletin: 10/2010

FACTOR: N/A

Synopsis

During the landing roll the right mainwheel assembly detached from its axle. Examination revealed that the four fasteners securing the right axle to the landing gear had failed as a result of the nuts having been pulled from the four attachment bolts. The investigation could not determine the cause of the failure.

It was noted that the threads on the attachment bolts can be damaged when the axles are removed from the landing gear. One Safety Recommendation was made to the aircraft

manufacturer that new nuts and bolts should be used when the axles are replaced or refitted to the landing gear.

SAFETY RECOMMENDATION - 2010-046

It is recommended that Extra Aircraft Company advise owners, and include an instruction in the maintenance manual, that new nuts and bolts are to be used when the wheel axles are replaced or refitted.

Response

This is to notify that we received the AAIB Safety Recommendation Number 2010-046 (File Ref.: EW/C2010/04/06) today (October 13th, 2010). We like to confirm that the recommendation addressed was included in the Maintenance Manual of the most current variant EA 300/LT. Refer to Chapter 32 page 3 and 5.

The same instruction will be included to the Maintenance Manual of remaining variants with the next regular revision.

Status - Accepted - closed

DA 42	Stapleford Airfield, Essex	3 June 2010	Accident
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AAIB Bulletin: 11/2010

FACTOR: N/A

Synopsis

Despite cycling the landing gear several times, the right main gear remained in the retracted position and the pilot landed the aircraft on the nose and left main landing gear. The pilot and passenger were uninjured, but the aircraft was extensively damaged. The investigation established that the right landing gear jammed in the wheel well as a result of the failure of a trunnion, which connected the landing gear damper to the wheel trailing arm. The failure was caused by stress corrosion cracking.

Three Safety Recommendations were made to the aircraft manufacturer.

SAFETY RECOMMENDATION - 2010-066

It is recommended that Diamond Aircraft Industries consider issuing a Mandatory Service Bulletin for the trunnions (Part No D60-3217-23-51) on the main landing gear fitted to DA42 and DA42M aircraft to be removed, disassembled and inspected for corrosion and cracking.

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-067

It is recommended that Diamond Aircraft Industries review their instructions for the inspection and lubrication of the trunnions (Part No D60-3217-23-51) on the main landing gear fitted to DA42 and DA42M aircraft with a view to reducing their susceptibility to corrosion and stress corrosion cracking.

Status - Response Awaited - open

SAFETY RECOMMENDATION - 2010-068

It is recommended that Diamond Aircraft Industries review the design of the trunnions (Part No D60-3217-23-51) on the main landing gear fitted to DA42 and DA42M aircraft with a view to making the components less susceptible to stress corrosion cracking.

Status - Response Awaited - open

Microlights

Flight Design CTSW	Caird Park Golf Course, Dundee	12 August 2009	Accident
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AAIB Bulletin: 8/2010

FACTOR: N/A

Synopsis

The pilot made a forced landing in a tree after the engine stopped near Dundee. The investigation identified flight planning as a contributory factor.

One Safety Recommendations is made.

SAFETY RECOMMENDATION - 2010-045

It is recommended that Flight Design GmbH, together with P&M Aviation, revise their assessment of the unusable fuel in the CTSW aircraft.

Status - Response Awaited - open

Rotorcraft > 5,700kg MTWA or above

AS332L**Aberdeen Airport****13 October 2006****Accident****AAIB Bulletin: 7/2010****FACTOR: N/A**

Synopsis

The aircraft was departing from Runway 14 for a flight to oil platforms in the North Sea, carrying 13 passengers. Five seconds into the takeoff the crew heard a bang and an abnormal vibration started. The crew rejected the takeoff and landed back on the runway. The aircraft started to taxi but the severe vibration continued so the commander stopped and shut down the helicopter on the threshold of Runway 32.

Initial examination showed that one main rotor blade spindle had fractured, through the lower section of its attachment yoke on the leading side of the spindle. Post-fracture plastic deformation of the lug had stretched open the fracture, separating the faces by some 12 mm.

As a result of this accident the helicopter manufacturer published an Emergency Alert Service Bulletin, requiring periodic inspections, and this was subsequently mandated by the European Aviation Safety Agency (EASA) as an Airworthiness Directive. In July 2009 the manufacturer issued Service Bulletins which introduced a 'wet' assembly procedure, with new nuts, for the main rotor blade spindles. This eliminated the requirement for the repetitive inspection procedure and was made mandatory by the issue of an Airworthiness Directive (AD) by the EASA.

The investigation identified the following causal factors for the failure of the spindle yoke:

- (i) Wear on the flapping hinge inner race.
- (ii) Excessive clamping pre-load across the yoke, due to the tie bolt being torqued to the specified dry value in the presence of grease when it was reinstalled some 175 hours prior to failure of the yoke.
- (iii) Significant hoop stresses in the bore of the yoke due to adverse tolerance stacking and the associated interference fit of the bush in the yoke.

The following were considered as contributory factors in the failure:

- (i) Flight loads biased towards the high-speed level flight condition, slightly higher than those generated by normal level flight cruise conditions.
- (ii) A minor deviation in corner radius profile at the inner end of the bore of the yoke, with a small increase in the attendant stress concentration.
- (iii) A minor reduction, at the fatigue origin site, in the intensity of the compressive surface layer stresses from the shot peen process.
- (iv) Flight loads in the spindle yoke slightly higher than anticipated in certification fatigue testing, due to the action of the lead-lag dampers (frequency adaptors).

One Safety Recommendation is made, to the European Aviation Safety Agency, concerning HUMS detection in helicopter rotating systems.

SAFETY RECOMMENDATION - 2010-027

It is recommended that the European Aviation Safety Agency, with the assistance of the Civil Aviation Authority, conduct a review of options for extending the scope of HUMS detection into the rotating systems of helicopters.

Response

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

The CAA accepts this recommendation, and will assist the European Aviation Safety Agency conduct a review of options for extending the scope of HUMS detection into the rotating systems of helicopters.

Status - Accepted - closed

AS332L2	Aberdeen Airport, Scotland	20 November 2007	Incident
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AAIB Bulletin: 2/2009
FACTOR: N/A

Synopsis

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

The right engine freewheel unit had failed causing that engine to overspeed; this was contained by the overspeed protection system shutting down the engine.

SAFETY RECOMMENDATION - 2009-003

It is recommended that Eurocopter should review the operation of the Training Idle System on the AS332 L2 helicopter in the event of the failure of the operating engine. Eurocopter should ensure that the behaviour of the helicopter in terms of NR recovery and any height loss are included in the Flight Manual Supplement, Supp 3. The correct pilot technique for managing such an event should also be included. This information should be based on flight test data.

Response

The Training Idle System of the AS332L2 does not cover all cases of engine failure in training flight. This situation is consistent with the fact of reducing one engine to idle.

However the Training Idle System brings some security features that improves security compared pure manual method (reducing one engine to idle with the control lever).

The Flight Manual will be improved to clearly explain to the pilots the risks associated with the training flights.

Status - Rejected - open

Agusta AW139	The North Sea, 65 nm north-east of North Denes Heliport	23 December 2008	Incident
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AAIB Bulletin: 10/2010
FACTOR: N/A

Synopsis

Whilst on a flight from North Denes Heliport to a North Sea drilling platform, the aircraft's crew alerting system displayed a VNE MISCOMPARE message. This was followed by the loss of No 2 engine indications and other aircraft system parameters. The No 1 engine parameters indicated normal operation and the crew elected to return to North Denes Heliport. Whilst still in cloud, the crew received indications that there was a fire in the baggage compartment at the rear of the aircraft. The commander then lost all altitude, airspeed and vertical speed information from his Primary Flight Display. Once below cloud, another company helicopter flew alongside G-CHCV and confirmed that there was no evidence of fire and a safe landing ensued.

The spurious warnings and the loss of indications were found to be due to corrosion in an avionic module. The corrosion had occurred due to the module cabinet being cooled by unfiltered, non-conditioned air drawn from intakes on the fuselage underside. The situation was exacerbated by the helicopter being operated in a maritime environment.

One Safety Recommendation is made.

SAFETY RECOMMENDATION - 2010-077

It is recommended that the European Aviation Safety Agency mandate the embodiment of the AgustaWestland Bollettino Tecnico BT AW139-166 on all short nose versions of the AgustaWestland AW139.

Response

EASA issued on 21/09/2010 the Airworthiness Directive AD 2010-0189 for AB139 and AW139 helicopters related to Navigation - Modular Avionic Unit - Inspection /Replacement/Modification, which covers the intent of the Safety Recommendation.

Status - Response Awaited - open

Rotorcraft <> 2,250kg and 5,700kg MTWA

No Safety Recommendations made in this section.

Rotorcraft = or < 2,250kg MTWA

RAF 2000 GTX-SE	West of Simon's Stone, Colliford Lake, Bodmin Moor	1 June 2006	Accident
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AAIB Bulletin: 9/2007

FACTOR: F33/2007

Synopsis

The gyroplane was being flown from Watchford Farm in Devon to Bodmin airfield in Cornwall by the pilot who was also the owner and builder. Approximately 2.8 nm north-east of Bodmin Airfield at a height of about 450 ft agl, a witness saw the main rotor blades stop. The gyroplane fell to the ground fatally injuring the pilot. The main rotor blades had contacted the vertical stabiliser, propeller and rudder.

During the course of this investigation a programme of test flying was conducted by the UK CAA, primarily as a result of an earlier accident. Undesirable handling characteristics of the RAF 2000 were identified. As a result the CAA has published Mandatory Permit Directive MPD 2006-013, restricting operation of the type.

The investigation has identified an undiagnosed medical problem, pre-impact mechanical interference of the control runs and undesirable handling characteristics of the gyroplane, but has not identified the precise cause of the accident. However, any combination of these factors could have caused the accident.

SAFETY RECOMMENDATION - 2007-052

It is recommended that the Civil Aviation Authority includes a statement in all Mandatory Permit Directives affecting aircraft operating under Permits-to-Fly to clearly advise owners if the work content requires a duplicate or independent inspection.

Response

As with safety recommendation 2005-085, the CAA partially accepts this Recommendation insofar as it relates to the need for a duplicate inspection. The PFA procedures include defined processes that include the need to carry out duplicate or independent inspections whenever the work involves primary structure or control systems.

In this case, the owner performed the modification actions apparently without reference to a PFA inspector or recording it in the aircraft's log book. This is notable, despite MPD 2006-03 stating:- During embodiment of the modification and after completion, the work must be inspected at appropriate stages by a person approved either by the CAA or the PFA. Compliance with this MPD and appropriate inspections should be in accordance with normal PFA procedures and recorded in the aircraft log book.

The CAA does not consider it appropriate to amend MPDs to simply identify duplicate/independent inspections.

Status - Accepted - closed

SA 341G Gazelle**Rudding Park,
Harrogate, North
Yorkshire****26 January 2008****Accident****AAIB Bulletin: 11/2009****FACTOR: F1/2010****Synopsis**

The pilot, who was experienced in fixed-wing aircraft but newly-qualified in helicopters, was undertaking a helicopter flight with a passenger, in gusty wind conditions. He was seen flying slowly, at a low level, near a chalet he owned in the grounds of an hotel when the aircraft was seen to spin around, before pitching up and falling to the ground, fatally injuring the two occupants.

It is considered that the pilot lost control of the helicopter whilst flying at low forward airspeed in strong and gusty wind conditions. The investigation revealed inconsistencies, and probable deficiencies, in the training of the pilot and inconsistencies, and possible deficiencies, in his subsequent PPL(H) Skills Test.

Deficiencies in the aircraft's maintenance were also identified, although these are not considered causal or contributory to the accident.

SAFETY RECOMMENDATION - 2009-084

It is recommended that the Serbian Civil Aviation Department review its oversight and audit system to ensure that aviation maintenance organisations in Serbia release to service only items for which they have the correct approvals.

Response

In accordance with Safety Recommendation 2009-084, hereby it is notified that the Civil Aviation Directorate of the Republic of Serbia has conducted following activities:

1. All Procedures and check-lists in airworthiness department regarding issuing JAR-145 approvals were checked if they are in compliance with IR PART-145 and AMC & GM to PART-145.
2. Oversight and audit plan were checked if they are in compliance with approved annual audit plan.
3. Qualifications, skills, experience and training of Airworthiness Inspectors were checked if they are in compliance with mandatory requirements.
4. Implementation of check-lists and procedures (as mentioned in point 1) regarding issuing JAR-145 approvals and scope of JAR-145 approvals have been checked.

Activities No. 1, 2, 3 and 4 were closed and for notified findings, Civil Aviation Directorate of the Republic of Serbia has done corrective actions.

Apart from Safety Recommendation 2009-084, during 2008, Civil Aviation Directorate of the Republic of Serbia had conducted the audit of the maintenance organization which overhauled the engine Turbomeca Astazou IIIA. We would like to inform you, that as a result of the audit, the maintenance approval MO-003 had been revoked on 15 September 2008.

Status - Accepted - closed

**Schweizer
269C-1****Barnaby Sands,
Lancashire****22 September
2009****Accident****AAIB Bulletin: 12/2010 + 3/2011 Correction
FACTOR: F1/2011****Synopsis**

The helicopter, which was on a training flight, suffered an in-flight emergency and subsequently crashed, fatally injuring both occupants. Examination of the wreckage revealed that the main rotor was turning at low speed on impact, but the reason for this could not be established. The investigation concluded that the most likely cause of the accident was a loss of control during an attempted forced landing downwind. The helicopter was being flown at 400 ft immediately prior to the emergency, which would have reduced the probability of a successful outcome.

One Safety Recommendation is made as a result of this investigation.

SAFETY RECOMMENDATION - 2010-089

It is recommended that the Civil Aviation Authority highlight to owners and operators of Schweizer 269C-1 helicopters the importance of performing the idle speed and idle mixture checks in section 4.14 of the Pilot's Flight Manual.

Response

The CAA accepts this Recommendation and will by means of an appropriately targeted Safety Notice and an associated GASIL article highlight to owners and operators of Schweizer 269C-1 helicopters the importance of performing the idle speed and idle mixture checks in section 4.14 of the Pilot's Flight Manual. The Safety Notice will be published before the end of February 2011 and the associated GASIL article will be published in the March 2011 edition.

Safety Notice 2011/01 was published on 23 February 2011 and an associated GASIL article appeared in GASIL No 2/2011, published on 14 March 2011.

Status - Accepted - closed

Others

Sky 260-24	Near Brodsworth Hall, Doncaster, South Yorkshire	13 August 2009	Accident
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AAIB Bulletin: 8/2010
FACTOR: F5/2010

Synopsis

The pilot was landing the balloon in a field of stubble in which there were a number of large rectangular straw bales. The balloon basket bounced and dragged on landing before coming to a stop against one of the bales. During the landing a female passenger sustained serious injuries.

SAFETY RECOMMENDATION - 2010-052

Balloon landings can take place at unprepared sites and may occasionally be bumpy for the occupants, especially in higher wind conditions if the basket tips over and drags along the ground. At present, not all commercial balloon operators make passengers aware of this, either at the booking stage or prior to a flight. Therefore, it is recommended that the Civil Aviation Authority require all commercial balloon operators to make prospective passengers aware of the varied nature of balloon landings so that they can make an informed decision as to whether or not to undertake a flight.

Response

The CAA accepts this Recommendation. It will review current guidance material and write to all UK Balloon AOC operators to remind them of the necessity for their operations manuals to contain appropriate entries to ensure that all prospective balloon passengers are advised of the varied and possibly energetic natures of balloon landings. This reminder will recommend that this advice should be given when the flight is booked, as well as being a required element of the pre-flight briefing. This work will be completed by 28 Feb 2011 in advance of the flying "season".

The actions required from this AAIB recommendation became bound up in actions that followed on from a previous AAIB recommendation, 2009-11. Action following that recommendation was initiated during a meeting between the CAA and balloon stakeholders in February 2010. The opportunity was taken at that meeting to discuss other issues relating to balloon basket safety and other operational issues including those in Recommendation 2010-052. All the views aired at that meeting were carefully considered and consolidated into draft guidance material for operations manuals. The CAA then wrote to all balloon operators asking for their consideration of the guidance material and for any comments they might have. These will be reviewed and incorporated in final CAA guidance material by the end of September 2011, when the busy flying "season" begins to ease. The draft guidance material highlighted the importance of careful briefing, before flight, on landing procedures to be followed by passengers, and the need for a reinforcement briefing just before the landing. Also included was the assessment of an individual passenger's fitness to fly, particularly with reference to age and mobility, and the importance of pilot training and decision making.

Status - Accepted - closed

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2006-030	Mooney M20J	Jersey Airport	16 Oct 2004	56
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2010-060	Boeing 777-300ER Citation-525	London TMA (terminal control area)	27 Jul 2009	36
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GLOSSARY OF ABBREVIATIONS

aal	above airfield level	kt	knot(s)
ACAS	Airborne Collision Avoidance System	lb	pound(s)
ACARS	Automatic Communications And Reporting System	LP	low pressure
ADF	Automatic Direction Finding equipment	LAA	Light Aircraft Association
AFIS(O)	Aerodrome Flight Information Service (Officer)	LDA	Landing Distance Available
AFRS	Aerodrome Fire & Rescue Service	LPC	Licence Proficiency Check
agl	above ground level	m	metre(s)
AIC	Aeronautical Information Circular	mb	millibar(s)
amsl	above mean sea level	MDA	Minimum Descent Altitude
AOM	Aerodrome Operating Minima	METAR	a timed aerodrome meteorological report
APU	Auxiliary Power Unit	min	minutes
ASI	airspeed indicator	mm	millimetre(s)
ATC(C)(O)	Air Traffic Control (Centre)(Officer)	mph	miles per hour
ATIS	Automatic Terminal Information System	MTWA	Maximum Total Weight Authorised
ATPL	Airline Transport Pilot's Licence	N	Newtons
BMAA	British Microlight Aircraft Association	N_R	Main rotor rotation speed (rotorcraft)
BGA	British Gliding Association	N_g	Gas generator rotation speed (rotorcraft)
BBAC	British Balloon and Airship Club	N_1	engine fan or LP compressor speed
BHPA	British Hang Gliding & Paragliding Association	NDB	Non-Directional radio Beacon
CAA	Civil Aviation Authority	nm	nautical mile(s)
CAVOK	Ceiling And Visibility OK (for VFR flight)	NOTAM	Notice to Airmen
CAS	calibrated airspeed	OAT	Outside Air Temperature
cc	cubic centimetres	OPC	Operator Proficiency Check
CG	Centre of Gravity	PAPI	Precision Approach Path Indicator
cm	centimetre(s)	PF	Pilot Flying
CPL	Commercial Pilot's Licence	PIC	Pilot in Command
°C,F,M,T	Celsius, Fahrenheit, magnetic, true	PNF	Pilot Not Flying
CVR	Cockpit Voice Recorder	POH	Pilot's Operating Handbook
DFDR	Digital Flight Data Recorder	PPL	Private Pilot's Licence
DME	Distance Measuring Equipment	psi	pounds per square inch
EAS	equivalent airspeed	QFE	altimeter pressure setting to indicate height above aerodrome
EASA	European Aviation Safety Agency	QNH	altimeter pressure setting to indicate elevation amsl
ECAM	Electronic Centralised Aircraft Monitoring	RA	Resolution Advisory
EGPWS	Enhanced GPWS	rpm	revolutions per minute
EGT	Exhaust Gas Temperature	RTF	radiotelephony
EICAS	Engine Indication and Crew Alerting System	RVR	Runway Visual Range
EPR	Engine Pressure Ratio	SAR	Search and Rescue
ETA	Estimated Time of Arrival	SB	Service Bulletin
ETD	Estimated Time of Departure	SSR	Secondary Surveillance Radar
FAA	Federal Aviation Administration (USA)	TA	Traffic Advisory
FIR	Flight Information Region	TAF	Terminal Aerodrome Forecast
FL	Flight Level	TAS	true airspeed
ft	feet	TAWS	Terrain Awareness and Warning System
ft/min	feet per minute	TCAS	Traffic Collision Avoidance System
g	acceleration due to Earth's gravity	TGT	Turbine Gas Temperature
GPS	Global Positioning System	TODA	Takeoff Distance Available
GPWS	Ground Proximity Warning System	UHF	Ultra High Frequency
hrs	hours (clock time as in 1200 hrs)	USG	US gallons
HP	high pressure	UTC	Co-ordinated Universal Time (GMT)
hPa	hectopascal (equivalent unit to mb)	V	Volt(s)
IAS	indicated airspeed	V_1	Takeoff decision speed
IFR	Instrument Flight Rules	V_2	Takeoff safety speed
ILS	Instrument Landing System	V_R	Rotation speed
IMC	Instrument Meteorological Conditions	V_{REF}	Reference airspeed (approach)
IP	Intermediate Pressure	V_{NE}	Never Exceed airspeed
IR	Instrument Rating	VASI	Visual Approach Slope Indicator
ISA	International Standard Atmosphere	VFR	Visual Flight Rules
kg	kilogram(s)	VHF	Very High Frequency
KCAS	knots calibrated airspeed	VMC	Visual Meteorological Conditions
KIAS	knots indicated airspeed	VOR	VHF Omnidirectional radio Range
KTAS	knots true airspeed		
km	kilometre(s)		

