

16 July 2013  
FOIA reference: F0001570

Dear XXXX

I am writing in respect of your recent application of 12 June 2013, for the release of information held by the Civil Aviation Authority (CAA).

Your request:

*“Please could you inform me on how many Engine Control Units ( ECU ) have been recorded as faulty or have broken in the past 10 years please”.*

Our response:

In assessing your request in line with the provisions of the Freedom of Information Act 2000 (FOIA), we are pleased to be able to provide the information below.

Incident reports are provided to the CAA under the terms of the Mandatory Occurrence Reporting (MOR) scheme, as described under Article 226 of the Air Navigation Order 2009 (ANO). Each report made is reviewed and, where appropriate, further investigation carried out and action taken.

We have carried out a search of the CAA MOR database for reports of electronic control units which have either failed or malfunctioned for the dates 01 July 2003 to all processed reports as at 11 July 2013 inclusive, and provided a summary of the 249 reports.

We have however, removed identifying information from these reports as this information is exempt from disclosure under section 44 (1) (a) of the FOIA.

Section 44 (1) (a) of the FOIA provides that information is exempt information if its disclosure is prohibited by, or under, any enactment. Under Section 23 of the Civil Aviation Act 1982, information which relates to a particular person (which includes a company or organisation) and has been supplied to the CAA pursuant to an ANO is prohibited from disclosure, (a copy of this exemption can be found enclosed).

For more information about the Mandatory Occurrence Reporting scheme, please refer to CAP382 which can be found at: [www.caa.co.uk/cap382](http://www.caa.co.uk/cap382)

If you are not satisfied with how we have dealt with your request in the first instance you should approach the CAA in writing at:-

**Civil Aviation Authority**

Aviation House GW Gatwick Airport South Crawley West Sussex England RH6 0YR [www.caa.co.uk](http://www.caa.co.uk)  
Telephone 01293 768512 [rick.chatfield@caa.co.uk](mailto:rick.chatfield@caa.co.uk)

Mark Stevens  
External Response Manager  
Civil Aviation Authority  
Aviation House  
Gatwick Airport South  
West Sussex  
RH6 0YR

[mark.stevens@caa.co.uk](mailto:mark.stevens@caa.co.uk)

The CAA has a formal internal review process for dealing with appeals or complaints in connection with Freedom of Information requests. The key steps in this process are set in the attachment.

Should you remain dissatisfied with the outcome you have a right under Section 50 of the Freedom of Information Act to appeal against the decision by contacting the Information Commissioner at:-

Information Commissioner's Office  
FOI/EIR Complaints Resolution  
Wycliffe House  
Water Lane  
Wilmslow  
Cheshire  
SK9 5AF  
[www.ico.gov.uk/complaints.aspx](http://www.ico.gov.uk/complaints.aspx)

Should you wish to make further Freedom of Information requests, please use the e-form at <http://www.caa.co.uk/foi>.

Yours sincerely

Rick Chatfield  
Information Rights and Enquiries Officer

## **CAA INTERNAL REVIEW & COMPLAINTS PROCEDURE**

- The original case to which the appeal or complaint relates is identified and the case file is made available;
- The appeal or complaint is allocated to an Appeal Manager, the appeal is acknowledged and the details of the Appeal Manager are provided to the applicant;
- The Appeal Manager reviews the case to understand the nature of the appeal or complaint, reviews the actions and decisions taken in connection with the original case and takes account of any new information that may have been received. This will typically require contact with those persons involved in the original case and consultation with the CAA Legal Department;
- The Appeal Manager concludes the review and, after consultation with those involved with the case, and with the CAA Legal Department, agrees on the course of action to be taken;
- The Appeal Manager prepares the necessary response and collates any information to be provided to the applicant;
- The response and any necessary information is sent to the applicant, together with information about further rights of appeal to the Information Commissioners Office, including full contact details.

**Freedom of Information Act: Section 44**

(1) Information is exempt information if its disclosure (otherwise than under this Act) by the public authority holding it-

- (a) is prohibited by or under any enactment,
- (b) is incompatible with any Community obligation, or
- (c) would constitute or be punishable as a contempt of court.

(2) The duty to confirm or deny does not arise if the confirmation or denial that would have to be given to comply with section 1(1)(a) would (apart from this Act) fall within any of paragraphs (a) to (c) of subsection (1).

**Section 23 of the Civil Aviation Act is such a statutory prohibition. Accordingly, the obligations of the CAA to comply with Section 23 are unaffected by the Freedom of Information Act.**

*Under Section 23, information supplied to the CAA in connection with its regulatory functions and which relates to a particular individual or organisation must not be disclosed by the CAA unless such disclosure is authorised by one of the exceptions contained in Section 23 itself.*

# PubRel

Date Produced: 16 July 2013

## Safety Regulation Group

Safety Data

Aviation House  
Gatwick Airport South  
West Sussex  
RH6 0YR

Direct Dial 01293 573220  
Direct Fax 01293 573972  
E-mail [sdd@caa.co.uk](mailto:sdd@caa.co.uk)

Switchboard 01293 567171  
Fax 01293 573999

*These records were retrieved from the UK CAA Mandatory Occurrence Reporting (MOR) Scheme by a member of Safety Data*

*The MOR system records include information reported to the CAA, information obtained from CAA investigations, and deductions by CAA staff based on the available information. The authenticity of the contents or the absence of errors and omissions cannot be guaranteed. Records in this system commenced on 1 January 1976 coincident with the introduction of Mandatory Occurrence Reporting in the UK, but occurrences reported voluntarily are also included, and no distinction is made between them.*

**Note: Any data provided from these records are made available on the understanding that they are only to be used for purposes of flight safety and must not be used for other purposes.**

**SUBJECT: MORs concerning ECUs which have either failed or malfunctioned**  
**PERIOD : All processed MORs since 01 July 2003 to 10 July 2013 inclusive**

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<b>Make/mdl/srs:</b>	BOMBARDIER CL600 2C10	<b>File Number:</b>	<b>200304677</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	15/07/2003
<b>Classification:</b>	Incident	<b>Location:</b>	Seaford (SFD)
<b>Event Type:</b>	7200 Turbine engine Emergency descent Declared emergency Aircraft/system/component Precautionary descent Aircraft return Declared emergency - Urgency Aerodrome services / operations 7300 Engine fuel and control system		

### Headline:

RH engine control problems during climb. Precautionary descent. Aircraft returned. PAN declared. FADEC malfunction.

### Narrative:

Fire service attendance requested for landing. Maintenance data centre (MDC) download carried out and data sent to aircraft operator for full investigation. FADEC installed is a 5.22 VERSION with full 3 sector memory. Fault appears to be the result of a FADEC OVHT, the inter turbine temperature (ITT)

climb caused the air turn back. The ITT was a channel A/B disagree. This is a known defect indicative of a cold junction module problem. The FADEC V 6.0 includes a fix for the single channel overheat condition. This will equate to a FADEC OVHT message instead of a FADEC (C) message. The cold junction anomaly is under investigation with engine manufacturer but no final solution is available as yet. FADEC replaced - no further reports.

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<b>Make/mdl/srs:</b>	JABIRU	<b>File Number:</b>	<b>200305910</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	26/08/2003
<b>Classification:</b>	Accident	<b>Location:</b>	Romsey (Hampshire)
<b>Event Type:</b>	7201 Turbine engine - generally Forced landing Main landing gear - collapse or retraction Incorrect fuel balance 2800 Fuel system Aircraft operation general 7300 Engine fuel and control system 3220 Nose/tail landing gear		

**Headline:**

UK Reportable Accident : Engine failure. NLG detached during subsequent forced landing in field. No injury to 1 POB. AAIB AARF investigation.

**Narrative:**

AAIB Bulletin 11/2003, ref: EW/G2003/08/49 - Summary: The aircraft, which departed with enough fuel to provide an estimated endurance of 2 hours, suffered an engine failure 50 minutes into its flight. The nose landing gear detached during the subsequent forced landing in a field. Post-landing examination of the aircraft by the pilot showed that there was no fuel in the fuel tank although some fuel was present in the fuel drain. The on-board computer, set manually by the pilot with the fuel contents before flight and providing a display of fuel flow and fuel used, however, indicated 12.3 litres of fuel remaining. CAA Closure: No CAA action appropriate.

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<b>Make/mdl/srs:</b>	MD HELICOPTER MD900	<b>File Number:</b>	<b>200305912</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	31/08/2003
<b>Classification:</b>	Incident	<b>Location:</b>	Royal London Hospital
<b>Event Type:</b>	Aircraft/system/component 7300 Engine fuel and control system 7700 Engine indicating system		

**Headline:**

Electronic Engine Control (EEC) failure.

**Narrative:**

During the initial climb, an aural warning tone sounded, the Integrated Instrument Display System (IIDS) captions "EEC2" and "Fail" for nr2 engine activated and the EGT was noted to be blank. Following an attempted manual reset, the torque was manually controlled for approximately 30 minutes until the 'Yellow' "MAN" indicator illuminated and the EEC was reset IAW the Rotorcraft Flight Manual (RFM) procedure. During subsequent engineering investigation, the nr2 engine NG sensor was replaced.

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<b>Make/mdl/srs:</b>	AIRBUS A319	<b>File Number:</b>	<b>200305922</b>
<b>Phase of Flight:</b>	En-route: Other	<b>UTC Date:</b>	25/08/2003
<b>Classification:</b>	Incident	<b>Location:</b>	
<b>Event Type:</b>	7201 Turbine engine - generally 7300 Engine fuel and control system		

**Headline:**

Nr2 engine surge.

**Narrative:**

Following nr2 engine in-flight failure and shutdown (see 200305696), a replacement engine was fitted with the EEC having been removed from the failed engine and installed on the replacement unit. During ground runs the 'new' engine surged at take-off power. When a new EEC (p/n: 824971-2-008) was fitted the engine operated satisfactorily. Investigation being progressed under 200305696.

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<b>Make/mdl/srs:</b>	MD HELICOPTER MD900	<b>File Number:</b>	<b>200306059</b>
<b>Phase of Flight:</b>	Initial climb	<b>UTC Date:</b>	28/08/2003
<b>Classification:</b>	Incident	<b>Location:</b>	Leconfield
<b>Event Type:</b>	7200 Turbine engine Flight crew 7300 Engine fuel and control system Aircraft operation general 7700 Engine indicating system 6700 Rotorcraft flight control system		

**Headline:**

Electronic Engine Control (EEC) failure. Appropriate drill incorrectly actioned.

**Narrative:**

At 600ft during climb the Integrated Instrument Display System (IIDS) indicated EEC failure together with aural warning tones for nr1 engine. Appropriate drills were actioned but the throttle was selected the wrong way causing visual registered torque to be 136%. The throttle was immediately selected the other way and the aircraft recovered to base. IIDS download carried out and all files interrogated with no exceedance found. Engines visually inspected followed by satisfactory ground run and air test. The

reporter suggests 1) further pilot training regarding in-flight emergency procedures, 2) improved markings on the collective to indicate throttle increase/decrease and 3) improved emergency procedure "flip cards" to ensure correct drill is carried out.

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<b>Make/mdl/srs:</b>	BOEING 757	<b>File Number:</b>	<b>200306383</b>
<b>Phase of Flight:</b>	Initial climb	<b>UTC Date:</b>	16/09/2003
<b>Classification:</b>	Incident	<b>Location:</b>	London-Gatwick - LGW
<b>Event Type:</b>	7200 Turbine engine 7700 Engine indicating system 7600 Engine controls 7300 Engine fuel and control system Aircraft return		

**Headline:**  
LH Electronic Engine Control (EEC) failure.

**Narrative:**

At 1000ft during initial climb, with the LH air conditioning pack off, the LH engine EGT increased towards the red line limit. The thrust lever was retarded to keep EGT within limits and "L EEC and L limiter" EICAS message appeared shortly afterwards. The QRH drill was actioned and climb was continued with EEC and limiters off, but EGT could not be contained below limit without reducing thrust well below climb thrust. A decision was then made to return for rectification action and the engine was operated at reduced thrust for the remainder of the flight. Initially, it was not possible to carry out troubleshooting via the fault isolation manual (FIM) because the LH EEC limiter/supervisory plus the LH HP bleed valve c/bs were tripped. The EEC, bleed valve control unit (BVCU) and engine transient pressure unit (ETPU) had no power and could not be BITE tested. Standard troubleshooting traced a short circuit to the fail fix solenoid on the fuel flow governor (FFG). The solenoid was disconnected and the c/bs were then successfully reset. The EEC, ETPU and fail fix solenoid were all replaced and tested satisfactorily. It was now possible to BITE check the BVCU and the resultant failure code required replacement of power control unit (PCU) A. This was actioned and all systems then operated satisfactorily.

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<b>Make/mdl/srs:</b>	BOEING 757	<b>File Number:</b>	<b>200306986</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	07/10/2003
<b>Classification:</b>	Incident	<b>Location:</b>	
<b>Event Type:</b>	Lightning strike damage Lightning strike 5300 Aircraft's fuselage structure 2200 Autoflight system 7300 Engine fuel and control system		

**Headline:**

Lightning Strike : Passing FL105 in light/moderate rain the aircraft was struck on the radome by lightning. The autothrottle disconnected and both EECs failed. QRH actioned and flight continued.

**Narrative:**

The radome suffered a 23 square inch area of delamination and required replacement. One EEC reset but the other would not and is to be replaced.

<b>Make/mdl/srs:</b>	BAE BAE146	<b>File Number:</b>	<b>200307514</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	20/10/2003
<b>Classification:</b>	Incident	<b>Location:</b>	Manchester (MCT)
<b>Event Type:</b>	7201 Turbine engine - generally Line maintenance 7300 Engine fuel and control system 7700 Engine indicating system		

**Headline:**

Nr1 engine FADEC failed during climb, with a loud bang and momentary large increase in EGT.

**Narrative:**

After arrival, a FASDEC defect was recorded in the Tech Log and ADD P040 was raised. Following completion of the next sector it was found that nr1 engine N1 had exceeded allowable transient limits. Further checks found unrelated damage to the LH engine, requiring nr1 engine replacement, which was considered to have been a result of engine release from overhaul in an unairworthiness condition. Engineering review, noting that the engine surge was due to a FADEC failure and that the FADEC was replaced during the subsequent engine change, intends no general safety response action. Flight Operations review notes that this event was highlighted in February's issue of the Company Flight Operations Newsletter.

<b>Make/mdl/srs:</b>	BOEING 757	<b>File Number:</b>	<b>200308029</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	18/11/2003
<b>Classification:</b>	Incident	<b>Location:</b>	Vienna
<b>Event Type:</b>	7201 Turbine engine - generally 7700 Engine indicating system Diversion 7600 Engine controls 7300 Engine fuel and control system 7200 Turbine engine		

**Headline:**

Engine vibration. Possible compressor blade sticking.

**Narrative:**

At the top of climb, nr2 engine vibration levels were noted to be increasing, reaching 2.5 units. EICAS 'R Engine Vibration' annunciated and QRH actioned. The engine was operated at reduced thrust and the aircraft diverted to Brussels. See also 200307784 which relates to the same engine and aircraft. Significant throttle stagger had been reported for the previous sector and was confirmed by an engine ground run but all indications matched when the ground run was repeated with EECs selected OFF. The subject sector was therefore operated with both EECs OFF iaw the MEL, after which the nr2 engine fan blades were removed, cleaned and lubricated. A borescope inspection of the LP, IP and HP compressor sections was also completed without revealing any internal damage. However, before any further maintenance action could be carried out, it became necessary, for unrelated reasons, to change the engine, at which point the lower part of a borescope support plug was found damaged. The above circumstances preclude any further useful investigation. It is believed that the sticking blades were at the root of the problem.

<b>Make/mdl/srs:</b>	AIRBUS A320	<b>File Number:</b>	<b>200308282</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	29/11/2003
<b>Classification:</b>	Serious incident	<b>Location:</b>	Birmingham (West Midlands)
<b>Event Type:</b>	7200 Turbine engine Declared emergency Declared emergency - Distress Diversion Turbine engine - multiple failures 7700 Engine indicating system 7300 Engine fuel and control system		

**Headline:**

Repeated surging of nr2 engine. Return to LHR initiated. Nr1 engine surge then suspected. MAYDAY declared and aircraft diverted to Birmingham. AAIB Field investigation.

**Narrative:**

AAIB Bulletin 11/2004, ref: EW/C2003/11/04 - Summary: On a relatively clear evening, upon reaching the cruise level of FL280, the crew and passengers on a scheduled flight from London Heathrow to Edinburgh experienced momentary noise and vibration throughout the aircraft. This was repeated approximately one minute later; an orange flash associated with the right engine had also been seen. The flight crew identified that the nr2 engine had surged and recovered, with the engine indications returning to normal. The aircraft's Quick Reference Handbook, coupled with the training that the flight crew had received, provided them with inadequate guidance with which to fully assess the situation. Their initial intention to continue to Edinburgh was changed upon advice from the operator and the crew initiated a return to Heathrow. The engine then began to surge again and, once more, recovered, but this was followed by another series of surges. At this point the crew believed that the nr1 engine had also surged so they declared a MAYDAY and diverted, uneventfully, to Birmingham Airport. Subsequently, it was determined that a progressive fault in the nr2 engine P2T2 probe had signalled inaccurate values to thenr2 engine computer, resulting in incorrect scheduling of the compressor inlet guide vanes, and this was a direct cause of the engine surges. Four Safety Recommendations (2004-59 to -60) are made to the

aircraft manufacturer as a result of this investigation.  
CAA Closure: CAA FACTOR F52/2004 was issued on 14 December 2004.

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<b>Make/mdl/srs:</b>	AEROSPATIALE AS355	<b>File Number:</b>	<b>200308748</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	15/12/2003
<b>Classification:</b>	Incident	<b>Location:</b>	Redhill
<b>Event Type:</b>	7200 Turbine engine 7300 Engine fuel and control system 7700 Engine indicating system Aircraft operation general 7600 Engine controls		

**Headline:**

Beep trim controller failure.

**Narrative:**

While conducting a power assurance air test, the pilot could not re-match the two engines with the engine beep trim controller. The nr1 engine failed to increase, leaving the nr2 engine with a high torque value. After several attempts at cycling the beep controller, the pilot informed ATC of the problem and of his intention to carry out a run on landing. The nr2 throttle was reduced to match the nr1 and a successful run on landing was performed. On investigation it was found that the beep trim motor had failed at the point where one engine was beeped fully forward, with the nr2 engine taking all the load. When defect rectification was carried out, it was found that the motor worked correctly on another, similar aircraft. On being refitted to the subject aircraft, the motor worked correctly and has since operated satisfactorily. Considered an isolated incident.

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<b>Make/mdl/srs:</b>	BAE ATP	<b>File Number:</b>	<b>200400024</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	03/01/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Aberdeen (ADN)
<b>Event Type:</b>	Aircraft/system/component 7201 Turbine engine - generally Propeller control Rejected take-off 7300 Engine fuel and control system		

**Headline:**

Take-off configuration warning. Rejected take-off. LH auto feather failed to arm.

**Narrative:**

During the early part of the take-off run, only the RH EEC and AFU auto feather lights armed, following which the take-off configuration warning sounded. Take-off was abandoned. A subsequent ground run showed the aircraft was in correct configuration although the LH auto feather failed to arm. The aircraft returned to the stand. During subsequent engineering inspection, nr1 engine EEC and AFU electrical connections were cleaned and the aircraft released to service.

<b>Make/mdl/srs:</b>	MD HELICOPTER MD900	<b>File Number:</b>	<b>200400167</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	03/01/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Barnes (Greater London)
<b>Event Type:</b>	7200 Turbine engine Aircraft/system/component 7300 Engine fuel and control system 7600 Engine controls 7700 Engine indicating system Diversion		

**Headline:**

Electronic Engine Control (EEC) failure with associated warning followed by nr2 engine control malfunction. Diversion. NG sensor connector contaminated.

**Narrative:**

At 1000ft during cruise on a positioning flight to re-fuel, the "EEC Fail" caption illuminated with relevant audio warning. The aircraft then diverted to Denham and was flown i.a.w. the procedures with the nr2 engine being operated in manual throttle. A manual reset was attempted but was unsuccessful. Uneventful landing carried out and nr2 engine manually shut down. Total aircraft hours 1480.35. Operator advised that the NG sensor complete with the electrical connector was cleaned, dried and refitted. Defect has not recurred to date.

<b>Make/mdl/srs:</b>	DE HAVILLAND DHC8	<b>File Number:</b>	<b>200401762</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	18/03/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Southampton (SAM)
<b>Event Type:</b>	7200 Turbine engine Rejected take-off 7700 Engine indicating system 7600 Engine controls 7300 Engine fuel and control system		

**Headline:**

Take off rejected at low speed due to slow response from nr2 engine torque. Nr2 engine ECU (P/N: 798213-3-007) replaced.

**Narrative:**

On commencing the take off roll, nr2 engine torque was slow to respond and the take off was rejected after approx 20 metres at very low speed. A high power engine run was then carried out on the runway, during which nr2 engine response was slow and sensitive at high power. The aircraft returned to the stand for further investigation. Nr2 engine ECU (P/N: 798213-3-007) replaced. Considered a random failure.

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<b>Make/mdl/srs:</b>	BAE BAE146	<b>File Number:</b>	<b>200401826</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	22/03/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Edinburgh (EDI)
<b>Event Type:</b>	7200 Turbine engine Rejected take-off Aircraft/system/component 7700 Engine indicating system 7300 Engine fuel and control system		

**Headline:**

RTO at approximately 50kts due to nr2 engine power loss.

**Narrative:**

At 40kts during the take-off run, nr2 engine N1 reduced towards 88%. Take off rejected from 50kts and aircraft returned to stand. Initial engineering investigation found FADEC fault code that would not reset. There was no FADEC fault indication during the take off roll or subsequent taxi back to stand.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200402492</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	15/04/2004
<b>Classification:</b>	Incident	<b>Location:</b>	
<b>Event Type:</b>	2700 Aircraft flight control 7201 Turbine engine - generally 7300 Engine fuel and control system Aircraft return Aircraft handling		

**Headline:**

FADEC degrade.

**Narrative:**

While the aircraft was being manoeuvred as slow speed, it 'twitched' markedly in yaw, while at the same time the Master Caution illuminated and "Degrade" appeared on 'Nr1 Systems' CAD. The aircraft was recovered to base. On shutdown, the Nr1 Systems CAD indicated 'FADEC Fail' followed by 'FLI Fail'. The HMU was replaced, with the old unit being returned to the manufacturer, and a FADEC download was carried out at their request.

<b>Make/mdl/srs:</b>	AEROSPATIALE AS332	<b>File Number:</b>	<b>200402612</b>
<b>Phase of Flight:</b>	Unknown	<b>UTC Date:</b>	29/04/2004
<b>Classification:</b>	Incident	<b>Location:</b>	North Sea
<b>Event Type:</b>	7200 Turbine engine 7700 Engine indicating system Aircraft return Aircraft operation general Declared emergency Declared emergency - Urgency 7300 Engine fuel and control system		

**Headline:**

Engine went to 85% Ng (28400rpm) during flight. Manual control assumed, PAN declared and aircraft returned for run-on landing. Fuel Control Unit (FCU) fault.

**Narrative:**

<b>Make/mdl/srs:</b>	SIKORSKY S76	<b>File Number:</b>	<b>200402694</b>
<b>Phase of Flight:</b>	Initial climb	<b>UTC Date:</b>	28/04/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Exeter
<b>Event Type:</b>	7200 Turbine engine Declared emergency Declared emergency - Urgency Diversion Aerodrome services / operations 7300 Engine fuel and control system		

**Headline:**

PAN declared due to nr2 engine malfunction. Diversion.

**Narrative:**

At 600ft shortly after take-off, the pilot declared a PAN due to a problem with nr2 engine and requested

immediate landing at Exeter Airport. Uneventful landing carried out with the emergency services in attendance. The aircraft then taxied to the apron and was shut down. Nr2 engine and nr2 DECU subsequently replaced and forwarded to the manufacturers for further investigation. Investigations by the engine manufacturer proved inconclusive, and the defect has not recurred to date. MOR will be re-opened if new information comes to light.

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<b>Make/mdl/srs:</b>	HAWKER SIDDELEY HS125	<b>File Number:</b>	<b>200402742</b>
<b>Phase of Flight:</b>	En-route: Other	<b>UTC Date:</b>	27/04/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Detling (DET)
<b>Event Type:</b>	7200 Turbine engine Declared emergency Aircraft return 7700 Engine indicating system 7300 Engine fuel and control system		

**Headline:**

Emergency declared and aircraft returned due to engine failure. EEC loss due to fuse failure and a poor connection of the N2 transducer.

**Narrative:**

During the climb, the LH engine surged with associated vibration and N2 fluctuation followed by LH computer failure. Throttle returned to idle and LH computer switched to 'Overspeed Protect'. Crew advised ATC that an engine failure had occurred and requested a return to Biggin. Squawk 7700 declared with confirmation of an emergency. Coordination was effected and the aircraft returned with LH throttle at idle. Engineering analysis of the occurrence indicates that the surge and vibration were linked and attributable to the sudden loss of the EEC due to fuse failure. The N2 fluctuations were traced to a poor connection of the N2 transducer electrical connector supported by the failure code stored in the EEC. The connector is considered to have been incorrectly tightened at the preceding engine change and vibrated loose in the event resulting in loss of sensing. Considering this, the Operator has brought this incident to the attention of certifying staff.

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<b>Make/mdl/srs:</b>	MD HELICOPTER MD900	<b>File Number:</b>	<b>200402986</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	11/05/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Benson
<b>Event Type:</b>	Aircraft/system/component 7300 Engine fuel and control system		

**Headline:**

Nr2 engine EEC failed.

**Narrative:**

During cruise, an IIDS 'EEC' and 'Red' Fail warnings activated together with an aural warning. Emergency checklist completed and a reset attempted. Aircraft then flown to base without further problem in manual throttle. During subsequent engineering investigation, nr2 EEC connectors were disconnected, cleaned and re-connected with full functional check being carried out satisfactorily in both manual and EEC controlled mode.

<b>Make/mdl/srs:</b>	AIRBUS A320	<b>File Number:</b>	<b>200403236</b>
<b>Phase of Flight:</b>	Taxi	<b>UTC Date:</b>	24/05/2004
<b>Classification:</b>	Incident	<b>Location:</b>	London-Heathrow - LHR
<b>Event Type:</b>	7200 Turbine engine Line maintenance Engine shutdown/flameout 7700 Engine indicating system 7300 Engine fuel and control system		

**Headline:**

Engine failure after start up. Recurring fault. EEC failure.

**Narrative:**

After engine start and tug disconnection, ECAM displayed an orange caution message concerning the compressor vane. The ECAM action only related to engine stall, which had not occurred. A very small amount of power was applied, which caused the EGT to rise to 672deg C, therefore the engine was shut down. The aircraft was taxied back onto stand and the flight cancelled. On data recall using print out, a considerable number of faults were found, including FADEC etc. The reporter comments that allegedly the engineers knew about the problems with this engine and had previously been fault finding to rectify a similar problem. Defect finally traced to nr2 engine EEC, item replaced and ground runs carried out. Nil further adverse reports.

<b>Make/mdl/srs:</b>	MD HELICOPTER MD900	<b>File Number:</b>	<b>200403363</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	26/05/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Denham
<b>Event Type:</b>	7200 Turbine engine 7300 Engine fuel and control system		

**Headline:**

Nr2 engine EEC failure.

**Narrative:**

During the cruise the aural warning sounded accompanied by an IIDS 'EEC FAIL' caption. Checklist actions carried out but EEC would not reset. Flight completed with nr2 engine in manual.

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<b>Make/mdl/srs:</b>	BAE BAE146	<b>File Number:</b>	<b>200403369</b>
<b>Phase of Flight:</b>	Approach	<b>UTC Date:</b>	18/05/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Venice
<b>Event Type:</b>	7200 Turbine engine 7300 Engine fuel and control system 7700 Engine indicating system 2200 Autoflight system		

**Headline:**

Nr2 engine FADEC fault.

**Narrative:**

A FADEC fault was indicated during final approach. Autothrottle and FADEC were selected OFF. Max achievable N1 on nr2 engine was approx 37%. Normal landing carried out. During engineering investigation nr2 engine HMU (p/n: 2-193-330-10), was replaced. It is noted the failure was probably due to a fault within the compressor discharge pressure (CDP) cartridge assembly (piston and spring), which prevented the fuel flow track from opening or closing the main meteric valve. This resulted in no or improper response to power lever operation in either auto or manual mode.

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<b>Make/mdl/srs:</b>	BAE BAE146	<b>File Number:</b>	<b>200403439</b>
<b>Phase of Flight:</b>	Normal descent	<b>UTC Date:</b>	27/05/2004
<b>Classification:</b>	Incident	<b>Location:</b>	London City - LCY
<b>Event Type:</b>	Aircraft/system/component 7300 Engine fuel and control system Diversion		

**Headline:**

Nr3 engine FADEC failure during descent. Diversion to BHX. FADEC sensor changed.

**Narrative:**

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<b>Make/mdl/srs:</b>	AEROSPATIALE AS332	<b>File Number:</b>	<b>200403448</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	26/05/2004
<b>Classification:</b>	Incident	<b>Location:</b>	North Sea (North Sea)

**Event Type:** Aircraft/system/component  
Declared emergency  
7700 Engine indicating system  
7300 Engine fuel and control system  
7200 Turbine engine  
Aircraft operation general  
Declared emergency -  
Urgency

**Headline:**

Nr2 engine rundown in flight. PAN declared.

**Narrative:**

In cruise nr2 engine ran down and Ng froze at 28200 rpm. EOP carried out and PAN declared. Continued to Scatsta and landed without further incident. The aircraft was subsequently returned to base with the nr2 engine ECU in the fallback mode i.e. engine frozen at 28200Ng. Nr2 engine NTL harness, PPNG and anticipator checks were carried out. During the PPNG check it was noticed that the voltage was erratic by 0.03V indicating that the Fuel Control Unit (FCU) was faulty. The FCU was replaced and flight test carried out satisfactory.

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<b>Make/mdl/srs:</b>	DIAMOND DA40	<b>File Number:</b>	<b>200403618</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	07/06/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Cranfield (CIT)
<b>Event Type:</b>	7201 Turbine engine - generally 7300 Engine fuel and control system 2400 Electrical power system Aircraft return		

**Headline:**

Engine power control and instrumentation malfunctions.

**Narrative:**

Engine power dropped from 80% to 65% while the ECU 'A' and 'B', Volts / Amps and Alternator warnings activated. Aircraft returned. The fault was believed to be a FADEC malfunction. Manufacturer informed.

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<b>Make/mdl/srs:</b>	DIAMOND DA40	<b>File Number:</b>	<b>200403620</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	04/06/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Cranfield (CIT)
<b>Event Type:</b>	Aircraft/system/component 7300 Engine fuel and control system 7900 Engine oil system Propeller control Aircraft return		

**Headline:**

Power loss on take-off.

**Narrative:**

Following normal pre-flight checks, including engine tests, 80% power was applied against the brakes before 100% power was employed on full throttle for the take-off run. As the aircraft began to rotate at approximately 60kts, the pilot noted only 40% power was displayed. The throttle was retarded, but as an aborted take-off was not possible the throttle was opened and the display returned to 100%. As the aircraft began to climb, the propeller was heard to cycle and 40% power was again displayed prior to returning to 100% and power was regained. The aircraft completed a circuit and landed safely. Initial investigation indicates a fault with FADEC signals to the propeller control valve. The engine manufacturer has been informed.

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<b>Make/mdl/srs:</b>	SAAB 340	<b>File Number:</b>	<b>200404347</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	01/07/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Dublin
<b>Event Type:</b>	7200 Turbine engine Rejected take-off 7700 Engine indicating system 7300 Engine fuel and control system		

**Headline:**

During takeoff roll engine torque failed to increase. Take off rejected and aircraft taxied to remote stand.

**Narrative:**

Diagnosed as DECU failure - DECU replaced.

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<b>Make/mdl/srs:</b>	BOEING 757	<b>File Number:</b>	<b>200404608</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	09/07/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Manchester (MCT)
<b>Event Type:</b>	7201 Turbine engine - generally Rejected take-off 2200 Autoflight system 7300 Engine fuel and control system 7700 Engine indicating system		

**Headline:**

Auto throttle, Engine Limiter Control and Electronic Engine Control (EEC) failed at 100kts on take-off, with EGT momentarily reaching 825 deg C before thrust reduction. TC modification in place.

**Narrative:**

This occurrence has been attributed to a failure of the Bleed Valve Control Unit(BVCU) and the Dedicated Generator Control Unit(DGCU). The failure of these units is caused by a over voltage from the Power Conditioning Control Unit(PCCU). There is an engine Type Certificate holder modification No.73-C103 which modifies the PCCU to alleviate this problem. The operator has instigated a program to modify its affected units.

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<b>Make/mdl/srs:</b>	AIRBUS A320	<b>File Number:</b>	<b>200405058</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	25/07/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Tuset
<b>Event Type:</b>	7200 Turbine engine Emergency descent 2800 Fuel system 7700 Engine indicating system Precautionary descent 7300 Engine fuel and control system Diversion		

**Headline:**

Nr2 engine rundown in cruise following EPR fluctuations and reduced fuel flow due to engine fuel control fault. Precautionary descent. Diversion.

**Narrative:**

At FL340 during cruise, nr2 engine EPR began to fluctuate therefore power was reduced to approx 80% N1, nr1 engine was set to climb power and the aircraft was descended to FL320. After approx 30 minutes the fluctuations recurred and N1 mode was selected to see if control was regained. Descent was continued to FL260 and EPR mode reselected. Fluctuations eased for approx 40 minutes then recommenced. Fuel flow was noted to decrease from 900 kg/hr to 700 kg/hr and then a short time later rapidly reduced to zero, followed by ECAM "ENG 2 FUEL CTRL FAULT" and "ENG 2 FAIL" messages. Engine relight was not considered a sensible option, therefore the aircraft diverted to Budapest where an uneventful landing was carried out at Maximum Landing Weight. Investigated under 200404987 - similar fault on the same a/c earlier the same day.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200405099</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	26/07/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Glasgow (GOW)
<b>Event Type:</b>	7200 Turbine engine Aircraft return 7300 Engine fuel and control system		

**Headline:**

FADEC degrade.

**Narrative:**

The aircraft was being test flown following an 800 hour inspection and a check of the FADEC Training function was being carried out. With Training Mode armed ('TRAIN ARM' on CAD), the nr1 engine switch was selected from flight to idle. Initial indications were as per Training FADEC function for engine failure - needle split on FLI, slight yaw and RPM warning, shortly followed by 'DEGRADE' on CAD (System 1) and clearing of Training Arm. Nr1 engine switch was reselected to Flight and Training Arm was switched off. On checking System Status Page on VEMD 2, the warning 'STP MTR' was displayed above System 1 information, indicating the Degrade was due to the Stepper Motor. Air test stopped and aircraft returned to base. Stepper Motor failure confirmed - HMU replaced and ground runs carried out with satisfactory results.

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<b>Make/mdl/srs:</b>	AIRBUS A319	<b>File Number:</b>	<b>200405127</b>
<b>Phase of Flight:</b>	Approach	<b>UTC Date:</b>	25/07/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Lyon
<b>Event Type:</b>	Aircraft/system/component 2200 Autoflight system 7300 Engine fuel and control system		

**Headline:**

Autothrust locked and then disconnected during approach possibly due to mobile telephone (PED) interference.

**Narrative:**

On approach, autothrust locked out and subsequently disconnected. Thrust levers were moved to idle and manually controlled. Autothrust was then re-engaged with no subsequent problems. After shut down, the flight crew were informed that a number of mobile telephones were heard in the passenger cabin on the last stage of approach. An engineer was called to investigate the possible causes of the autothrust problem and agreed that it may have been due to interference. A nr2 engine FADEC (maintenance) message was also received after shut down. The reporter suggests that all mobile telephones should be switched 'off' whilst on board the aircraft to prevent a recurrence of the problem. Self-test performed on AFS and FADEC 2 with satisfactory results - no message on status on ground.

<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200405409</b>
<b>Phase of Flight:</b>	Hovering	<b>UTC Date:</b>	08/08/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Newcastle (NEW)
<b>Event Type:</b>	7200 Turbine engine 7300 Engine fuel and control system 7700 Engine indicating system Aircraft return		

**Headline:**

Nr2 FADEC fail warning in high hover. Nr2 engine torque indication dropped to zero. Aircraft returned.

**Narrative:**

Fault diagnosed as N2 sensor failure. N2A and N2B sensors replaced and faulty items returned to manufacturer for further investigation. Ground run and air test completed with satisfactory results.

<b>Make/mdl/srs:</b>	BAE BAE146	<b>File Number:</b>	<b>200406131</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	24/08/2004
<b>Classification:</b>	Incident	<b>Location:</b>	MELEE
<b>Event Type:</b>	Aircraft/system/component 2200 Autoflight system 3400 Navigation systems 3418 Flight management system 7300 Engine fuel and control system Unknown		

**Headline:**

Loss of autopilot, autothrottle, flight director, FADEC and Thrust Rating Panel (TRP) during cruise. No fault found.

**Narrative:**

Passing over frontal systems in cloud with engine anti icing on, moderate turbulence was experienced

and speed was reduced to 0.62 to maintain IAS above Velocity Final Take off (VFTO) +30 for rough air conditions. Climb was normal but TRP (Thrust Rating Panel) would not maintain speed - maximum speed selected and autopilot, autothrottle, flight director and TRP tripped out. Aircraft flown on raw data and QRH drills actioned. Autopilot and flight director reinstated after 10 minutes. Uneventful approach and landing carried out. Aircraft de-powered and FADEC reinstated after approximately 10 minutes. Maintrol consulted who advised that this aircraft has a history of this and that the TRP unit had been replaced a few days earlier. Investigation carried out by Operator. Engineering checks carried out in accordance with the AMM with no faults found. Repetitive defect investigation raised and this has concluded no repetition of the defect to 11 January 2005.

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<b>Make/mdl/srs:</b>	AIRBUS A319	<b>File Number:</b>	<b>200406184</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	25/08/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Geneva
<b>Event Type:</b>	7200 Turbine engine Declared emergency 7300 Engine fuel and control system 7700 Engine indicating system Declared emergency - Urgency Aircraft return 7100 Powerplant package		

**Headline:**

Nr1 engine stalled during climb. PAN declared and aircraft returned. Investigation concluded that this event had resulted from the failure of a Group 2 solenoid.

**Narrative:**

Nr1 engine system fault indicated on start up. Engine shutdown and second start carried out with same result. Post flight inspection revealed damage to the right hand 'C' duct inner skin similar to previous occurrences involving stage 10 bleed valve failure. Investigation of the reported ECAM message concluded that it had resulted from the failure of a Group 2 solenoid, which would cause all HP bleed valves to move to the fail-safe open position. The operator concerned in this occurrence has now embodied SB75-0093 on all applicable installed engines.

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<b>Make/mdl/srs:</b>	BOEING 757	<b>File Number:</b>	<b>200406197</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	02/09/2004
<b>Classification:</b>	Incident	<b>Location:</b>	London-Gatwick - LGW
<b>Event Type:</b>	Aircraft/system/component 7200 Turbine engine 7300 Engine fuel and control system Aircraft return Overweight landing 2200 Autoflight system		

**Headline:**

RH EEC and ELC failed during takeoff roll. Unable to rectify in cruise. Aircraft returned for overweight landing.

**Narrative:**

The operator's ASR Ref No: 186/04/757 confirms failure of the EEC. Component strip report details failure of the diode 'D3' and capacitors 'C3 and C9' on board A of EEC trim module nr5. There have been no further defects of this nature and with an unscheduled component change rate (UCCR) of 0.05 per 1000 component hours giving a mean time between unit replacement (MTBUR) of 18,000 to 20,000 hours, the operator considers this to be acceptable and that no further action is necessary. The ASR further detailed an N2 exceedance during takeoff roll of 101.8% for 6 seconds, which was subsequently confirmed to be between the 100.3 to 103.3% for a maximum of 20 seconds limit, which requires correction of the overspeed condition only. The ELC failure detailed in the MOR report was due to EEC failure causing loss of power to the ELC and thus giving ELC failure warning.

<b>Make/mdl/srs:</b>	BOEING 757	<b>File Number:</b>	<b>200406383</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	01/09/2004
<b>Classification:</b>	Incident	<b>Location:</b>	
<b>Event Type:</b>	7201 Turbine engine - generally 7700 Engine indicating system 7200 Turbine engine 7300 Engine fuel and control system 2400 Electrical power system		

**Headline:**

Uncommanded increase in thrust. Engine control failure. Failure of the generator stator has been identified as the root cause.

**Narrative:**

While climbing through FL205, the aircraft experienced a sudden uncommanded increase in thrust, EGT and RPM on the RH engine. The RH thrust lever was retarded prior to 'N1 Limit' and 'RH Eng EEC' messages activating. QRH actioned. The flight continued to its destination with EECs and RH Engine Limiter 'Off'. The operator is currently in consultation with the engine manufacturer concerning this occurrence. Operator investigation concluded that the aircraft was operated correctly. Engineering defect troubleshooting revealed that the RH engine had suffered a dedicated generator failure. The generator was replaced with no further recurrence to date and the engine speed limiter worked as designed. The failure of the dedicated generator stator has been identified as the root cause. However due to the condition of the returned unit, the component vendor has been unable to identify the root cause of unit failure.

CAA Closure: The hazard is adequately controlled by existing requirements, procedures and documentation.

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<b>Make/mdl/srs:</b>	DE HAVILLAND DHC6	<b>File Number:</b>	<b>200407029</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	25/09/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Newquay - St Mawgan

**Event Type:** 7200 Turbine engine  
Declared emergency  
Declared emergency -  
Urgency  
Diversion  
7700 Engine indicating system  
Missed approach  
7900 Engine oil system  
7300 Engine fuel and control  
system  
6100 Propellers generally  
Aircraft handling

**Headline:**

PAN declared due to problem with RH engine. Aircraft diverted to Exeter and landed safely. Defect not reproduced in ground runs. Air test conducted, satisfactorily; crews briefed; aircraft released.

**Narrative:**

At approximately 1000 ft during approach, the flight crew perceived a change in engine note and a slight yaw to the right. The torque gauge was seen to be low and fluctuating slightly before falling from 15 psi to 5 psi. The power lever was moved forward slightly to compensate, which resulted in torque climbing momentarily to 15 psi before falling again to 5 psi. All other indications were normal. Single engine go-around completed and the RH propeller feathered prior to declaring a PAN and diverting to Exeter, due to weather at Newquay and Plymouth. An uneventful landing followed with the RH propeller still feathered and the aircraft taxied to the stand and shut down normally. During engineering investigation, the RH propeller initially failed to come out of feather but after further starts, operated normally. A number of engine ground runs were performed, but apart from a minor oil leak from the PCU, no faults were found to the engine or torque system. The original defect could not be reproduced. An Air test and further crew training confirmed the serviceability of the Aircraft. There has been no re-occurrence of the defect to date.

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<b>Make/mdl/srs:</b>	AIRBUS A330	<b>File Number:</b>	<b>200407389</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	09/10/2004
<b>Classification:</b>	Incident	<b>Location:</b>	
<b>Event Type:</b>	7200 Turbine engine 7300 Engine fuel and control system		

**Headline:**

LH engine spool down in climb.

**Narrative:**

In the climb with the thrust levers in the climb detent and in open climb mode, the left engine spooled down, followed by auto ignition and return to climb power. Engineers ordered a change of EEC.

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<b>Make/mdl/srs:</b>	AIRBUS A320	<b>File Number:</b>	<b>200407497</b>
<b>Phase of Flight:</b>	En-route: Other	<b>UTC Date:</b>	10/10/2004
<b>Classification:</b>	Incident	<b>Location:</b>	
<b>Event Type:</b>	7201 Turbine engine - generally Line maintenance 7300 Engine fuel and control system 3000 Ice/rain protection system 7500 Engine air system 7600 Engine controls		

**Headline:**

Engine anti-ice fault raised against incorrect MEL item. Appropriate action taken by operator.

**Narrative:**

With the anti-ice valve locked out in accordance with the MEL, it was noted there was an rpm discrepancy on descent. Following landing, engineers confirmed the valve was locked out but the problem recurred on descent during the subsequent sector, with nr1 engine N1 being 33% and nr2 engine N1 being 44%. Following arrival, engineers found that the anti-ice valve was not at fault, with the anti-ice N1 engine control (EEC) having malfunctioned. The reporter therefore concludes the engine anti-ice fault was raised against an incorrect MEL and expresses concern that nr1 engine would not have enough bleed air to provide adequate anti-ice. Replacement of the anti-ice valve cured the defect. It transpired that this was a lease engine with a different EEC, which did not accelerate when anti-ice was selected. The operator has agreed to review their procedure for accepting lease engines, where mod state build standard differs from their own, which may cause such problems. The lack of awareness by the operator led to incorrect troubleshooting. When the EEC was finally identified as unserviceable, it was replaced and ADD cleared.

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<b>Make/mdl/srs:</b>	BOEING 737	<b>File Number:</b>	<b>200407806</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	21/10/2004
<b>Classification:</b>	Incident	<b>Location:</b>	London-Gatwick - LGW
<b>Event Type:</b>	Aircraft/system/component Line maintenance 2200 Autoflight system 7300 Engine fuel and control system 2300 Communication system 2400 Electrical power system		

**Headline:**

Engineering oversight left aircraft with no aural warning or cabin call and caused stabilizer speed trim fault that left pitch channel of remaining autopilot unserviceable.

**Narrative:**

The aircraft was accepted for service with autopilot 'B' and power management control (PMC) 1 & 2

inoperative. During taxi out cabin call would not function - MEL reviewed and procedures established to enable departure. After takeoff autopilot 'A' was engaged after clean up, with the aircraft cleared to FL80. On reaching FL80 aircraft attitude reduced normally, with ALT HOLD annunciated, however aircraft attitude continued to decrease and the aircraft descended 150ft. The autopilot was disengaged and the aircraft returned to FL80. It was noticed that there was no autopilot 'OFF' warning. A new cleared level of FL120 was obtained and the autopilot was re-engaged. On ALT capture it was apparent that the autopilot was not going to level off, so it was disengaged again. A cleared level of FL210 was then given but as no autopilot disengage warning had been heard, clearance was obtained to level off at FL180 to allow for fault finding. With the aircraft under manual control, are call check found 'SPEED TRIM INOP' although no c/bs appeared to be tripped. After consulting Maintrol the problem was traced to two c/bs that had been left pulled - aural warning c/b behind P2 amber collar plus speed trim c/b behind P1 position (hidden by flexi lead for P3 OPS position roaming light). After reset, the autopilot was tested and the flight continued normally with autopilot B and PMCs inoperative. Investigation by the operator confirmed that this event was caused by human error on the part of engineering. The circuit breakers were not reset after completion of earlier troubleshooting. Staff briefings have been carried out.

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<b>Make/mdl/srs:</b>	EMBRAER EMB145	<b>File Number:</b>	<b>200408031</b>
<b>Phase of Flight:</b>	Taxi	<b>UTC Date:</b>	04/11/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Glasgow (GOW)
<b>Event Type:</b>	7200 Turbine engine 8000 Engine starting system 7300 Engine fuel and control system		

**Headline:**

"Eng 2 Out" EICAS caption displayed after engine start. As a precaution, Engineering replaced the DAU2.

**Narrative:**

During pushback, nr2 engine failed to start using FADEC "A" (no light up or fuel input) although nr1 engine was successfully started. A second attempt was then made to startnr2 engine using FADEC "B", which was successful. The after start checks were completed when EICAS caption "Eng 2 out" was noted. The aircraft then returned to stand. As a precaution, Engineering replaced the DAU2.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200408380</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	12/11/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Newquay - St Mawgan
<b>Event Type:</b>	7201 Turbine engine - generally 7300 Engine fuel and control system 7700 Engine indicating system		

**Headline:**

'Engine Degrade' caption activated.

**Narrative:**

During a positioning flight, 'Nr1 Engine Degrade' caption illuminated on the CAD although small

movements of the collective indicated that the engine would respond to control inputs. Descent into the destination airport was uneventful and the aircraft shut down as normal. Nr1 engine HMU was subsequently diagnosed as defective.

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<b>Make/mdl/srs:</b>	HAWKER SIDDELEY HS125	<b>File Number:</b>	<b>200408736</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	22/11/2004
<b>Classification:</b>	Incident	<b>Location:</b>	
<b>Event Type:</b>	7201 Turbine engine - generally Consequential events 7700 Engine indicating system 7300 Engine fuel and control system Diversion		

**Headline:**

LH engine ITT reading higher than normal and passenger medical emergency. Aircraft diverted. Moisture contamination of the Digital Electronic Engine Control.

**Narrative:**

Having been parked on the ramp for approximately three weeks and following a normal departure, it was noted while in the cruise at FL340 that the LH engine ITT was approximately 30 degrees higher than the right. FMS fuel indications suggested the fuel flow was 40lbs per hour higher than the right, consequently LH engine power was reduced by 2-3%N1 to reduce ITT and fuel flow. A diversion was being considered when one of the passengers became unwell, consequently the aircraft landed uneventfully in Bermuda and the passenger taken to hospital with suspected low potassium levels. The following day, various inspections and tests were carried out in consultation with the engine manufacturer, with no faults found. It was suspected the malfunctions may have been caused by moisture contamination of the Digital Electronic Engine Control. The flight that continued the following day was uneventful.

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<b>Make/mdl/srs:</b>	DIAMOND DA40	<b>File Number:</b>	<b>200408789</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	05/11/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Gamston (GAM)
<b>Event Type:</b>	Line maintenance 7201 Turbine engine - generally Aircraft/system/component 2400 Electrical power system 8500 Reciprocating engine 7300 Engine fuel and control system Aircraft return		

**Headline:**

Multiple engine/electrical system warnings and suspected engine power loss during acceptance flight following aircraft repair. Aircraft returned. Alternator belt had been installed incorrectly.

**Narrative:**

At approx 3000ft during a turn on climb out on an acceptance flight test, the "Low voltage" light illuminated followed a few seconds later by the "Alternator" warning light. A decision was then made to terminate the flight and ATC were advised that the aircraft was returning to the airfield. Approx 1 minute later the "Coolant temp" LEDs showed maximum and both engine "ECU" lights "A" and "B" illuminated. Engine rpm remained satisfactory to final approach and at 100ft agl the "Coolant level" light also illuminated. An uneventful landing was then carried out. The aircraft had recently been repaired following a forced landing due to engine failure (200404237 refers), and had allegedly already undergone an air test of 1.7 hours duration prior to this acceptance flight (although no evidence of this was noted in the logs). The findings of an investigation carried out at the time by the engine manufacturer were that the alternator belt had been installed incorrectly during an engine change causing it to fail after only 1.7 hours of operation. The aircraft manufacturers have made maintenance engineers aware of the Maintenance Manual installation procedure.

<b>Make/mdl/srs:</b>	DIAMOND DA40 CESSNA 172	<b>File Number:</b>	<b>200408873</b>
<b>Phase of Flight:</b>	Maintenance phases Maintenance phases	<b>UTC Date:</b>	08/12/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Bournemouth
<b>Event Type:</b>	7201 Turbine engine - generally Aircraft/system/component 7300 Engine fuel and control system Any other event 7700 Engine indicating system		

**Headline:**

Thielert TAE125 diesel engine - potential engine failure and/or RPM drop on ECU reset.

**Narrative:**

The TAE125 is controlled by a FADEC system consisting of two separate ECUs, 'A' and 'B'. During normal running, with the ECU changeover switch in the normal (Auto) position, when ECU circuit breaker (c/b) 'A' is pulled the engine swaps to ECU 'B'. When the ECU 'A' c/b is reset (at idle RPM) the engine stops. At 1200 RPM resetting the ECU 'A' c/b results in a severe RPM drop, after which the engine recovers and runs at 1200 RPM on ECU 'A'. The reporter notes that this occurs on TAE125s fitted to both Diamond and Cessna aircraft. The engine and aircraft manufacturers have been informed. Inquiries identified that the practice of resetting these circuit breakers in flight is not approved in the flight manual, unless in response to a failure condition. As the manufacturer had been informed, the risk presented by the reported occurrence is considered acceptable pending further action by them.

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<b>Make/mdl/srs:</b>	BOEING 757	<b>File Number:</b>	<b>200408967</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	08/12/2004
<b>Classification:</b>	Incident	<b>Location:</b>	En Route
<b>Event Type:</b>	7200 Turbine engine 7300 Engine fuel and control system 7700 Engine indicating system 7600 Engine controls Declared emergency Declared emergency - Urgency		

**Headline:**

RH engine EEC failure and RH engine abnormal EGT indication during cruise. PAN declared for priority landing.

**Narrative:**

During cruise at FL360, RH engine EGT fluctuated and RH engine EEC and RH engine limiter messages were annunciated. Autothrottle disconnected. The QRH was actioned and the RH engine was determined to be unreliable due to the inability to produce cruise thrust without significant difference in EGT and fuel flow compared to the LH engine. LH engine thrust was increased to compensate for the reduced power on the RH engine. A PAN was declared for priority approach and a normal flap 20 landing was carried out. Investigation carried out and five components removed and sent for "as received test" - all components found to be "SATIS". Aircraft has not had an EEC failure since the event. Defects point to a PCCU fault but this passed test. Therefore, cause thought to be a wiring issue, which removing components has disturbed. The Operator is monitoring components and aircraft performance following refit.

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<b>Make/mdl/srs:</b>	BAE JETSTREAM3100	<b>File Number:</b>	<b>200409273</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	21/12/2004
<b>Classification:</b>	Incident	<b>Location:</b>	Stornoway (STN)
<b>Event Type:</b>	7200 Turbine engine Rejected take-off 7700 Engine indicating system 7300 Engine fuel and control system		

**Headline:**

RTO at approx 70kts due to LH engine EGT/torque fluctuations. Moisture ingress of electrical systems suspected.

**Narrative:**

Thorough engine run-ups were carried out and it was established that with the Single Red Line (SRL) and Torque Temperature Limiting (TTL) systems switched off, the engine ran without problem. The aircraft was operated on the next sector with the SRL/TTL systems off iaw the company operations manual and on arrival at destination an engine ground run was carried out with the SRL system switched on and off but the fault was unable to be reproduced - torque, RPM,EGT and fuel flow all found satisfactory. Subsequent sectors were flown with the SRL/TTL systems on with no further problems. The reporter suspects that the problem was caused by damp electrical systems following adverse weather conditions. Total aircraft hours/cycles/landings 27670.54/35877/35877, total aircraft hours/cycles/landings

since overhaul/repair/inspection 27.34/64/64, total engine hours/cycles 22072/28939, total engine/cycles since overhaul/repair2894.01/5070, total engine hours/cycles since inspection 27.30/64. Manufacturer advised.

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<b>Make/mdl/srs:</b>	BOEING 757	<b>File Number:</b>	<b>200409281</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	23/12/2004
<b>Classification:</b>	Incident	<b>Location:</b>	London-Heathrow - LHR
<b>Event Type:</b>	Aircraft/system/component Fumes Aircraft return ATM SID 2300 Communication system 2510 Flight compartment 2200 Autoflight system 7300 Engine fuel and control system 2400 Electrical power system 3400 Navigation systems Smoke or fumes in aircraft		

**Headline:**

RT communication failure with ATC. Aircraft returned to departure airport due to "technical problem". Power failure of the TAT probe heater.

**Narrative:**

Following departure, the aircraft Mode C was seen to reach 63 but then descended again. ATC attempted to establish communication with no initial success, until the aircraft called saying they "might have a problem". The aircraft then failed to follow the SID routing, requiring ATC to turn the aircraft to maintain separation. The pilot confirmed he was happy to take lateral instructions but did not wish to climb. No PAN was declared but the aircraft returned to the departure airport. The pilot failed to reveal the nature of the problem to ATC. The technical problem referred to was recorded as follows. Between takeoff and 1500 feet there was a TAT warning autothrottle failure and EEC warning. There was also a transient burning smell in cockpit. QRH drill for TAT and EEC actioned and the aircraft returned to Heathrow. As burning smell dissipated fumes drill not actioned and approach and landing without incident. The aircraft technical log entries/flight data confirm that loss of autothrottle/EEC was caused by a power failure of the TAT probe heater. It was stated that the TAT probe heater circuit breaker was found in a tripped state. Maintenance investigation immediately following the event failed to confirm a wiring or probe defect (the circuit breaker was subsequently reset and probe tested satisfactory). The probe itself was replaced as 'suspect'. Workshop investigation on the removed probe revealed no fault and the probe has since been released back to service. The airline has also confirmed that there have been no further reports of burning smells since the report date.

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<b>Make/mdl/srs:</b>	BAE ATP	<b>File Number:</b>	<b>200409520</b>
<b>Phase of Flight:</b>	Normal descent	<b>UTC Date:</b>	20/10/2004
<b>Classification:</b>	Incident	<b>Location:</b>	
<b>Event Type:</b>	Aircraft/system/component 7600 Engine controls 7300 Engine fuel and control system		

**Headline:**

Nr2 engine power lever restricted.

**Narrative:**

In VMC at night the nr2 engine power lever was found to be 'binding'. During the landing roll, when reverse power was selected, the nr2 engine roll-over lever jammed until abnormal pressure was applied, after which it worked but was still difficult to use. Following engineering inspection, the nr2 engine control servo unit p/n HTE220007 was replaced.

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<b>Make/mdl/srs:</b>	AIRBUS A340	<b>File Number:</b>	<b>200500057</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	05/01/2005
<b>Classification:</b>	Incident	<b>Location:</b>	Washington Dulles
<b>Event Type:</b>	7200 Turbine engine Rejected take-off Aircraft/system/component 7700 Engine indicating system 7600 Engine controls 3418 Flight management system 7300 Engine fuel and control system 7500 Engine air system		

**Headline:**

Engine thrust loss on takeoff.

**Narrative:**

Thrust levers were selected to TOGA for takeoff (as required for nr1 engine anti-ice locked on due to previous sector fault). Very shortly afterwards, and before "power set" call, the 'eng thrust loss' caption illuminated. Take off was rejected at very low speed (approx 20kt). Aircraft returned to stand where, after lengthy conversation with Mainrol, the fault was diagnosed as a faulty Display Management Computer (DMC) 3/engine 4 interface. DMC 2 was substituted for DMC 3 and the sector recommenced. DMC p/n 96154570110X replaced and system tested with satisfactory results. Further investigation established that the 'eng thrust loss' warning was associated with the open nr1 engine anti-ice valve - new ECU software is designed to eliminate warnings of this nature.

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<b>Make/mdl/srs:</b>	BOEING 757	<b>File Number:</b>	<b>200500330</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	16/01/2005
<b>Classification:</b>	Incident	<b>Location:</b>	
<b>Event Type:</b>	Aircraft/system/component 7201 Turbine engine - generally Declared emergency 7700 Engine indicating system 2200 Autoflight system Declared emergency - Urgency Diversion 7300 Engine fuel and control system		

**Headline:**

N1 in amber band. LH engine EEC failure.

**Narrative:**

While passing FL350 during the climb, the LH engine N1 was noted to be in the 'Amber' band and indicating in excess of 102.9. The thrust lever was retarded to match the RH engine, which was indicating 101.9. The LH EPR then began to fluctuate before the digital EPR reading and autothrottle failed. PAN declared and the aircraft diverted to Brussels for an uneventful landing. LH engine EEC found unserviceable. The aircraft has flown 22 sectors since replacement of the EEC with no further problems. Routine component failure.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200500569</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	25/01/2005
<b>Classification:</b>	Incident	<b>Location:</b>	Fairoaks
<b>Event Type:</b>	7200 Turbine engine 7300 Engine fuel and control system		

**Headline:**

Nr2 stepper motor malfunction.

**Narrative:**

As part of second training sortie, training mode was selected and nr1 engine set to (training) idle position. Training mode briefly activated but was cancelled by FADEC software. CAD showed nr2 engine degrade caution and 'STP-MTR' indication showed in fail screen on VEMD. Aircraft returned to operating pad. FADEC (EECU) 'dump' carried out and stepper motor 'freeze' fault confirmed. Nr2 engine HMU was replaced and the aircraft returned to service.

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<b>Make/mdl/srs:</b>	DE HAVILLAND DHC8	<b>File Number:</b>	<b>200500712</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	30/01/2005
<b>Classification:</b>	Incident	<b>Location:</b>	Guernsey
<b>Event Type:</b>	7201 Turbine engine - generally Rejected take-off Aircraft/system/component Propeller control 7300 Engine fuel and control system		

**Headline:**

Uncommanded auto feather de-arm during takeoff roll. Takeoff rejected at 85kts. FADEC failure. Unable to reproduce on the ground.

**Narrative:**

Engineering investigation confirmed nr2 Channel A fault codes (FADEC) present. Connector plugs cleaned as it is suspected that the spurious signals may have been caused by dirt ingress to FADEC plugs. Engine ground runs and auto feather tests carried out with no faults found. Incident classed as spurious or possible dirty ingress to FADEC plugs.

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<b>Make/mdl/srs:</b>	AIRBUS A340	<b>File Number:</b>	<b>200500888</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	08/02/2005
<b>Classification:</b>	Serious incident	<b>Location:</b>	
<b>Event Type:</b>	7200 Turbine engine Turbine engine - multiple failures 2800 Fuel system Declared emergency 7300 Engine fuel and control system Declared emergency - Distress Diversion 3418 Flight management system		

**Headline:**

Nr1 and nr4 engines ran down in flight. Nr4 engine restarted following fuel crossfeed. MAYDAY declared. Aircraft diverted to Amsterdam. AAIB Formal investigation.

**Narrative:**

AAIB AAR 4/2007, ref: EW/C2005/02/03 - Summary: Some 11 hours after take-off, at about 0330hrs with the aircraft in Dutch airspace and at FL380, the nr1 engine lost power and ran down. Initially the pilots suspected a leak had emptied the contents of the fuel tank feeding the nr1 engine but a few minutes later, the nr4 engine started to lose power. At that point all the fuel crossfeed valves were manually opened and the nr4 engine recovered to normal operation. The pilots then observed that the fuel tank feeding the nr4 engine was also indicating empty and they realised that they had a fuel management problem. Fuel had not been transferring from the centre, trim and outer wing tanks, so the pilots attempted to transfer fuel manually. Although transfer was partially achieved, the expected indications of fuel transfer in progress

were not displayed so the commander decided to divert to Amsterdam, where the aircraft landed safely on three engines. The investigation determined that the following causal factors led to the starvation of inner fuel tanks 1 and 4 and the subsequent rundown of engine numbers 1 and 4: 1. Automatic transfer of fuel within the aircraft stopped functioning due to a failure of the discrete outputs of the master Fuel Control and Monitoring Computer (FCMC); 2. Due to FCMC ARINC data bus failures, the flight warning system did not provide the flight crew with any timely warnings associated with the automated fuel control system malfunctions; 3. The alternate low fuel level warning was not presented to the flight crew because the Flight Warning Computer (FWC) disregarded the Fuel Data Concentrator (FDC) data because its logic determined that at least one FCMC was still functioning; 4. The health status of the slave FCMC may have been at a lower level than that of the master FCMC, thus preventing the master FCMC from relinquishing control of the fuel system to the slave FCMC when its own discrete and ARINC outputs failed. During the investigation the AAIB issued six safety recommendations. Two (2005-36 and -37) were published in Special Bulletin S1/2005 on 8 March 2005 and four more (2005-108 to -111) in an interim report published in AAIB Bulletin 2/2006.

CAA Closure: CAA FACTOR F30/2007, detailing the CAA responses to the six AAIB Safety Recommendations, was issued on 4 September 2007. Any further CAA action required will be progressed via the 'Annual Review of AAIB Recommendations' procedure.

<b>Make/mdl/srs:</b>	DIAMOND DA40	<b>File Number:</b>	<b>200501228</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	16/02/2005
<b>Classification:</b>	Incident	<b>Location:</b>	Shoreham
<b>Event Type:</b>	Aircraft/system/component 7300 Engine fuel and control system		

**Headline:**

Rough running engine at full power and, later, while taxiing. Fault found to be faulty fuel injector electrical connection, although no information shown on FADEC.

**Narrative:**

The situation will continue to be monitored through normal oversight activity.

<b>Make/mdl/srs:</b>	AIRBUS A330	<b>File Number:</b>	<b>200501479</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	01/03/2005
<b>Classification:</b>	Incident	<b>Location:</b>	London-Gatwick - LGW
<b>Event Type:</b>	7200 Turbine engine Engine shutdown/flameout 7300 Engine fuel and control system Aircraft return Overweight landing		

**Headline:**

Engine FADEC parameter loss.

**Narrative:**

Nr1 engine suffered FADEC channel failure when climbing through FL150, resulting in all engine parameters being lost. Successful engine relight with return of parameters. Aircraft returned to departure airport for an uneventful overweight landing. EEC changed and the aircraft departed with no recurrence. Investigation being progressed under 200408419.

<b>Make/mdl/srs:</b>	BAE BAE146	<b>File Number:</b>	<b>200501542</b>
<b>Phase of Flight:</b>	Initial climb	<b>UTC Date:</b>	28/02/2005
<b>Classification:</b>	Incident	<b>Location:</b>	London City - LCY
<b>Event Type:</b>	Altitude related Flight crew Aircraft/system/component Aircraft handling 2200 Autoflight system ATM SID Deviation-flight level/altitude 7300 Engine fuel and control system		

**Headline:**

Altitude deviation. Exceedance of maximum permitted airspeed below FL100.

**Narrative:**

Following an initial turn after departure and with autopilot engaged, speed increased to approximately 270kts, which was above company maximum of 240kts below FL100. During recovery, the autopilot failed to capture the selected ATC/SID cleared level of 3000ft, with the aircraft reaching a maximum of 3300ft before a manual recovery was completed. At 3000ft QNH after departure on a BPK 3T SID from R/W28 with the autopilot engaged and the auto throttle disconnected, because of the requirements of operating under ADD P196 for an engine 4 FADEC fault, the airspeed increased to a reported 270 KIAS in excess of the AFM airspeed limit below 8000ft of 250 KIAS and the company airspeed limit of 240 KIAS below FL100. During the subsequent recovery, the cleared altitude was exceeded by a reported 300ft. The reporter states that the autopilot appeared not to capture the selected altitude. Recorded flight data indicates a climb to 400ft above the cleared level immediately after autopilot disconnection at approximately 3000ft QNH, followed by a speed increase to a maximum of 275 KIAS during the descent back to 3000ft. The FADEC fault was rectified and the ADD cleared. The pilot appears to have induced the level bust in applying late corrective actions to attitude and power after the autopilot was disconnected.

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<b>Make/mdl/srs:</b>	MD HELICOPTER MD900	<b>File Number:</b>	<b>200502064</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	19/03/2005
<b>Classification:</b>	Incident	<b>Location:</b>	London City - LCY

**Event Type:** 7200 Turbine engine  
Declared emergency  
7300 Engine fuel and control  
system  
7600 Engine controls  
Declared emergency -  
Urgency  
Diversion  
7700 Engine indicating system

**Headline:**

PAN declared due to EEC warning. Aircraft diverted to Denham.

**Narrative:**

In the cruise, the yellow Electronic Engine Control (EEC)'EEC MAN' and red 'FAIL' captions illuminated accompanied by an audible warning. Power and speed were adjusted to maintain torque and rotor RPM. It was confirmed that the nr1 engine was affected and the emergency checklist actioned. A PAN was declared and the aircraft diverted to Denham with nr1 throttle in manual. After checking the IIDS fault codes, the EEC connectors and NG sensor connector were cleaned. No further similar problems were reported. Inquiries reveal that the IIDS fault codes confirmed the location of the problem; action was taken to clear the defect, which has not returned to date.

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<b>Make/mdl/srs:</b>	MD HELICOPTER MD900	<b>File Number:</b>	<b>200502613</b>
<b>Phase of Flight:</b>	Hovering	<b>UTC Date:</b>	06/04/2005
<b>Classification:</b>	Incident	<b>Location:</b>	Manchester Barton A/F

**Event Type:** Aircraft/system/component  
7300 Engine fuel and control  
system  
2700 Aircraft flight control  
6400 Rotorcraft tail rotor  
system

**Headline:**

Electronic engine control (EEC) failure.

**Narrative:**

On lifting into the hover both yellow EEC captions illuminated. The aircraft re-landed and two EEC resets were executed which failed to clear the fault. On further investigation the NOTAR pedal potentiometer spindle was found to have moved in its clamp, giving the wrong resistance figure to the EECs. The spindle was re-clamped and electrically rigged iaw MM. Air test carried out and system found serviceable.

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<b>Make/mdl/srs:</b>	AEROSPATIALE AS332	<b>File Number:</b>	<b>200503342</b>
<b>Phase of Flight:</b>	Initial climb	<b>UTC Date:</b>	06/05/2005
<b>Classification:</b>	Incident	<b>Location:</b>	Oil Rig
<b>Event Type:</b>	7200 Turbine engine Aircraft/system/component Declared emergency 7700 Engine indicating system Aircraft return Declared emergency - Urgency Aerodrome services / operations 7300 Engine fuel and control system Aircraft operation general		

**Headline:**

Nr1 engine NG fluctuations during climb out. Nr1 engine throttled back. Aircraft returned to base. PAN declared. Nr1 Fuel Control Unit (FCU) fault.

**Narrative:**

Just after take-off, a "Diff NG" warning illuminated intermittently and both NGs fluctuated in opposite directions with fluctuations becoming more intense. Emergency checklist procedures complied with and the crew concluded that nr1 engine was malfunctioning. A decision was then taken to return to base rather than landing back on the rig. Nr1 engine was left throttled back giving a stable and reduced torque during cruise and landing - all engine parameters remained steady during the return. A PAN was declared for the landing - a shallow approach was made followed by a running landing. Nr1 engine was shut down prior to taxi iaw the emergency checklist. Emergency services advised after shutdown. The reporter confirms that several minor problems have recently been experienced related to FCUs. Nr1 FCU replaced and following ECU check for plug security the results were the same during the first ground run. The ECUs were swapped and the results were again the same during the second ground run. Following FCU replacement, ground run leak checks and an air test were satisfactorily carried out.

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<b>Make/mdl/srs:</b>	EMBRAER EMB145	<b>File Number:</b>	<b>200503378</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	09/05/2005
<b>Classification:</b>	Incident	<b>Location:</b>	Unknown
<b>Event Type:</b>	7200 Turbine engine 7700 Engine indicating system 7300 Engine fuel and control system Aircraft operation general Declared emergency Declared emergency - Urgency		

**Headline:**

Nr2 engine failed to re-start during air test. The cause of this event was failure of the ITT monitoring mode of one of the FADEC devices.

**Narrative:**

During single engine climb as part of a CAA air test, the aircraft levelled at FL190 and nr2 engine failed to re-start (with ITT indications showing only dashes). FADEC reset and re-start attempted using FADEC B and A with the same result. ITT increased a small amount to 48deg C then start rejected with ITT again indicating dashes. PAN declared and single engine recovery carried out back to Manchester. Investigation, including troubleshooting accomplished after this event, found no faults but the nr2 DAU was replaced before the next air test when the fault reoccurred. Following discussion with the engine manufacturer led to the replacement of the fuel nozzles and FPMU. A detailed report identified the cause as failure of the ITT monitoring mode of FADEC B7.6. This will be rectified by FADEC B8, and is being introduced on an attrition basis with compliance at next scheduled maintenance input.

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<b>Make/mdl/srs:</b>	DIAMOND DA40	<b>File Number:</b>	<b>200503590</b>
<b>Phase of Flight:</b>	Normal descent	<b>UTC Date:</b>	15/05/2005
<b>Classification:</b>	Incident	<b>Location:</b>	Bridgend (Glamorgan)
<b>Event Type:</b>	Aircraft/system/component 7201 Turbine engine - generally Declared emergency 7300 Engine fuel and control system Declared emergency - Urgency Any other event Aircraft return 7900 Engine oil system		

**Headline:**

Engine ECU warnings during training flight. PAN declared. Aircraft returned. Oil pressure sensor connector fault suspected. Investigation confirmed the fault, sensor replaced.

**Narrative:**

When power was reduced during descent, whilst performing the third of a series of practice forced landings, the engine stuttered momentarily with caution lights ECU A, ECU Band engine caution illuminated on the annunciator panel. The practice forced landing was discontinued, power was applied and a climb maintained to 3000ft. The emergency checklist was actioned, a PAN was declared and an expeditious approach and landing carried out back at Cardiff. On the ground, the manual ECU swap switch was transferred from the ECU A automatic to ECU B without any effect on the caution panel. The reporter confirms that this is the second incident involving ECU problems on an Academy aircraft within 2 months - 200502453 refers. Both aircraft are new, each with less than 100 hours total time. Engineering investigation concluded that the warnings were caused by a defective oil pressure sensor connector and not by loss of engine oil pressure. Following discussion between the UK agent and the engine manufacturer, it was agreed that the aircraft could fly for a maximum of approx 10 hours before the defect would be likely to recur. The defect had been scheduled for repair on 19 May 2005, but aircraft would have been grounded if warnings had recurred before rectification had been possible. Investigation, including examination of the data downloaded from the aircraft computers by the airframe manufacturer and the engine OEM, confirmed a fault with the 'P oil' sensor connector, which was replaced.

<b>Make/mdl/srs:</b>	MD HELICOPTER MD900	<b>File Number:</b>	<b>200504392</b>
<b>Phase of Flight:</b>	Approach	<b>UTC Date:</b>	04/06/2005
<b>Classification:</b>	Incident	<b>Location:</b>	Denham
<b>Event Type:</b>	7200 Turbine engine Aircraft/system/component 7300 Engine fuel and control system		

**Headline:**

Nr2 engine Electronic Engine Control (EEC) failure. Engine EEC connector was contaminated with oil. Contacts cleaned and resealed.

**Narrative:**

At 1200ft during approach, the aural warning sounded with an Integrated Instrument Display System (IIDS) "EEC Fail" caption. This occurred twice with two successful resets of the EEC but on the third occasion with no reset. The aircraft then landed with the nr2 engine in manual. Tech Log annotated accordingly. Investigation traced this fault to the nr2 engine EEC connector, which was contaminated with oil. Contacts cleaned and resealed.

<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200504527</b>
<b>Phase of Flight:</b>	Standing	<b>UTC Date:</b>	05/06/2005
<b>Classification:</b>	Incident	<b>Location:</b>	Benson
<b>Event Type:</b>	7200 Turbine engine 8000 Engine starting system 7300 Engine fuel and control system		

**Headline:**

Nr1 engine starter inadvertent engagement when nr1 engine FADEC selected on. Nr1 FADEC fault.

**Narrative:**

On selection of nr1 engine FADEC switch to 'on', nr1 engine starter engaged. When the FADEC was switched 'off' the starter stopped cranking. During subsequent investigation the fault was traced to the nr1 FADEC, which was replaced. Engine ground run and start function now satisfactory. Total aircraft hours 5585.20, total aircraft hours since inspection 85.00. Manufacturer advised.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200505134</b>
<b>Phase of Flight:</b>	Standing	<b>UTC Date:</b>	21/06/2005
<b>Classification:</b>	Incident	<b>Location:</b>	Warton
<b>Event Type:</b>	7200 Turbine engine 7300 Engine fuel and control system		

**Headline:**

Degrade caption on caution advisory panel.

**Narrative:**

On shutdown, during the one minute engine rundown period, the 'Degrade' caption illuminated. When the engine switches were both selected OFF, both the FADEC fail and the First Limit Indicator (FLI) fail captions illuminated on the nr1 engine. Following fault diagnosis, the FADEC was replaced and an air test was carried out with satisfactory results. However, after a further 40 minutes flight, the nr1 engine 'Degrade' caption recurred together with a 'RSCVR' caption. On this occasion the HMU was replaced and the original FADEC was refitted. A ground run and flight test were then satisfactorily completed. Further investigation/strip report requested. Investigation traced the fault to a degraded stepper motor, which was rectified.

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<b>Make/mdl/srs:</b>	AIRBUS A320	<b>File Number:</b>	<b>200505541</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	12/07/2005
<b>Classification:</b>	Incident	<b>Location:</b>	En Route
<b>Event Type:</b>	7200 Turbine engine 7700 Engine indicating system 7600 Engine controls 7300 Engine fuel and control system		

**Headline:**

Failure to obtain N1 rated thrust on nr1 engine. Investigation eventually led to replacement of the nr1 engine EEC was replaced. The fault has not recurred in five months since this action.

**Narrative:**

After a mild turbulence encounter at FL348 during cruise, ECAM "Eng 1 EPR Mode Fault" was annunciated. N1 mode pushbutton was recycled but EPR mode was not regained. ECAM actions were carried out and N1 rated mode indicated 90.5 N1 and both N1 maximum amber markers showed 90.5 but at CL thrust lever position on nr1 engine the maximum N1 available was 76.9%. Relevant parameters IAS 258kts, TAT -22deg C, SAT -48deg C and AUW 58.4 tonnes. After landing, the circuit breakers were

recycled for FADEC and EPR mode was regained. Investigation, including detailed inspection and monitoring 'on-wing', resulted in the sense line between the EEC and turbine casing connection being found loose; this was tightened and wire locked. Additionally, the nr1 engine relay box was replaced and engine runs carried out satisfactorily. Subsequently, the nr1 engine EEC was replaced. The fault has not recurred in the five months following this maintenance intervention.

CAA Closure: The hazard is adequately controlled by the actions stated above.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200506158</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	29/07/2005
<b>Classification:</b>	Incident	<b>Location:</b>	Lisburn, NI
<b>Event Type:</b>	7200 Turbine engine 7300 Engine fuel and control system 7700 Engine indicating system Aircraft return		

**Headline:**

FADEC failure.

**Narrative:**

In the cruise at 1000ft, 'FADEC FAIL' and 'FLI FAIL' captions were displayed, with needle 1 and torque indications for the nr1 engine disappearing and nr1 T4 freezing at approx 720deg C. No abnormal indications were received in respect of the nr2 engine and NR remained constant. FRC actions were carried out, with the nr1 engine being placed in manual and under twist grip control. The aircraft then returned and landed safely. Nr2 engine was shutdown normally and nr1 shutdown manually, after which FADECs and battery were switched off then on again. Six normal captions appeared on engine nr2 but nr1 still presented 'FADEC FAIL' and 'FLI FAIL' with no torque display. The procedure was repeated and this time all captions appeared as normal with no failure messages. Nr1 engine FADEC download carried out - N2 sensors 'A' and 'B' found defective and replaced. Engine run carried out with no recurrence of FADEC failure and no oil leaks.

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<b>Make/mdl/srs:</b>	AIRBUS A340	<b>File Number:</b>	<b>200506208</b>
<b>Phase of Flight:</b>	Approach	<b>UTC Date:</b>	25/07/2005
<b>Classification:</b>	Incident	<b>Location:</b>	New York JFK
<b>Event Type:</b>	Aeroplane flight path deviation Consequential events 2800 Fuel system Aircraft handling Missed approach Tailwind Aircraft operation general 3418 Flight management system 7300 Engine fuel and control system Aerodrome services / operations		

**Headline:**

Go-around at 150ft a/c due to a fast approach with a 10kt tailwind.

**Narrative:**

During approach with a 10kt tailwind, the aircraft speed was too fast for a safe landing, therefore a go-around was initiated. The problems were exacerbated by Fuel Control and Monitoring Computer (FCMC) 1 and 2 faults on approach and by the failure of the fuel auto transfer. The reporter comments that FCMC 1 and 2 were reset prior to fuelling and that both systems tested satisfactorily. QAR data for this event to be reviewed. Inquiries reveal that the crew took the correct action in the circumstances but that the problem is often exacerbated at the subject aerodrome by using a runway that is more convenient for the aerodrome operator than for the arriving aircraft. The subject operator's crews are well aware of this and this was an isolated event that was handled correctly. The FCMC problems were incidental and would not have contributed to the fast approach.

<b>Make/mdl/srs:</b>	AEROSPATIALE AS332	<b>File Number:</b>	<b>200507806</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	19/09/2005
<b>Classification:</b>	Incident	<b>Location:</b>	Sumburgh (SUM)
<b>Event Type:</b>	7201 Turbine engine - generally Declared emergency 7600 Engine controls 7200 Turbine engine Declared emergency - Urgency Diversion 3400 Navigation systems 7300 Engine fuel and control system Aircraft operation general		

**Headline:**

PAN declared due to nr1 engine power fluctuations. Diverted to Sumburgh. Full emergency declared by ATC. Fault traced to fault with the Digital Engine Control Unit. Unit replaced. No recurrence.

**Narrative:**

Initial troubleshooting identified a fault with the Digital Engine Control Unit (DECU). DECU replaced and aircraft returned to service, with nil recurrence. Subsequent repair report indicated that a short circuit had occurred on a PCB within the DECU.  
CAA Closure: No further CAA action practicable.

<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200508026</b>
<b>Phase of Flight:</b>	Circuit pattern - base leg	<b>UTC Date:</b>	16/09/2005
<b>Classification:</b>	Incident	<b>Location:</b>	Wattisham
<b>Event Type:</b>	7200 Turbine engine 7300 Engine fuel and control system 7600 Engine controls		

**Headline:**

Nr2 engine degrade caption in flight. Investigation concluded with the exchange of a faulty component, with no recurrence.

**Narrative:**

In the circuit, nr1 engine was switched to idle and when it wound down a degrade caption appeared for nr2 engine. Nr1 engine was then returned to flight and all engine indications were normal, although the degrade caption remained. Uneventful landing carried out and when the aircraft was closed down the memory code showed "STP MTR". Engineering advice sought and fault cleared when the aircraft was restarted. No further faults recorded on a test flight but the fault did recur the next month. Investigation identified a component that was suspect. Subsequently, this component was routed to the OEM for inspection. Owing to an administrative error, the component was not identified as an 'MOR' item and thus only subjected to the normal repair process, however, the OEM has confirmed that this event was caused by a failure within the quarantined component. They are unable to investigate further. There has been no recurrence of the failure since removal/replacement.

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**Make/mdl/srs:** EUROCOPTER EC135

**Phase of Flight:** Cruise

**Classification:** Incident

**Event Type:** 7200 Turbine engine  
7300 Engine fuel and control  
system  
7600 Engine controls

**File Number:** 200508309

**UTC Date:** 03/10/2005

**Location:** Bury St Edmunds

**Headline:**

Nr2 engine degrade caption illuminated in flight. Recurring fault.

**Narrative:**

During cruise a degrade caption illuminated on nr2 CDS with no other indications. Flight continued to destination followed by an uneventful landing and close down. The fuel metering units were swapped between engines and ground runs were carried out with no fault found. Fuel metering unit changed on advice from engine manufacturer and tested satisfactorily. Investigation progressed under 200803351, 200508026 (similar incident, same aircraft on 16 Sep 2005), 200508025.

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<b>Make/mdl/srs:</b>	AIRBUS A320	<b>File Number:</b>	<b>200508977</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	30/10/2005
<b>Classification:</b>	Incident	<b>Location:</b>	En Route
<b>Event Type:</b>	7200 Turbine engine Declared emergency Air Navigation Services Altitude related 7300 Engine fuel and control system 7600 Engine controls Declared emergency - Urgency Aircraft return 2200 Autoflight system Deviation-flight level/altitude Deviation-climb/descent Information provision Provision of ANS traffic information		

**Headline:**

Nr2 engine ECAM fault warnings for EIU (Engine Interface Unit), Fuel Valve and EPR Mode. PAN declared. Aircraft returned.

**Narrative:**

In the cruise at FL390, an "Eng2 EIU Fault" ECAM was displayed rapidly followed by an "Eng2 Fuel Valve Fault / Eng2EPR Mode Fault" message. ECAM drills were carried out, then N1 Mode reset to EPR Mode. EPR Mode re-engaged then failed again with the same ECAM warnings. Possible conflict occurred during the descent - avoiding action taken by LACC controller with other traffic. A decision was then made to return to BHX on advice from Maintrol. A PAN was declared and an uneventful landing made in N1 Mode with manual thrust. Investigation found that the EIU was replaced and sent for repair. The unit was cleaned and tested with no faults found. As far as can be determined, the unit operated correctly in the failure mode. Following consultations with Maintrol the crew returned to BHX and elected to make a PAN call as a precautionary measure.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200509190</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	03/11/2005
<b>Classification:</b>	Incident	<b>Location:</b>	Warton (Greater Manchester)
<b>Event Type:</b>	7201 Turbine engine - generally 7300 Engine fuel and control system		

**Headline:**

Engine nr2 'Degrade' caution illuminated. Stepper motor defect.

**Narrative:**

During training sortie, helipad departure initiated. Training mode armed and nr 2 engine set to training idle. Training mode automatically de-activated, nr2 'Degrade' illuminated. After landing, system status

page checked and showed nr2 engine 'STP-MTR' indication. Engines shutdown and system reset. All indications cleared, aircraft restarted and returned to operating pad. Training mode subsequently re-checked and worked successfully. Nr2 engine FADEC data download carried out which confirmed a stepper motor defect. Nr2 engine HMU (Fuel Control Unit) replaced with new item. No further reports.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC225	<b>File Number:</b>	<b>200509224</b>
<b>Phase of Flight:</b>	Maintenance phases	<b>UTC Date:</b>	28/10/2005
<b>Classification:</b>	Incident	<b>Location:</b>	Aberdeen (ADN)
<b>Event Type:</b>	7200 Turbine engine 7700 Engine indicating system 7300 Engine fuel and control system		

**Headline:**

Nr1 engine stall/overheat on start up post engine change.

**Narrative:**

Following an engine change, a ground run was being carried out on the nr1 engine. The start proceeded normally up to approx 48% N1 when a series of rapid loud bangs/pops were heard and yellow flames were observed to be shooting out of the nr1 engine exhaust. The engine was shut down and no residual flames were apparent. Immediately prior to shutdown the pilot observed an engine temperature exceedance of 1069deg C for 4 seconds. No fault could be found and a borescope inspection proved that there was no internal damage. The engine manufacturer was consulted and on their advice the engine was run with a replacement FADEC but the same problem occurred, at approximately the same N1 reading. The overtemp nr1 engine was removed and another engine fitted. Full ground runs and flight tests were then carried out with satisfactory results. During subsequent investigation the engine alternator stator was removed and the 8 pole permanent magnet rotor was found to be loose on the driveshaft and free to rotate independently. If the compressor was turned (by hand) the frictional forces would turn the permanent magnet rotor but as soon as it was touched by a finger it would stop. It was therefore diagnosed that, at start, the engine alternator is only providing compressor rotational speed to the FADEC (N1) and therefore the frictional forces would turn the magnet with the shaft. However, at approximately 48% N1 the FADEC switches from aircraft battery power to engine alternator power; the magnetic forces now applied to the alternator would stop the permanent magnet rotor. This would be seen by the FADEC as low (zero) N1 during start, so it would command more fuel (hence the flames). The FADEC would also fail itself and this would invoke the bleed valve fall back law of 85% bleed valve opening. The bleed valve going to 85% during the start cycle would cause the reported bangs/pops.

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<b>Make/mdl/srs:</b>	BAE BAE146	<b>File Number:</b>	<b>200509303</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	01/11/2005
<b>Classification:</b>	Incident	<b>Location:</b>	Birmingham
<b>Event Type:</b>	7200 Turbine engine Rejected take-off 7300 Engine fuel and control system		

**Headline:**

Take off rejected due to nr3 FADEC failure.

**Narrative:**

After clicking the TOGA buttons, on setting power the nr3FADEC failed. In an attempt to regain take off power, thenr3 power lever was pushed forward manually but no more than 60% could be achieved. The take off was therefore rejected and the aircraft returned to the stand. Nr3 FADEC HMA p/n 2-193-330-10 replaced.

<b>Make/mdl/srs:</b>	BOEING 767	<b>File Number:</b>	<b>200510330</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	18/12/2005
<b>Classification:</b>	Incident	<b>Location:</b>	Solo City
<b>Event Type:</b>	7200 Turbine engine Declared emergency Aeroplane flight path deviation Aircraft handling Declared emergency - Distress Diversion Overweight landing Declared emergency - Urgency 7300 Engine fuel and control system		

**Headline:**

LH engine surge during take-off. A/c diverted. LH Engine Control Unit (ECU) replaced.

**Narrative:**

On rotation, three loud bangs heard accompanied by a violent yaw to the left. Violent fluctuations noted on the LH engine instruments. Standard engine drills carried out for engine failure and MAYDAY declared. Surge suspected due to normal operation at idle power settings and passenger reports of flames from the engine. QRH 'Engine Limit Surge/'Stall Check' completed and the engine recovered to normal operation. Climb carried out to FL160, emergency downgraded to PAN and diversion initiated where an uneventful overweight landing completed. Fault investigation resulted in LH Engine Control Unit (ECU) being replaced.

<b>Make/mdl/srs:</b>	BAE BAE146	<b>File Number:</b>	<b>200510338</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	18/12/2005
<b>Classification:</b>	Incident	<b>Location:</b>	Birmingham
<b>Event Type:</b>	7200 Turbine engine Rejected take-off 7700 Engine indicating system 7300 Engine fuel and control system 7600 Engine controls		

**Headline:**

RTO due to engine N1 shortfall.

**Narrative:**

Nr1 engine 'FADEC Fault' warning activated as take off power selected. FADEC 1 de-selected and take off commenced but nr1 engine was slow to accelerate. N1 failed to exceed 60%. Take off rejected and the aircraft returned to the stand. FADEC system reset and ground runs carried out with satisfactory results. Recorded data showed that the take off had been rejected at 107kts (V1 was 114kts). Ops Manual Amendment Notice issued to remind crews that take offs must be rejected for a FADEC failure below 80kts but may be continued above 80kts provided N1 is within 1% of target.

<b>Make/mdl/srs:</b>	SAAB 340	<b>File Number:</b>	<b>200510397</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	17/12/2005
<b>Classification:</b>	Incident	<b>Location:</b>	Glasgow (GOW)
<b>Event Type:</b>	7200 Turbine engine 7700 Engine indicating system Propeller control Aircraft handling 7300 Engine fuel and control system		

**Headline:**

Erratic engine indications. ECU malfunctioned.

**Narrative:**

Following a standard RH departure from R/W23 an early RH turn was carried out with the P2 (PF) requesting climb power. Reducing the Constant Torque on Take Off (CTOT) by 2% resulted in an approx drop of 50-60% in torque and associated Intermediate Turbine Temperature (ITT) with intermittent auto-coarsen warning. Torque and ITT indications had returned to normal when a further reduction in CTOT caused a similar recurrence. Torque fluctuations occurred approx 4 times during the flight with the aircraft yawing to the left. The power levers were reduced to idle, aircraft levelled, and a visual circuit/uneventful landing was carried out by the P1 (LH) with the engines operating normally at idle (40% torque). Engine Control Unit (ECU), p/n 7086M60911s/n ECDE5251, changed and T4.5 trimmer adjusted.

<b>Make/mdl/srs:</b>	SIKORSKY S76	<b>File Number:</b>	<b>200510522</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	26/12/2005
<b>Classification:</b>	Incident	<b>Location:</b>	Sandown Park
<b>Event Type:</b>	7201 Turbine engine - generally 7700 Engine indicating system 7300 Engine fuel and control system Aircraft return		

**Headline:**

Nr1 engine digital control malfunction. Stepper motor fault.

**Narrative:**

During initial climb, nr1 engine control warnings ('DECUFAIL' plus 'stepper motor fault' ) illuminated on Integrated Instrument Display System (IIDS). N2 increased to 108% before rapidly rising to 112%. Engine control lever retarded and the helicopter landed.

CAA Closure: The HMU, p/n 0292858220, and DECU, p/n 70BMA01080, from the affected engine were replaced along with the DECU from the nr2 engine. The aircraft was then ground run and flight tested satisfactorily with no further defects reported. The manufacturer strip reports confirmed that a bench test of the nr1 HMU stepper motor drive circuit showed a failure mode which was consistent with the stepper motor 'freezing'. In addition, it was noted that the nr2 DECU had undergone an untimely reset due to the failure of an internal component. It was concluded that this nr2 DECU reset had caused a short term power stagnation on the nr2 engine, which would have induced a rapid acceleration of the nr1 engine to compensate. This may have caused a mismatch between requested and actual stepper motor position which caused the system to freeze. A strip report of the HMU confirmed that the stepper motor monitor circuit required re-adjustment.

<b>Make/mdl/srs:</b>	BAE BAE146	<b>File Number:</b>	<b>200600020</b>
<b>Phase of Flight:</b>	Normal descent	<b>UTC Date:</b>	02/01/2006
<b>Classification:</b>	Incident	<b>Location:</b>	
<b>Event Type:</b>	Flight crew Aircraft/system/component 7300 Engine fuel and control system 2200 Autoflight system Aircraft handling Diversion 7600 Engine controls Aircraft operation general		

**Headline:**

Overspeed to 305kts during descent.

**Narrative:**

Flight crew pre-occupied due to the FADEC being inoperative, and thus the autothrottle was inoperative, together with a diversion to Stansted due to the FADEC malfunction. Descent commenced in VS but the crew failed to reduce thrust manually and reduce selected speed to 0.69/295 kts. With speed continuing to increase, airbrake deployed which increased the rate of descent. Autopilot disconnected and correct speed regained after reselecting 295 on the MCP.

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<b>Make/mdl/srs:</b>	AIRBUS A340	<b>File Number:</b>	<b>200600117</b>
<b>Phase of Flight:</b>	En-route - holding	<b>UTC Date:</b>	08/01/2006
<b>Classification:</b>	Incident	<b>Location:</b>	Lambourne (LAM)
<b>Event Type:</b>	7200 Turbine engine Declared emergency 7300 Engine fuel and control system Declared emergency - Urgency 7700 Engine indicating system		

**Headline:**

PAN declared due to ECAM 'ENG 2 FADEC FAULT' caution. Nr2engine set to +/-53% N1 and approach flown with autothrust deselected.

**Narrative:**

Engine indications normal on ground. Following consultation with engineering, aircraft taxied to stand. Following troubleshooting ECU changed and ground run carried out satisfactory.

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<b>Make/mdl/srs:</b>	AIRBUS A320	<b>File Number:</b>	<b>200601961</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	13/03/2006
<b>Classification:</b>	Incident	<b>Location:</b>	En Route
<b>Event Type:</b>	7200 Turbine engine Noise / rattle 2200 Autoflight system 7600 Engine controls 7700 Engine indicating system 7500 Engine air system 7300 Engine fuel and control system		

**Headline:**

Nr2 engine stall during climb. Recurring problem. Variable Stator Vane (VSV) actuator malfunction.

**Narrative:**

The aircraft had been cleared to FL300 but whilst passing FL290 ATC requested level off at FL290. The autopilot was disengaged and abrupt level off initiated with a large thrust reduction by the autothrust. An audible pop was heard and ECAM 'Engine 2 stall' was displayed. All engine parameters were normal and with no recurrence, the flight continued to destination. Similar fault previously occurred 25 Feb 2006 - (200601479 refers) and again on 19 Mar 2006, (200602118 refers). Subsequent analysis showed that when autopilot was disengaged, there were large drops in engine parameters. Both engine's N1 decreased by 15% (N2 by 10%), EPR target dropped by 1.4units to 0.94 units along with actual EPR for each engine reducing by 0.4units. EGT's for both engines also began to reduce before autopilot was re-engaged and parameters returned to original values. This aircraft has experienced numerous similar problems. Troubleshooting failed to find any defects, however, following the incident on 19 Mar 2006, the stage 10 bleed valve was replaced and, following an engine ground run, the EEC was also replaced. On 8 Apr 2006, the engine had its 5th stall in flight and, on this occasion, all 7th and 10th stage bleed valves and solenoids were replaced but, during the subsequent engine ground run, the engine stalled again so

was changed. Engine (s/n V10926) had been fitted to the nr2 position at aircraft delivery in Mar 2001 and had accumulated 11553 FH / 11428 FC at time of removal. The engine was sent to the manufacturer for strip and analysis and they concluded that there was a malfunctioning of the VSV actuator and this, coupled with deterioration within the stages 4, 5, and 6 of the HP compressor, was the cause of the surging. Inspection of the VSV system was performed iaw Service Bulletin 72-0379 prior to engine disassembly, with no mis-rigging of the system evident. Rig Test of the VSV actuator confirmed that it was outside limits and had high midstroke leakage. Visual inspection of the HPC front casing assembly highlighted stage 4 and 5 trunnion bush deterioration and heavy wear on the stage 4 inner shroud assemblies. Stage 4, 5, and 6 rotor path lining wear and deterioration was also evident. The engine has been restored and is now back in service with the operator. Reliability of the VSV actuator within the operator's fleet is satisfactory, with only one unit changed in the 12 months prior to this event. At the time of this event, the operator's MTBUR was 110484. As at Nov 2006, the MTBUR had risen to 113142 and the manufacturers worldwide MTBUR at the same time was only 49024. Therefore, reliability of the actuator is not considered a problem. Additionally, Task 753200-11-1 VSV lubrication is carried out every 1200 FH and is included in operator's AMP.

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<b>Make/mdl/srs:</b>	DE HAVILLAND DHC8	<b>File Number:</b>	<b>200602029</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	15/03/2006
<b>Classification:</b>	Incident	<b>Location:</b>	Bristol International
<b>Event Type:</b>	Flight crew Rejected take-off 7200 Turbine engine Propeller control 7600 Engine controls 7300 Engine fuel and control system 7500 Engine air system		

**Headline:**

RTO at 40kts due to nr1 engine FADEC caution following auto feather selection during power application. Recurring fault.

**Narrative:**

During take-off sequence, the P2 noticed that autofeather had not armed so reselected it during power application. Shortly afterwards, 'Nr1 eng FADEC' caution light illuminated and take-off was aborted. The second take-off later the same day was again aborted at 40kts when the nr1 engine FADEC caution light again illuminated. The aircraft vacated the runway normally and returned to stand for engineering assistance. P 2.2 bleed valve p/n 540-0949-5 subsequently replaced and power assurance checks carried out with satisfactory results.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200602583</b>
<b>Phase of Flight:</b>	Normal descent	<b>UTC Date:</b>	29/03/2006
<b>Classification:</b>	Incident	<b>Location:</b>	Shropshire
<b>Event Type:</b>	7200 Turbine engine 7300 Engine fuel and control system		

**Headline:**

Nr2 engine FADEC degrade due to Hydro-Mechanical Unit (HMU) malfunction.

**Narrative:**

On lowering the collective lever in forward flight, the CDS displayed a 'Degrade' for nr2 engine, indicating FADEC malfunction. The aircraft was flown, iaw the Flight Manual checklist, back to base without incident. FADEC memory checked in flight and displayed 'STP-MTR 118'. During subsequent investigation, 'Degrade' caption was confirmed in association with code '118' (stepper motor). Defective RH HMU(p/n 0319928850) removed and replaced with p/n 0319858260 and vital point and duplicate inspections carried out. Ground run and leak checks satisfactorily completed and aircraft released to service. Total aircraft hours 6130.53, total aircraft hours since inspection 24.00, total HMU hours 2730.24, total HMU hours since inspection 24.00. Manufacturer advised.

<b>Make/mdl/srs:</b>	HAWKER SIDDELEY HS125	<b>File Number:</b>	<b>200602805</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	08/04/2006
<b>Classification:</b>	Incident	<b>Location:</b>	WELIN
<b>Event Type:</b>	7200 Turbine engine Declared emergency Engine shutdown/flameout Consequential events Declared emergency - Urgency 7700 Engine indicating system 7300 Engine fuel and control system 7600 Engine controls Overweight landing Aerodrome services / operations		

**Headline:**

Nr2 engine FADEC fault warning/engine failure in cruise. PAN declared. Checklist actioned. FADEC malfunction.

**Narrative:**

Engine troubleshooting carried out iaw MM CH 72-00-00, fault isolation section. Ground runs carried out with no further faults. The FADEC system has no manual reversion, for the engine to rundown due to a FADEC fault, both channels have to be faulty. Both the nr1 (p/n 1203KDC09-006) and nr2 (p/n 1203KDC09-007) FADEC computers were replaced with p/n 1203KDC09-008 as a precaution. The subsequent strip report of the suspect faulty FADEC computer is still ongoing, however, preliminary results from testing carried out to date indicate that there is a defect present that intermittently causes a lane change failure. The failure mode results in one control lane failing and attempting to relinquish control to the other channel but the other channel is unable to obtain control. The result would be an EEC failure and an engine shutdown. This information has been passed to EASA for their attention. CAA Closure: No further CAA action required at this time.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200603679</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	26/04/2006
<b>Classification:</b>	Incident	<b>Location:</b>	Warton
<b>Event Type:</b>	7200 Turbine engine 7300 Engine fuel and control system Aircraft return		

**Headline:**

FADEC stepper motor failure. A/c returned to base.

**Narrative:**

With training mode activated, when training idle was selected on nr1 engine, training mode was immediately cancelled by FADEC and nr2 engine 'DEGRADE' caution illuminated. Systems status page confirmed stepper motor failure. A/c returned to base. On shutdown when flight report page illuminated, Delta N1, Torque and FLI (Nr2) were lost from VEMD. All failed indications confirmed on system status page. Nr2 engine FADEC data download carried out and stepper motor channel failure confirmed. Nr2 engine HMU replaced.

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<b>Make/mdl/srs:</b>	CESSNA 172	<b>File Number:</b>	<b>200604623</b>
<b>Phase of Flight:</b>	Approach	<b>UTC Date:</b>	10/05/2006
<b>Classification:</b>	Incident	<b>Location:</b>	Gloucester-Staverton
<b>Event Type:</b>	Engine shutdown/flameout 2800 Fuel system Aircraft/system/component Incorrect fuel balance 7200 Turbine engine 7300 Engine fuel and control system 1200 Servicing Aircraft operation general		

**Headline:**

Diesel engine failure due to transient fuel starvation.

**Narrative:**

The aircraft departed with 135.1 litres of fuel (Jet A1), of which 120 litres was usable, for a planned flight of 7 hours total airborne endurance. With approximately 1 hour of endurance remaining and prior to approach, the low fuel lights started occasionally flickering during a roll, which was expected when the fuel level was less than ¼ tank, the pilot estimating approximately 20 - 25 litres of fuel remaining. With the aircraft rather too high on approach, a 'crab technique' using sideslip was employed to reduce altitude. At 100ft altitude, a small amount of power was applied but the engine "coughed". Full power was applied, the pump was checked as 'on' and the other fuel tank (LH) selected but the engine still failed to restart. The aircraft landed safely and towed to the ramp. FADEC lights 'A' and 'B' were flashing but the engine would not restart on either FADEC. Both fuel tanks were dipped, confirming 22.71 litres of useable fuel remaining which equated to a remaining endurance of approximately one hour. A computer download from the FADEC confirmed the engine had stopped due to fuel starvation. Fuel filters were checked but no contamination was found to impede fuel flow. The fuel system was bled and the engine operated

normally. It was believed the failure was due to fuel starvation caused by the fuel tank outlets of the selected tank being momentarily uncovered, resulting in an airlock and permanent stoppage of the engine. The reporter alleges, 1) shortcomings in the Pilot's Operating Handbook (POH) highlighting this eventuality as 'caution' and not warning; 2) POH also fails to mention that temporary fuel starvation due to a transient uncovering of the fuel outlets will result in the permanent stoppage of the engine; 3) and suggests that a different fuel selector be standardised allowing a choice of 'Left, Right and Both' tanks to be selected. The reporter has subsequently resolved that "in future, subtract an extra one hour from the endurance figures when planning a flight and refuel the aircraft by five hours of operation from full tanks or when it is calculated 30 litres of fuel is remaining in total - whichever is the soonest". EASA are responsible for the continued airworthiness of this aircraft and they have been informed of the reported occurrence. CAA have raised a number of issues relating to this occurrence and EASA are addressing any necessary corrective actions required.

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<b>Make/mdl/srs:</b>	AIRBUS A320	<b>File Number:</b>	<b>200605328</b>
<b>Phase of Flight:</b>	Maintenance phases	<b>UTC Date:</b>	21/06/2006
<b>Classification:</b>	Incident	<b>Location:</b>	Luton (LUT)
<b>Event Type:</b>	Aircraft/system/component 2800 Fuel system Line maintenance 7300 Engine fuel and control system Unknown		

**Headline:**

CFM56 engine Hydro-Mechanical Unit (HMU) failure and fuel leak during ground testing. Needle valve assembly retaining plate missing. Unable to determine cause.

**Narrative:**

Whilst performing a FADEC function test prior to an engine ground run, a needle valve assembly was ejected from the HMU by LP fuel pressure and parts were deposited on the ground. Subsequent inspection revealed that the needle valve assembly retaining plate was missing. HMU p/n 8061-526. The manufacturer stated that the unit had been tested before despatch without incident. The maintenance company found no evidence or record of the needle cover being removed. Therefore, they were unable to determine the circumstances that led to this failure. The function check prior to engine run up for test was deemed to be successful as the error was found.

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<b>Make/mdl/srs:</b>	BAE BAE146	<b>File Number:</b>	<b>200605948</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	08/07/2006
<b>Classification:</b>	Incident	<b>Location:</b>	
<b>Event Type:</b>	Aircraft/system/component Declared emergency Icing conditions 7300 Engine fuel and control system 3000 Ice/rain protection system 7700 Engine indicating system Declared emergency - Urgency		

**Headline:**

Nr4 FADEC failure during cruise, followed by RH zone 'High Temp' warning during descent in icing conditions and uncommanded increase in nr4 engine N1. Airframe ice build-up observed. PAN declared.

**Narrative:**

PAN declared to attain descent out of icing conditions. Nr1 FADEC failed on landing. During engineering investigation, nr4 engine ECU (p/n 2-203-493-06) replaced.

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<b>Make/mdl/srs:</b>	AIRBUS A330	<b>File Number:</b>	<b>200606062</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	12/07/2006
<b>Classification:</b>	Incident	<b>Location:</b>	
<b>Event Type:</b>	7200 Turbine engine Engine shutdown/flameout Declared emergency Fumes Declared emergency - Urgency Smoke or fumes in aircraft 7700 Engine indicating system 7300 Engine fuel and control system 2100 Air conditioning & pressurization		

**Headline:**

PAN declared due to loss of nr1 engine thrust. Burning smell reported after engine shutdown. A/c landed safely.

**Narrative:**

Following this occurrence, the EGT harness was replaced and the a/c operated for 5 days without any further reports. However, on 17 Jul 2007, an ECAM warning was triggered on taxi in, accompanied by fluctuating EGT. Troubleshooting was carried out, but no faults were found and the post flight report (PFR) showed nil faults. On taxi out for the next sector, an ECAM warning "ENG 1 MINOR FAULT" was generated with nr1 EGT indication fluctuating. PFR indicated that fault was due to the EGT system. Connectors on the EEC were removed, cleaned and found satisfactory. Visual inspection of EGT probes and harness was also carried out and found satisfactory. On 19 Jul 2007, the nr1 EEC was replaced as a

precaution and, at the same time, a further inspection of the EGT harness revealed a suspect connection at 301BVC terminal. The tag was replaced and an EEC test carried out satisfactorily. The a/c was then operated and monitored for over 6 months without any further problems. Although some problems have occurred due to damage to EGT cable insulation, a review of the engine manufacturer's technical information found no other reported occurrences of this defect, where it is suspected that the connection had a high resistance and would have caused the fluctuations at high temperature. Therefore, considered an isolated incident.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200606152</b>
<b>Phase of Flight:</b>	Circuit pattern - base leg	<b>UTC Date:</b>	10/07/2006
<b>Classification:</b>	Incident	<b>Location:</b>	Fairoaks
<b>Event Type:</b>	7200 Turbine engine Aircraft/system/component 7300 Engine fuel and control system 7700 Engine indicating system Aircraft operation general		

**Headline:**  
Stepper motor failure.

**Narrative:**

Downwind with training mode set to arm and nr1 engine set-to training idle, nr1 engine degrade caution illuminated and training mode automatically cancelled. System status page showed 'STP MTR' on failure page. After shut down, nr1FLI removed from FLI and system status page also showed 'TQ IND' and 'Delta N 1' failures (no torque on FLI and Delta N1 showed amber). Nr1 engine FADEC download carried out- data analysed and defect confirmed as stepper motor failure. Nr1 engine HMU (p/n 0319928800) replaced and subsequent ground run and function checks satisfactorily completed with nil defects. Aircraft/component total hours/total hours since inspection 2161.35/71. Manufacturer advised.

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<b>Make/mdl/srs:</b>	EMBRAER EMB145	<b>File Number:</b>	<b>200606458</b>
<b>Phase of Flight:</b>	Standing	<b>UTC Date:</b>	19/07/2006
<b>Classification:</b>	Incident	<b>Location:</b>	Geneva
<b>Event Type:</b>	7201 Turbine engine - generally 7300 Engine fuel and control system		

**Headline:**  
Abnormal indications on FADEC reset. FADEC 2B fault.

**Narrative:**

On resetting and alternating nr2 engine FADEC from 'A' to'B', a slight dull thud similar to a delayed light up was heard through the airframe. Several further reset alternatives were carried out, during which it was noted the event only occurred on changing FADEC from 'A' to 'B'. As the sound occurred, fuel flow was seen to increase momentarily along with a slight increase in ITT/N2. Nr2 engine then operated normally on both FADEC after a reset. The flight continued, with the event reproduced for engineers during a subsequent engine ground run at base. When FADEC 1 and 2 were transposed, the fault also

transposed. Engineering then refitted FADEC 1 to its correct position and replaced FADEC 2B (p/n 23078828).  
CAA Closure: No further CAA action required at this time.

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<b>Make/mdl/srs:</b>	AIRBUS A321	<b>File Number:</b>	<b>200606500</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	21/07/2006
<b>Classification:</b>	Incident	<b>Location:</b>	Paris CDG
<b>Event Type:</b>	Aircraft/system/component 3418 Flight management system 7600 Engine controls 2200 Autoflight system 7300 Engine fuel and control system Unknown		

**Headline:**

A failed to transition to 'CLB' after take-off. Unable to determine cause.

**Narrative:**

Passing 1500ft QNH on departure, it was noticed that there was no thrust lever 'CLB' prompt on the Flight Mode Annunciator (FMA) and the FMGC's displayed the amber 'EO' (Engine Out) prompt. Both engines were operating normally so 'EO' prompt was pressed, bringing the FMGCs back to normal mode. The reporter notes the aircraft had remained in Speed Reference System (SRS) until 'EO' prompt was pressed. Subsequent clean up was normal. The FMGC BITE and Trouble-Shooting Data (TSD) were requested for analysis but not collected from the a/c. The master FMGC activates the EO mode when an engine-out condition is detected. The EO mode remains active until engine recovery is detected or the EO amber clear prompt is pressed. Engine recovery is detected when the following conditions are met: both FADEC are sending valid data and Engine Master Switch is ON and N2 is greater than IDLE on both engines and both thrust levers have an angle greater than 5deg or, FMGS is in DONE or PREFLIGHT phase or, EO CLR prompt is pressed. Without the FMGC BITE and TSD it is not possible to determine the cause of this event and take appropriate action. No further occurrences reported on this a/c as at 6 Feb 2007. CAA Closure: The hazard is adequately controlled by the actions stated above.

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<b>Make/mdl/srs:</b>	AEROSPATIALE AS332	<b>File Number:</b>	<b>200606662</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	27/07/2006
<b>Classification:</b>	Incident	<b>Location:</b>	North Sea
<b>Event Type:</b>	7200 Turbine engine Declared emergency Consequential events 7700 Engine indicating system 7600 Engine controls Aircraft return Declared emergency - Urgency 7300 Engine fuel and control system Aircraft operation general		

**Headline:**

PAN declared due to nr1 "engine run up". Squawked 7700 displayed. A/c returned for VFR recovery. Electronic Control Unit (ECU) changed.

**Narrative:**

Engineering investigation traced fault to the Electronic Control Unit (ECU). ECU replaced iaw AMM. The part is monitored by the operator's reliability system and no adverse trends are apparent.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200606949</b>
<b>Phase of Flight:</b>	Normal descent	<b>UTC Date:</b>	02/08/2006
<b>Classification:</b>	Incident	<b>Location:</b>	Ballinderry
<b>Event Type:</b>	7200 Turbine engine Declared emergency Declared emergency - Urgency 7300 Engine fuel and control system		

**Headline:**

PAN declared due to nr2 engine failure. Landed safely.

**Narrative:**

Shortly after pilot reported leaving the frequency and descending to approach his destination, he declared a PAN due to engine failure. 'Eng Fail' and 'FADEC Fail' messages displayed. During the following power up, 'FLI Fail', 'Degraded' and 'FADEC Fail' messages displayed. During subsequent tests on the DECU, it was discovered that overspeed protection had triggered erroneously at 98% free turbine speed (normal threshold is 114%), causing the engine to shutdown. Further investigation by the manufacturer revealed that the DECU had suffered a loss of secondary power.

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<b>Make/mdl/srs:</b>	BOEING 737	<b>File Number:</b>	<b>200607217</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	12/08/2006
<b>Classification:</b>	Incident	<b>Location:</b>	
<b>Event Type:</b>	Engine shutdown/flameout 7830 Thrust reverser system 7300 Engine fuel and control system Diversion Overweight landing		

**Headline:**

Nr1 engine shutdown during climb due to 'Reverser' warning. A/c diverted for uneventful overweight landing. Thrust reverse control module changed.

**Narrative:**

A/c was operating with an ADD for EEC in alternate mode. The operator indicates that, following reactivation of the thrust reverser, the fault recurred. The Fault Isolation Manual (FIM) indicated a thrust reverser control module fault, which was changed. The a/c has flown in excess of 100hrs since with no repeat of the fault. Boeing have issued SB 737-78-1078 which addresses the problem of spurious thrust reverse indications. The operator is considering the incorporation of the SB.

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<b>Make/mdl/srs:</b>	BOEING 737	<b>File Number:</b>	<b>200607618</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	25/08/2006
<b>Classification:</b>	Incident	<b>Location:</b>	Manchester (MCT)
<b>Event Type:</b>	7200 Turbine engine Declared emergency Vibration/buffet 7700 Engine indicating system Declared emergency - Urgency Aircraft return Aerodrome services / operations 7300 Engine fuel and control system 7900 Engine oil system		

**Headline:**

Nr1 engine surge during climb. PAN declared. A/c returned and landed safely with AFS in attendance.

**Narrative:**

Passing 1000ft, a cyclic high frequency vibration was felt through the airframe with simultaneous aircraft yaw. Nr1 engine N1 indication also cycled to red line limits, with other parameters (EGT, N2 etc.) rising and falling in synchronicity. Nr1 engine was throttled back and symptoms disappeared. Checklist for engine limit/surge/stall carried out and attempt to advance nr1 thrust lever reproduced original symptoms. Nr1 engine operated at idle thrust for remainder of flight. PAN declared and a/c returned for an uneventful flap 15 approach and landing. After clearing the runway and a visual inspection by the fire service, the nr1

engine was shut down and the a/c taxied to stand. Engine inspection carried out iaw AMM 72-00-00. Borescope inspection carried out, no faults found but main engine control replaced iaw 73-21-01. Rigging and duplicate checks carried out, engine ground runs satisfactory. Additionally, MCDs inspected with no debris found.

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<b>Make/mdl/srs:</b>	BOEING 737	<b>File Number:</b>	<b>200607960</b>
<b>Phase of Flight:</b>	Normal descent	<b>UTC Date:</b>	05/09/2006
<b>Classification:</b>	Incident	<b>Location:</b>	London-Gatwick - LGW
<b>Event Type:</b>	7200 Turbine engine Declared emergency 7600 Engine controls 7700 Engine indicating system Declared emergency - Urgency Flight crew/ANS 7300 Engine fuel and control system		

**Headline:**

Suspected sub-idle engine condition. PAN declared. MEC fault.

**Narrative:**

Excessive engine N1 stagger became evident, especially at low thrust settings. At comparable thrust lever positions, N1 gauges differed by more than 15% with corresponding yaw handling characteristics. Sub-idling engine condition suspected. PAN declared and the aircraft entered the hold to investigate the fault. Normal flap 30 approach subsequently flown with autothrottle disconnected. Investigation established that, the absence of a 'LOW IDLE' light would indicate that there was not a sub-idle condition. During troubleshooting, N2 was found low during power check, which indicated an MEC fault. MEC (p/n 8062-210, s/n WYG66038) removed and sent for repair, which found several faults (high flows on CDP, high torque motor hysteresis), which were not considered to have contributed to this incident. However, the aircraft has operated for over 350 sectors without any further reports of throttle stagger. Additionally, this MEC had operated 33211 hours since last overhaul, which is in excess of its MTBR.  
CAA Closure: No further CAA action required at this time.

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<b>Make/mdl/srs:</b>	AIRBUS A319	<b>File Number:</b>	<b>200608712</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	21/09/2006
<b>Classification:</b>	Incident	<b>Location:</b>	Manchester (MCT)

**Event Type:** 7200 Turbine engine  
Declared emergency  
Consequential events  
Noise / rattle  
7300 Engine fuel and control system  
7800 Engine exhaust system  
7830 Thrust reverser system  
7700 Engine indicating system  
Declared emergency -  
Urgency  
Precautionary landing

**Headline:**

Nr2 engine loud noise and multiple engine ECAM warnings in cruise. PAN declared. ECU fault.

**Narrative:**

During cruise ECAM warning 'ENG (2) fuel TL fault' was displayed on three occasions followed in rapid succession by ECAM warnings 'ENG (2) FADEC A fault', 'ENG (2) FADEC B fault', 'ENG (2) REV fault', 'ENG (2) EIU fault', 'ENG (2) N1 discrepancy' and 'ENG (2) compressor fault'. The reporter states that ECAM actions were difficult to carry out therefore a PAN was declared although the flight continued to destination. Uneventful precautionary landing carried out without the use of reverse thrust. Engineering investigation carried out and root cause identified as Electronic Control Unit (ECU) failure. ECU changed, no further reports. Equipment's removal will be recorded as part of the reliability monitoring process. CAA Closure: The hazard is adequately controlled by the actions stated above.

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<b>Make/mdl/srs:</b>	BOEING 757	<b>File Number:</b>	<b>200609023</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	26/05/2006
<b>Classification:</b>	Incident	<b>Location:</b>	London-Gatwick - LGW

**Event Type:** 7200 Turbine engine  
Rejected take-off  
7700 Engine indicating system  
7600 Engine controls  
7300 Engine fuel and control system

**Headline:**

On selecting take off power, LH engine failed to accelerate fully. Take off rejected from 70kts and a/c returned to stand. EEC limiter failed.

**Narrative:**

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200609604</b>
<b>Phase of Flight:</b>	Hovering	<b>UTC Date:</b>	23/10/2006
<b>Classification:</b>	Incident	<b>Location:</b>	Gloucester-Staverton
<b>Event Type:</b>	7200 Turbine engine Consequential events 7300 Engine fuel and control system		

**Headline:**  
FADEC failure.

**Narrative:**

A/c in hover prior to transition, when nr1 engine 'FADEC FAIL' caption illuminated followed by nr2 engine 'DEGRADE' caption. Nr1 engine MODE SW selected to manual. A/c returned to dispersal area and shutdown iaw FRCs. Following the event the FADEC would not power up and memory could not be downloaded. FADEC (p/n 70EMM01020) returned to manufacturer for investigation, which revealed that the 15 volt main power supply was short circuited due to a capacitor failure. The operator has had no other similar problems caused by the same component failure and, therefore, considers this to be an isolated incident.

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<b>Make/mdl/srs:</b>	AEROSPATIALE AS332	<b>File Number:</b>	<b>200610578</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	21/11/2006
<b>Classification:</b>	Accident	<b>Location:</b>	North Sea
<b>Event Type:</b>	2700 Aircraft flight control 7200 Turbine engine Declared emergency Ditching 6700 Rotorcraft flight control system 7700 Engine indicating system 2200 Autoflight system Declared emergency - Distress 2300 Communication system 3130 Data recording 3270 Auxiliary landing gear 2560 Emergency equipment Aircraft operation general 7300 Engine fuel and control system		

**Headline:**  
UK Reportable Accident: Abnormal engine indications followed by increasingly restricted cyclic movement. A/c ditched in sea. No injuries to 17 POB. Dutch Authority investigation.

**Narrative:**

CAA Closure: The flight crew experienced a "huge" difference in Ng gas turbine rotor speed, which exceeded 7.5%, with nr1 engine Ng being unstable. A difference on exhaust gas temperature gas was also noted. PAN declared. 'OEI High' (one engine inoperative high) armed light observed to turn on and

off. Increasing flight control problems experienced during the subsequent descent after switching off the autopilot. MAYDAY declared. An emergency landing was carried out with flotation gear inflated. The investigation concluded that a malfunction of the engine control systems caused the differing engine rotor speeds but a technical explanation for this malfunction could not be found. The investigation did not reveal the cause for the reported flight control problem. All occupants evacuated the helicopter but the life rafts located in the sponsons were not used during the evacuation. The 4 crew members and 13 passengers were rescued from the water after approximately one hour and were transported ashore to Den Helder. One passenger suffered from light hypothermia but the other occupants were uninjured. Ten Safety Recommendations have been issued of which three are addressed to the operator, one is addressed to the UK Civil Aviation Authority, one to the aircraft manufacturer, one to EASA and one to the French DGAC. See Dutch Safety Board report completed 23 February 2010.

<b>Make/mdl/srs:</b>	BOEING 757	<b>File Number:</b>	<b>200611332</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	12/12/2006
<b>Classification:</b>	Incident	<b>Location:</b>	
<b>Event Type:</b>	Aircraft/system/component Diversion 7300 Engine fuel and control system 7200 Turbine engine		

**Headline:**

A/c diverted due to 'L ENG EEC' and 'L ENG LIMITER' EICAS messages. Upper and lower Dedicated Generator Control Units and LH EEC replaced. LH engine fan casing replaced due to water contamination.

**Narrative:**

Bleed Valve Control Unit (BVCU) and Electronic Engine Control (EEC) ground power checks carried out and BVCU fault code 07 led to LH engine EEC replacement and wiring checks. No reported recurrence. CAA Closure: No further CAA action required at this time.

<b>Make/mdl/srs:</b>	AEROSPATIALE AS332	<b>File Number:</b>	<b>200611467</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	18/12/2006
<b>Classification:</b>	Incident	<b>Location:</b>	En Route
<b>Event Type:</b>	7200 Turbine engine Engine shutdown/flameout Consequential events Declared emergency Aircraft operation general 6201 Main rotor - general 7700 Engine indicating system Declared emergency - Urgency 7300 Engine fuel and control system		

**Headline:**

Nr1 engine run up. PAN declared. D&D cell informed. ECU fault.

**Narrative:**

In cruise at 2000ft, a split in NG was noticed that was not evident on previous flight. A split of 600NG approx was noted at times with engines returning to normal. Inbound flight continued with engines closely monitored but, approx 25nm from destination, nr1 engine ran up with associated power light. Emergency actions complied with and uneventful approach and landing completed. Nr1 engine shut down on landing. Investigation ascertained that nr1 ECU had recently been subjected to scheduled replacement. Wire found damaged on nr1 ECU connector. Nr1 and 2 ECUs transposed, following which engines matched. The following day, the nr2 engine ran up and so nr2 ECU was replaced. Suspect ECU was intermittent on fit. Further investigation into the history of this ECU revealed that it had previously been removed for repair because of an engine run up. Details forwarded to engine OEM.

<b>Make/mdl/srs:</b>	AEROSPATIALE AS332	<b>File Number:</b>	<b>200611489</b>
<b>Phase of Flight:</b>	Approach	<b>UTC Date:</b>	19/12/2006
<b>Classification:</b>	Incident	<b>Location:</b>	Scott Platform
<b>Event Type:</b>	7200 Turbine engine Declared emergency Declared emergency - Urgency Aircraft return Aircraft operation general 7700 Engine indicating system Missed approach 7300 Engine fuel and control system		

**Headline:**

Go-around due to engine power fluctuations on approach to helipad. A/c returned and PAN declared, with one engine at idle and other under manual control. ECU fault.

**Narrative:**

Nr1 ECU scheduled replacement previous day. On first flight after replacement, nr1 engine run up. Wire found damaged on nr1 ECU connector. Airtest showed mismatch in Ng, therefore, nrs1 and 2 ECUs transposed and engines matched. On this occasion, nr2 engine ran up and nr2 ECU replaced. Suspected ECU was intermittent on fit.

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<b>Make/mdl/srs:</b>	DIAMOND DA42	<b>File Number:</b>	<b>200700109</b>
<b>Phase of Flight:</b>	Initial climb	<b>UTC Date:</b>	08/01/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Luton (LUT)
<b>Event Type:</b>	7200 Turbine engine Declared emergency Aircraft handling 7300 Engine fuel and control system Declared emergency - Distress Aircraft return 8500 Reciprocating engine		

**Headline:**

MAYDAY declared due to intermittent RH engine malfunction/power loss with momentary yaw to right followed by 'R ECUA FAIL' warning. Checklist actioned. A/c returned and landed safely.

**Narrative:**

Passing 2000ft during the initial climb a change in engine noise was noted and the a/c yawed momentarily to the right. This then continued intermittently followed by the 'R ECU A FAIL' caption illumination. Relevant checklist actioned to no effect. MAYDAY declared, a/c returned and uneventful approach and landing carried out with the RH engine operating normally. Defect confirmed as a broken wire on the nr1 crankshaft sensor cable on the RH engine. Wire repaired with Sensor Repair Kit p/n 02-9150-52100R2. All warnings reset and engine ground runs carried out. Associated MOR's reviewed, no common thread in the reports.

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<b>Make/mdl/srs:</b>	BOEING 747	<b>File Number:</b>	<b>200700113</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	04/01/2007
<b>Classification:</b>	Incident	<b>Location:</b>	En Route
<b>Event Type:</b>	Engine shutdown/flameout 2800 Fuel system Consequential events 7300 Engine fuel and control system		

**Headline:**

Nr3 engine rundown during the cruise. Hydro Mechanical Unit (HMU) and Electronic Engine Control (EEC) replaced.

**Narrative:**

Autothrottle disconnected followed by nr3 engine rundown and EICAS 'Eng 3 Fuel Vlv'. In-flight engine shutdown completed. One attempt made to restart the engine without success. Fuel balance was found to be very difficult due to fuel synopsis not indicating flows and nr1 cross feed being opened (Deferred Defect). The aircraft landed with 8.2T of fuel. Nr3 engine HMU and EEC replaced due to no power to the EEC. EGR satisfactory. Regarding the fuel imbalance, nr1 cross feed valve actuator replaced. Deferred defect cleared.

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<b>Make/mdl/srs:</b>	BOEING 747	<b>File Number:</b>	<b>200700117</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	05/01/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Manchester (MCT) TMA

**Event Type:** Aircraft/system/component  
Consequential events  
2200 Autoflight system  
2400 Electrical power system  
2700 Aircraft flight control  
3400 Navigation systems  
2100 Air conditioning &  
pressurization  
7300 Engine fuel and control  
system  
3000 Ice/rain protection  
system  
3418 Flight management  
system  
7900 Engine oil system  
Unknown

**Headline:**

Multiple system failure indications after establishing cruise.

**Narrative:**

System failure indications were displayed in respect of LH autopilot, autothrottle, trim systems, cabin temperature, nr3 engine EEC, LH IRS, 2R window heat and Captain's transfer bus. The following indications were also noted to be inoperative: EICAS flight control position, MMD pressure 1, 2 & 3, stabiliser and rudder trim, engine oil pressure, cargo temperature and nr3 engine EPR. QRH actioned and, after consultation with Maintrol, flight continued. EICAS 'Flaps Primary' message displayed on approach. C/b P6-6 A20popped. No damage, arcing, chafing or burning noted to c/b or wiring. C/b replaced as precaution and return sector proceeded without incident.

CAA Closure: The c/b that was found tripped was C851, AC BUS 3 distribution, and when open the systems indicated would not be powered and would generate the failure messages and indications seen. The replacement of this c/b was considered prudent as no other fault could be found on investigation. Examination of the c/b could not determine any defect and the reason for tripping could not be positively identified. The aircraft had experienced intermittent failures of the nr1 AC and DC busses during the previous four sectors due to unknown causes and subsequently a nr2 BTB trip and reset. The operator instigated further investigation of the electrical system which included the replacement of the nr2 GCU, and BTB interchange. The aircraft is being monitored for further problems.

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<b>Make/mdl/srs:</b>	BOEING 737	<b>File Number:</b>	<b>200700642</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	13/01/2007
<b>Classification:</b>	Incident	<b>Location:</b>	London-Gatwick - LGW

**Event Type:** 7200 Turbine engine  
Rejected take-off  
7700 Engine indicating system  
7300 Engine fuel and control system  
7500 Engine air system

**Headline:**

RTO at approx 100kts due to lack of power (67%) on nr2 engine. A/c returned to stand. Main Engine Control (MEC) fault/repared.

**Narrative:**

Nr2 engine had been slow to accelerate on previous two departures. Engine inspected and, according to reports, only the fuel filter was replaced at the time of the incident. Acceleration / deceleration runs carried out with results within the AMM limits. A/c was then dispatched without any further reports. Following inspection of the FDR trace, the main fuel pump and MEC were replaced and Variable Stator Vane (VSV) / Variable Bleed Valve (VBV) rigging checks carried out. Strip report for the MEC found that fuel flow metering appeared to be within limits as indicated by the CDP and Acceleration Schedules, however, the inconsistency in the governor system would affect the ability of the engine to accelerate and stabilise at any required throttle setting. Fault confirmed on test bench. MEC repaired iaw CMM.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200700906</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	03/02/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Llangernyw
<b>Event Type:</b>	7200 Turbine engine 2800 Fuel system 7300 Engine fuel and control system Aircraft return		

**Headline:**

Nr2 ECU fuel pressure caption illuminated in flight. Fuel prime pump switched on iaw FRC and caption cleared. A/c returned. Fault traced to nr2 HMU, which was replaced.

**Narrative:**

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<b>Make/mdl/srs:</b>	CESSNA 172	<b>File Number:</b>	<b>200700965</b>
<b>Phase of Flight:</b>	Initial climb	<b>UTC Date:</b>	03/02/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Shobdon
<b>Event Type:</b>	7201 Turbine engine - generally 7200 Turbine engine Declared emergency 7700 Engine indicating system 7300 Engine fuel and control system Declared emergency - Distress Aircraft return		

**Headline:**

MAYDAY declared due to partial engine failure on climb out. Aircraft returned.

**Narrative:**

FADEC indicated 38% power but with no system alarm shown. Engine continued to run at low power but did not respond to power level changes. Black smoke observed from engine. On investigation, the induction inlet hose connecting the turbocharger to the induction side had split lengthways. This is addressed in Thielert SB TM TAE 651-0006. This aircraft was pre-mod and has now been modified.

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<b>Make/mdl/srs:</b>	BOEING 737	<b>File Number:</b>	<b>200701171</b>
<b>Phase of Flight:</b>	Normal descent	<b>UTC Date:</b>	10/02/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Geneva
<b>Event Type:</b>	Aircraft/system/component Declared emergency Consequential events Air Navigation Services 3414 Airspeed/Mach indicating system 3416 Altitude system 7300 Engine fuel and control system 3410 Flight Environment Data Declared emergency - Urgency Operational issues		

**Headline:**

IAS Disagree, Alt Disagree and both EECs operating in Altn Mode.

**Narrative:**

During initial descent, with the aircraft carrying two faults (TCAS Inop and the Captain's PTT switch intermittent), the aircraft levelled at FL270 when 'IAS Disagree' activated on both PFDs. Both engine EECs then downgraded into 'Altn' mode. PAN declared to ATC, who then instructed descent to FL210. Flight crew informed ATC of the requirement to maintain FL270 and asked for altitude readout and groundspeed. The Captain's PFD indicated 500ft low with the correct speed while the First Officer's indicated the correct altitude but speed as 130kts. QRH consulted. ADIRU fault suspected but indications

and ATC feedback were confusing. Approach flown with Captain using his speed indication and the First Officer's altitude indication. Investigation being progressed under 200700788.

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<b>Make/mdl/srs:</b>	DIAMOND DA40	<b>File Number:</b>	<b>200702146</b>
<b>Phase of Flight:</b>	Taxi	<b>UTC Date:</b>	07/03/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Shoreham
<b>Event Type:</b>	Aircraft/system/component 7300 Engine fuel and control system		

**Headline:**

Unindicated ECU switch failure.

**Narrative:**

A satisfactory ECU function test had been completed as part of the pre-flight checks. After landing, instead of carrying out the after landing checks, the pilot conducted the pre-flight checks again by mistake and found that the ECU function test failed. On investigation, it was discovered that the engine had been running on ECU 'B' because of an open circuit condition on the 'FORCE B' switch. The engine normally runs on ECU 'A' but, when the switch fails, it runs on ECU 'B'. However, there is no indication to the pilot that the switch has failed and that only ECU 'B' is available. The Flight Manual states that if only one ECU (channel) is available, the pilot should land at the nearest suitable airfield. The occurrence was reported to the aircraft manufacturer who confirmed the following. The engine normally runs on ECU A AUTOMATIC. In this operating mode, the ECU switch generates a closed electric circuit. If FORCED ECU B is selected, the ECU switch generates an open electric circuit, whereas the switch cannot distinguish between FORCED ECU B position and a broken switch in the open circuit position. During the pre-flight ECU test, the ECU switch is tested which worked properly before this flight. If there is neither ECU A nor ECU B failure there is no indication if ECU A or ECU B is active, according to the installation design. The failure attracts attention when performing the pre-flight ECU test before the next flight. In flight the ECU B selection is only made in the event of an indicated engine problem, or that the automatic switch over function has not been carried out by the system software. If the pilot continues to see or feel an engine problem an emergency landing should be carried out, in accordance with the Flight Manual, as both ECU A and B are incapable of controlling the engine adequately. In addition, and following the pre-flight test, the switch selection to ECUB should be carried out iaw AFM prior to take-off, and any system failures would have been indicated to the pilot who would have abandoned the flight at that point. A failure of the switch is not annunciated until the pre-flight ground test is carried out, and this test would not normally be carried out in flight, and is inoperative with the power lever out of flight idle.

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<b>Make/mdl/srs:</b>	BOEING 737	<b>File Number:</b>	<b>200702502</b>
<b>Phase of Flight:</b>	Normal descent	<b>UTC Date:</b>	23/03/2007
<b>Classification:</b>	Incident	<b>Location:</b>	TIMBA
<b>Event Type:</b>	7200 Turbine engine Declared emergency Consequential events 7700 Engine indicating system Declared emergency - Urgency 7300 Engine fuel and control system		

**Headline:**

PAN declared due to nr1 engine spool down. Uneventful flap 15 landing carried out.

**Narrative:**

During en route descent, a slight left yaw occurred and nr1 engine N1 fluctuated then decreased from the commanded 80% to approx 40%. Autothrottle disconnected, engine igniters and anti-ice switched 'on' and after about 30 seconds the engine stabilised. After holding to assess the situation, the crew elected to make a two-engine flap 15 landing, which proceeded without incident. Subsequent investigation carried out and Engine Control Unit (ECU) found unserviceable. ECU replaced with no further reports. Component was returned to vendor for fault investigation which resulted in the location of some corrupted and faulty circuit components within the Digital Processing Module.

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<b>Make/mdl/srs:</b>	AEROSPATIALE AS332	<b>File Number:</b>	<b>200703326</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	18/04/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Aberdeen (ADN)
<b>Event Type:</b>	Declared emergency Consequential events Aircraft/system/component 7700 Engine indicating system 7600 Engine controls 6201 Main rotor - general Declared emergency - Urgency Aircraft handling Aerodrome services / operations Aircraft operation general Aircraft return 7300 Engine fuel and control system		

**Headline:**

PAN declared due to nr1 engine runaway. Aircraft returned.

**Narrative:**

Shortly after levelling at 3000ft, engine fluctuations were observed, accompanied by the aircraft yawing. 'Diff NG' and Power 1' warnings activated. Nr1 engine appeared to vary between 26000 and 35500 NG with nr2 engine compensating. When the lever was lowered and nr1 speed select lever taken out of the

gate, fluctuations ceased. There were no other abnormal indications. PAN declared and the aircraft returned. Investigation determined required replacement of the nr1 FCU (p/n 0164168420, s/n 605B) and nr1 ECU (p/n 0177698310, s/n 083AQ). The operator's reliability system will monitor these components for any adverse trends.

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<b>Make/mdl/srs:</b>	CESSNA 172	<b>File Number:</b>	<b>200703633</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	28/04/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Bournemouth
<b>Event Type:</b>	7201 Turbine engine - generally 7200 Turbine engine Aircraft/system/component Consequential events Aircraft return 2400 Electrical power system Aerodrome services / operations 7300 Engine fuel and control system 2300 Communication system		

**Headline:**

Multiple failures and decrease in engine noise on climb out. Aircraft returned.

**Narrative:**

While on climb out, pilot requested return to departure airport. When ATC asked the nature of the problem his transmission was partly incoherent although "FADEC" and "Low Bus" were heard. Full airport emergency declared. Aircraft landed safely but pilot stated he had no throttle. Aircraft stopped on taxiway with white smoke emanating from the engine. Investigation being progressed under 200700965.

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<b>Make/mdl/srs:</b>	AIRBUS A319	<b>File Number:</b>	<b>200704695</b>
<b>Phase of Flight:</b>	Normal descent	<b>UTC Date:</b>	24/05/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Lambourne (LAM)
<b>Event Type:</b>	Aircraft/system/component 7200 Turbine engine Consequential events 7300 Engine fuel and control system 7700 Engine indicating system 7600 Engine controls 2200 Autoflight system		

**Headline:**

On reduction of thrust at commencement of descent, ECAM warning 'Eng 2 sensor fault' was displayed with instruction to avoid rapid power changes. Manual thrust used instead.

**Narrative:**

ECAM actions completed but when power was applied from idle, it was found that significant power asymmetry occurred before engine power equalised. Autothrottle disconnected due inability to control engine power satisfactorily which resulted in significant increase in workload even using autopilot with manual thrust. Defect cleared by purging EC2line on No.2 engine. Frequency of EC2 line purging, currently 2A, will be reviewed if similar defects are reported.

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<b>Make/mdl/srs:</b>	AEROSPATIALE AS332	<b>File Number:</b>	<b>200704825</b>
<b>Phase of Flight:</b>	Initial climb	<b>UTC Date:</b>	29/05/2007
<b>Classification:</b>	Incident	<b>Location:</b>	North Sea
<b>Event Type:</b>	7200 Turbine engine 7600 Engine controls 7700 Engine indicating system Aircraft return 7300 Engine fuel and control system Aircraft operation general		

**Headline:**

Recurring 'Power 1' cautions accompanied by differential Ng indications. A/c returned to base.

**Narrative:**

Shortly after take-off, the 'Power 1' light illuminated with an associated nr1 engine Ng rise of around 500. Nr2 Ng then rose rapidly, stabilising at 33587 for 1.5secs before returning to normal. Nr1 engine parameters then also returned to normal. The crew elected to return to base where the power loss PCB was replaced. Similar symptoms were reported during the subsequent sector and the a/c again returned. Nr1 and nr2 ECUs were swapped to aid fault diagnosis and a flight test was carried out with no further similar problems being reported. Two days later, during initial climb an audible engine rundown was heard accompanied by master 'Warn' and 'Diff NG' cautions. Nr1 engine Ng was observed to be 4000 lower than nr2. The a/c returned to base and further investigation resulted in replacement of the nr2FCU. However, the fault recurred on the following day. The power loss PCB has been replaced and no further reports have been made. The reliability system will monitor this component to monitor for adverse trends.

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<b>Make/mdl/srs:</b>	AEROSPATIALE AS332	<b>File Number:</b>	<b>200704835</b>
<b>Phase of Flight:</b>	Standing	<b>UTC Date:</b>	30/05/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Eider Platform
<b>Event Type:</b>	7200 Turbine engine Declared emergency 7700 Engine indicating system 7300 Engine fuel and control system Declared emergency - Urgency 7600 Engine controls		

**Headline:**

With rotors running on offshore platform, nr2 engine ran up by approx 3000Ng and 'Diff NG' caption illuminated. Engine then stabilised but symptoms recurred after a few minutes. A/c shut down.

**Narrative:**

Nr2 ECU replaced and ground runs completed with satisfactory results. Similar fault occurred on the following day during return to Scatsta. PAN declared and flight continued to base. Nr2 Ng speed probe subsequently replaced. The operator's reliability system will monitor for any adverse trends.

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<b>Make/mdl/srs:</b>	AEROSPATIALE AS332	<b>File Number:</b>	<b>200704838</b>
<b>Phase of Flight:</b>	Initial climb	<b>UTC Date:</b>	31/05/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Scatsta
<b>Event Type:</b>	7200 Turbine engine 7600 Engine controls 7700 Engine indicating system 7300 Engine fuel and control system Aircraft return		

**Headline:**

Nr1 engine 'Diff NG' caution. A/c returned.

**Narrative:**

During initial climb, an audible engine rundown was heard accompanied by master 'Warn' and 'Diff NG' cautions. Nr1 engine Ng was observed to be 4000 lower than nr2. The a/c returned to base and further investigation resulted in replacement of the nr2 FCU. Investigation progressed under 200704825.

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<b>Make/mdl/srs:</b>	AEROSPATIALE AS332	<b>File Number:</b>	<b>200704868</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	01/06/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Scatsta
<b>Event Type:</b>	7200 Turbine engine Rejected take-off 7600 Engine controls 7700 Engine indicating system 7300 Engine fuel and control system		

**Headline:**

Nr1 engine 'Power' light illuminated on take-off. Momentary split in Ng observed. Take-off rejected.

**Narrative:**

Nr2 FCU replaced. Investigation being progressed under 200704825.

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<b>Make/mdl/srs:</b>	EMBRAER ERJ190 (190 / 195)	<b>File Number:</b>	<b>200705039</b>
<b>Phase of Flight:</b>	Landing	<b>UTC Date:</b>	04/06/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Alicante
<b>Event Type:</b>	3200 Landing gear Consequential events Fumes 2700 Aircraft flight control 7201 Turbine engine - generally 3250 Landing gear steering Aircraft handling Aeroplane flight path deviation 3242 Brakes 3260 Gear position & warning Aerodrome services / operations 7700 Engine indicating system Smoke or fumes in aircraft 7300 Engine fuel and control system Aircraft operation general		

**Headline:**

A/c difficult to control on landing.

**Narrative:**

During landing roll, a/c pulled right. This was corrected with rudder and brake but, on exiting runway, a/c pulled hard left. Fire service called as outer brake was smoking and indicating hot. After shut down, EICAS displayed 'No Dispatch Eng nr2'. Engine thrust reverser fault codes indicated failure of the CPU in FADEC and NVM (Non Volatile Memory) in FADEC. Cleared iaw Fault Isolation Manual. Operator investigation revealed that the F/O was having difficulty in controlling the a/c during the landing roll so the Captain took control. Subsequently, the F/O appeared to have inadvertently made a brake application as the a/c exited the runway, which is consistent with the symptoms described in the report. Crew debriefed

with the aid of retrieved Flight Data.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200705983</b>
<b>Phase of Flight:</b>	Standing	<b>UTC Date:</b>	28/06/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Glasgow (GOW)
<b>Event Type:</b>	7200 Turbine engine 7300 Engine fuel and control system		

**Headline:**

Following engine start, with both engines at idle, nr2 FADEC failed with associated loss of first limit indicator (FLI) display and master caution.

**Narrative:**

FADEC would not subsequently power up and no fault code could be retrieved - nr2 FADEC replaced.

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<b>Make/mdl/srs:</b>	DIAMOND DA40	<b>File Number:</b>	<b>200706533</b>
<b>Phase of Flight:</b>	Approach	<b>UTC Date:</b>	11/07/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Shoreham
<b>Event Type:</b>	7201 Turbine engine - generally Declared emergency 7300 Engine fuel and control system 7200 Turbine engine 7600 Engine controls Declared emergency - Urgency		

**Headline:**

PAN declared due to engine regulator problem/inability to achieve more than 75% power.

**Narrative:**

Uneventful landing with fire services on standby. The maintenance organisation have confirmed that a full download of the engine control unit was carried out and data sent to Thielert. Their response was that it indicated that the problem was related to the propeller hunting. The propeller was subsequently removed and sent to the maintenance organisation for repair. It has since been fitted onto another aircraft, with similar hunting problems. The propeller has been removed from the second aircraft, and instructions awaited from MT Propellers in Germany to either send back to the maintenance organisation, or to MT for further investigation.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200706625</b>
<b>Phase of Flight:</b>	Landing	<b>UTC Date:</b>	13/07/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Inverness (INS)
<b>Event Type:</b>	Fumes Aircraft/system/component Smoke or fumes in aircraft 2520 Passenger compartment 2400 Electrical power system 7300 Engine fuel and control system		

**Headline:**

Smoke and electrical burning smell in cabin. Electrical master box replaced.

**Narrative:**

A/c shut down. Visual inspection carried out with no defects apparent. Battery master switch selected 'on' and smoke re-appeared with FADEC Fail and associated visual warnings on Caution Advisory Display. Audio warnings heard through the ICS. A/c power switched off. Electrical master box, p/n: 4504-300-6 replaced. Ground run carried out satisfactory and a/c returned to service.

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<b>Make/mdl/srs:</b>	AIRBUS A320	<b>File Number:</b>	<b>200707176</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	30/07/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Edinburgh (EDI)
<b>Event Type:</b>	7200 Turbine engine Consequential events 7700 Engine indicating system 7300 Engine fuel and control system		

**Headline:**

Approaching FL350 in the climb, a loud bang was heard accompanied by an ECAM 'Eng 1 Stall' caution. FADEC auto re-ignition activated. All engine parameters normal. Flight continued.

**Narrative:**

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<b>Make/mdl/srs:</b>	BOEING 737	<b>File Number:</b>	<b>200707667</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	12/08/2007
<b>Classification:</b>	Incident	<b>Location:</b>	
<b>Event Type:</b>	7200 Turbine engine Declared emergency Consequential events 7700 Engine indicating system Aircraft handling Aircraft return Declared emergency - Urgency Aeroplane flight path deviation 7300 Engine fuel and control system Unknown 2200 Autoflight system		

**Headline:**

Nr2 engine thrust fluctuations. PAN declared. Aircraft returned.

**Narrative:**

At approximately 2000ft during the climb, the aircraft experienced a sudden yaw. All engine parameters were normal although the First Officer believed he had noticed a brief fluctuation of nr2 engine N1. The climb continued until approximately 7000ft when a second yaw occurred. Both pilots observed a brief 10% N1 fluctuation before engine parameters returned to normal. QRH actioned and a return to departure airport initiated. PAN declared. During approach, unknown traffic caused a TCAS TA alert, with neither flight crew able to make visual contact with conflicting traffic. An uneventful landing followed with emergency services in attendance. Investigation iaw AMM revealed no sign of FOD ingestion. MCDs checked with no debris found. Fuel tank sumps inspected for water with none found. Tube and drain holes checked for blockage or damage with none found. Fuel filter inspected with no sign of contamination or blockage found. During crew debrief, there was no indication of PMC failures (e.g. no ovhd light and/or master caution light illuminated). Suspect main engine control MEC failure. RH engine MEC replaced.

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<b>Make/mdl/srs:</b>	AEROSPATIALE AS332	<b>File Number:</b>	<b>200708225</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	22/08/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Aberdeen (ADN)
<b>Event Type:</b>	Aircraft/system/component 7700 Engine indicating system 7300 Engine fuel and control system Aircraft return		

**Headline:**

During climb out, both nr1 torque gauge indications fell to zero and first limit indicator (FLI) displays disappeared. A/c returned.

**Narrative:**

Torque transmitter, p/n 106CP 01Y05, s/n 0407, found defective. Component replaced. No further reports. Considered a random failure.

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<b>Make/mdl/srs:</b>	DIAMOND DA42	<b>File Number:</b>	<b>200708574</b>
<b>Phase of Flight:</b>	Standing	<b>UTC Date:</b>	25/07/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Shoreham
<b>Event Type:</b>	7200 Turbine engine 7300 Engine fuel and control system		

**Headline:**

ECU A failure due to water contamination of FADEC.

**Narrative:**

The pilot started the LH engine then the RH engine, at which point the LH engine stopped running. After restarting the LH engine an 'ECU A Fail' warning was displayed. The maintenance organisation was informed and a full engine run and download confirmed that ECU A had failed. The ECU was reset and the warning cleared. The download was sent to the engine manufacturer but it could not be determined why ECU 'A' had failed and why it did not switch to ECU 'B'. The FADEC was then sent to the engine manufacturer and run on a test cell, which revealed that it was contaminated with water. Such contamination is addressed by Recommended Service Bulletin No. RSB-42-036, issued by the a/c manufacturer in February 2007. The reporter proposes that this SB should be made mandatory.

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<b>Make/mdl/srs:</b>	AIRBUS A340	<b>File Number:</b>	<b>200708604</b>
<b>Phase of Flight:</b>	Normal descent	<b>UTC Date:</b>	04/09/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Washington Dulles
<b>Event Type:</b>	Engine shutdown/flameout Consequential events 7900 Engine oil system 7300 Engine fuel and control system		

**Headline:**

Nr3 engine shutdown as precaution due to high oil temperature indication. Nr3 engine oil temperature sensor subsequently replaced and system checks completed satisfactorily.

**Narrative:**

Minor ignition fault , nr3 electronic control unit (ECU) interchanged with nr2 engine, no further faults.

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<b>Make/mdl/srs:</b>	PIPER PA28	<b>File Number:</b>	<b>200708630</b>
<b>Phase of Flight:</b>	Taxi	<b>UTC Date:</b>	30/08/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Shoreham
<b>Event Type:</b>	7201 Turbine engine - generally 7300 Engine fuel and control system 2400 Electrical power system 7100 Powerplant package		

**Headline:**

Engine failure during taxi. Diesel engine wiring loom fault suspected.

**Narrative:**

Engine stopped during taxi after landing. Both Engine Control Units (ECU) circuit breakers found tripped and reset. Engine restarted and aircraft taxied direct to maintenance facility. Initial engineering investigation failed to reveal cause of circuit breakers tripping, therefore, a full download was carried out and sent to engine manufacturer for comment. Engine manufacturer analysed data and suspected problem caused by an internal short circuit of engine wiring loom. Loom replaced and new FADEC also to be fitted. Total aircraft hours 6119.08, total engine hours 66.60.

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<b>Make/mdl/srs:</b>	BOEING 757	<b>File Number:</b>	<b>200708808</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	08/09/2007
<b>Classification:</b>	Incident	<b>Location:</b>	En Route
<b>Event Type:</b>	7200 Turbine engine Aircraft/system/component 8000 Engine starting system 7600 Engine controls Aircraft operation general Diversion 7300 Engine fuel and control system		

**Headline:**

Diversion due to two engine faults that, in combination, resulted in a no despatch status.

**Narrative:**

Aircraft departed with RH engine start 'switch hold on' function unserviceable, with manual start required. During flight, RH engine limiter EICAS warning displayed which is a no despatch item in conjunction with engine start switch fault. Following discussion with Maintrol, aircraft diverted and landed safely. Switch unit subsequently removed. Operator investigation and strip report on the switch unit indicated a defect on the switch plate which could have caused the double fault. DGCU (Dedicated Generator Control Unit) found to "be out of calibration". Unit disassembled, cleaned, repaired, calibrated and tested to manufacturer's specification.

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<b>Make/mdl/srs:</b>	DIAMOND DA40	<b>File Number:</b>	<b>200710283</b>
<b>Phase of Flight:</b>	Initial climb	<b>UTC Date:</b>	17/10/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Coventry
<b>Event Type:</b>	Aircraft/system/component Consequential events 7300 Engine fuel and control system Aircraft return 8500 Reciprocating engine		

**Headline:**

ECU failure on climb out. Aircraft returned.

**Narrative:**

At 600ft during climb out on a training flight with a student at the controls, 'ECU B FAIL' annunciated and instructor took control. Company checklist actioned and fault reset, which immediately re-appeared. Visual circuit then flown and uneventful landing carried out. Subsequent to the event, a data download of the FADEC system indicated that the cam position sensor had failed. The replacement part was also checked by data download and no defect was apparent. Engine run satisfactory with no further defects noted.

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<b>Make/mdl/srs:</b>	AEROSPATIALE AS332	<b>File Number:</b>	<b>200710440</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	15/10/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Lagos
<b>Event Type:</b>	7200 Turbine engine Engine shutdown/flameout Consequential events 7700 Engine indicating system 7300 Engine fuel and control system 7100 Powerplant package Aircraft return		

**Headline:**

Nr2 engine rundown in cruise. A/c returned.

**Narrative:**

In the cruise at 3500ft, a slight yaw was felt followed by illumination of the 'ALARM' and 'DIFF NG' lights. Engine instruments were checked and the nr2 engine was found to be running at ground idle with nr2 torque indicating zero and 'OVSP2' also illuminated. Checklist actioned, engine shutdown and a/c returned. Following detailed inspection, and on engine manufacturer's advice, nr2 ECU and nr2 NTL harness replaced. Full ground runs, hover and flight tests were then carried out with satisfactory results.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200710481</b>
<b>Phase of Flight:</b>	Initial climb	<b>UTC Date:</b>	18/10/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Ripley
<b>Event Type:</b>	7200 Turbine engine 7300 Engine fuel and control system Aircraft operation general Aircraft return		

**Headline:**

Nr2 'Degrade' caution illuminated during simulated nr2 engine failure. Training mode cancelled and a/c returned. Nr2 HMU replaced.

**Narrative:**

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200710733</b>
<b>Phase of Flight:</b>		<b>UTC Date:</b>	30/10/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Henlow
<b>Event Type:</b>	7200 Turbine engine Aircraft/system/component 7300 Engine fuel and control system Aircraft operation general		

**Headline:**

Nr2 system 'Degrade' caption due to stepper motor failure.

**Narrative:**

In training mode, nr1 engine selected to idle and FLI (first limit indicator) initially displayed correct indications but then reverted to normal display and 'Degrade' caption displayed on nr2 system on CAD. Interrogation of fault displayed stepper motor fail message on nr2 system. Degrade caption and fail message disappeared on shut down and subsequent re-start. FADEC dump unable to be carried out (on advice from engine manufacturer) due to faulty equipment, therefore nr2 HMU replaced and nr and nr2 FADECs transposed. Nr2 HMU p/n 0319858090 removed - TSN 1598.10 hours. Following HMU replacement and transposition of FADECs, reduced content ground run and independent Check A, both satisfactorily completed, and aircraft released to service. Total aircraft hours 6119, total aircraft hours since inspection 90.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200712271</b>
<b>Phase of Flight:</b>	Standing	<b>UTC Date:</b>	13/12/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Rhuddlan
<b>Event Type:</b>	Aircraft/system/component 7200 Turbine engine 7300 Engine fuel and control system 7600 Engine controls		

**Headline:**

'FADEC FAIL' CDS caption when nr2 engine twist grip moved from neutral position.

**Narrative:**

Following engine shutdown after flight, twist grips of both engines were moved from their neutral position to check correct CDS captions illuminated following an intermittent problem earlier same day, post dual controls removal. Nr1 engine twist grip gave correct CDS indications when moved from neutral position. Nr2 engine twist grip did not give any CDS indication when moved from neutral position towards engine decelerate direction but gave a 'FADEC FAIL' CDS caption when moved towards accelerate direction. Nr2 HMU subsequently replaced.

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<b>Make/mdl/srs:</b>	AIRBUS A320	<b>File Number:</b>	<b>200712508</b>
<b>Phase of Flight:</b>	Approach	<b>UTC Date:</b>	20/12/2007
<b>Classification:</b>	Incident	<b>Location:</b>	London-Gatwick - LGW
<b>Event Type:</b>	7200 Turbine engine Consequential events Aircraft/system/component Missed approach 7300 Engine fuel and control system		

**Headline:**

Three loud bangs followed by ECAM 'ENG 1 STALL' warning during go-around. Banging ceased and ECAM message cleared. Engine parameters appeared normal. Subsequent approach uneventful. Recurring fault.

**Narrative:**

A similar incident was reported the following day, 21 Dec2007, during initial climb. Stall occurred when a/c level at 5000ft, with power reducing.  
CAA Closure: Subsequent to investigations, the P2T2 probe was replaced due to EECT2 temp input out of range. EEC and AIDS temp now correct. EEC installation and idle tests carried out satisfactorily with all indications normal. Nr1engine high power runs carried out including acceleration and deceleration with no faults.

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<b>Make/mdl/srs:</b>	AIRBUS A319	<b>File Number:</b>	<b>200712633</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	26/12/2007
<b>Classification:</b>	Incident	<b>Location:</b>	London-Heathrow - LHR
<b>Event Type:</b>	7200 Turbine engine Declared emergency Aircraft/system/component 7900 Engine oil system 7700 Engine indicating system Vibration/buffet Declared emergency - Urgency Aircraft return Aerodrome services / operations 7300 Engine fuel and control system		

**Headline:**

PAN declared due to numerous abnormal engine indications. A/c returned and landed safely.

**Narrative:**

During the take-off roll nr1 engine oil pressure indicated 50-60psi lower than nr2. As all other indications were normal the take-off continued. During climb, in addition to oil pressure fluctuations, nr1 EGT started to fluctuate significantly. At FL350 a noticeable vibration started to occur, apparently in synch with the EGT fluctuations. A PAN was declared and, after confirming that the engine was still producing power and that autothrust was still managing, the decision to return to Heathrow was made. An uneventful CAT1 autoland was carried out and, after a fire service inspection, the a/c continued to the stand without further incident.

CAA Closure: Investigation revealed the root cause to be internal fault with the EEC, which was subsequently replaced. Since this event there have been no further reports of this type on this aircraft and is not considered to be a fleet wide issue.

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<b>Make/mdl/srs:</b>	AIRBUS A321	<b>File Number:</b>	<b>200712678</b>
<b>Phase of Flight:</b>	Initial climb	<b>UTC Date:</b>	27/12/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Faro
<b>Event Type:</b>	Aircraft/system/component 2200 Autoflight system 3400 Navigation systems 3418 Flight management system 7700 Engine indicating system 7300 Engine fuel and control system 3410 Flight Environment Data 3420 Attitude and direction data system Aircraft return		

**Headline:**

A/c returned due to navigation system failure during climb. On subsequent departure, triple IRS failure occurred during initial climb, requiring further return.

**Narrative:**

During climb out an ECAM 'Thrust Lock' caution was displayed followed by 'GPS Primary Unavailable', which was then replaced by 'Nave ACC Downgrade' and loss of Autopilot / Autothrottle. A return was initiated and during descent further failure messages were received, including 'Eng 1 Overspeed', 'FADEC', 'Eng 1 EIU' and 'ADIRU 2 Fault'. Manual raw data approach flown for a visual circuit and uneventful landing. After conducting the relevant tests, the a/c was found operational and a second departure was initiated. Passing 3000ft an ECAM 'A/P Off, A/Thr Off' warning was displayed, followed by 'IRS 1+2', 'IRS 1+3' and 'IRS 2+3' fault warnings. A/c returned and landed safely.

CAA Closure: During subsequent investigations, IRS BITE and interface test performed satisfactorily. EIU 1 and FADEC reset and BITE performed with no faults detected. Engine run carried out by the crew for fault confirmation with none observed. Subsequent to further tests, ADIRU (air data inertial reference system) 2 replaced. Interface test carried out on IR 1 and 3 and system considered serviceable.

<b>Make/mdl/srs:</b>	BOEING 737	<b>File Number:</b>	<b>200712781</b>
<b>Phase of Flight:</b>	Taxi	<b>UTC Date:</b>	26/12/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Fuertaventura
<b>Event Type:</b>	7200 Turbine engine 8000 Engine starting system 7700 Engine indicating system 7300 Engine fuel and control system 7600 Engine controls		

**Headline:**

Nr2 engine slow to respond and failed to idle due to HMU fault.

**Narrative:**

On commencing taxi, it was noticed that the nr2 engine was very slow to spool up, taking 5-7 seconds to match nr1 engine parameters. During taxi several more thrust lever commands were made and each time nr2 was slow to respond. The a/c returned to stand and a BITE check was carried out together with a dry run actuator check with no faults found. Normal start of nr2 attempted with engine failing to reach idle condition. Start aborted and Maintrol informed. Following further checks, a successful start was achieved and a ground idle run completed with all parameters appearing normal. On the following day, after an uneventful flight and landing, on exiting the runway an 'Engine Fail' indication was observed in respect of the nr2 engine. The engine was shut down and the a/c taxied to stand without further incident. A subsequent EEC interrogation showed no fault. An engine ground run was initiated but on start up the engine hung at 48% N2. An HMU internal fault was suspected and the nr2 HMU, which had been installed at manufacture, was replaced. An engine ground run was then carried out with satisfactory results. This was followed by an uneventful full power take-off.

CAA Closure: Operator ceased operation September 2008, no further investigation practical.

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<b>Make/mdl/srs:</b>	AIRBUS A321	<b>File Number:</b>	<b>200712926</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	06/11/2007
<b>Classification:</b>	Incident	<b>Location:</b>	Madrid
<b>Event Type:</b>	7200 Turbine engine Consequential events Declared emergency Vibration/buffet Declared emergency - Urgency Precautionary descent Diversion Overweight landing 7300 Engine fuel and control system 7700 Engine indicating system		

**Headline:**

In cruise ECAM 'ENG 2 STALL' caution displayed accompanied by vibration. Thrust reduced to idle, PAN declared and a/c diverted for uneventful overweight landing.

**Narrative:**

During diversion all engine indications remained normal. On investigation the only anomaly found was contamination of the EEC Pb sense line filter. The EEC was changed for a post SB73-0186 assembly, which has the Pb sense line filter removed. A fleet modification programme is in progress. The a/c operated 419 hours between this incident and engine removal without recurrence.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200800362</b>
<b>Phase of Flight:</b>	Maintenance phases	<b>UTC Date:</b>	12/01/2008
<b>Classification:</b>	Incident	<b>Location:</b>	Glasgow (GOW)
<b>Event Type:</b>	Aircraft/system/component 2800 Fuel system 7300 Engine fuel and control system		

**Headline:**

HMU (HP/LP) pump manual throttle stiff to operate.

**Narrative:**

On operating the throttle towards increase fuel flow following replacement of nr1 engine HMU (HP/LP) pump assembly, it was found that excessive force was required to move beyond the neutral detent. 'Eng Manual / Degrade' caption illuminated briefly and then extinguished. Investigation found the airframe linkage to have full and free movement but when the HMU manual throttle lever was operated, it was found to be stiff. After further attempts to move the operating lever, it became possible to move the arm through 360deg as if internal stops had failed. Nr1 engine HMU (HP/LP) pump assembly replaced. Investigation being progressed under 200711586.

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<b>Make/mdl/srs:</b>	AIRBUS A319	<b>File Number:</b>	<b>200800929</b>
<b>Phase of Flight:</b>	Standing	<b>UTC Date:</b>	31/01/2008
<b>Classification:</b>	Incident	<b>Location:</b>	Lisbon
<b>Event Type:</b>	7200 Turbine engine Line maintenance 7300 Engine fuel and control system 7600 Engine controls		

**Headline:**

Engine EEC software mis-match.

**Narrative:**

Prior to departure, ACARS message received from Maintrol advising crew to only perform a full power take-off due to incompatible engine EEC software. TOGA take-off completed without incident. Reporter comments that nr2 engine was changed 23 Jan 2008 and aircraft offered for service on 30 Jan 2008 with engine mis-match undetected. Aircraft then flew five sectors before any notification received about a possible engine mis-match.

CAA Closure: The engine installed on this aircraft was a lease engine and had been provided by the engine manufacturer and was inadvertently supplied with an EEC to a standard which was not compatible to the operator's fleet. The software supplied was approved for use on the V2500-A5 engine, but at the time of the event this modification standard had not been embodied on the operator's fleet. The new software introduces an increase in the amount of de-rate that can be used when compared to the maximum de-rate amount currently available. Therefore, a condition could exist where there is thrust asymmetry between the two engines. Since this event, the operator has launched a modification to embody the latest software across their fleet. Until fleet embodiment of the modification and to control and prevent further intermix issues, three changes have been raised. Two introduce cautions into the AMM stating that during engine/EEC replacement the engineer must ensure that the software standards are compatible. The third change adds a caution into the IPC stating the pre and post mod software standards are not intermixable. As a final action, a similar caution has been added to the operator's engine change task list.

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<b>Make/mdl/srs:</b>	DIAMOND DA40	<b>File Number:</b>	<b>200800972</b>
<b>Phase of Flight:</b>	Circuit pattern - base leg	<b>UTC Date:</b>	29/01/2008
<b>Classification:</b>	Incident	<b>Location:</b>	Coventry
<b>Event Type:</b>	7201 Turbine engine - generally Declared emergency 7300 Engine fuel and control system Declared emergency - Urgency 7700 Engine indicating system		

**Headline:**

PAN declared due to ECU failure.

**Narrative:**

CAA Closure: Engineer attended aircraft and diagnosed a MAP sensor failure due to a fractured wire. The operator confirms that there have been no further occurrences of this nature.

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<b>Make/mdl/srs:</b>	DIAMOND DA40	<b>File Number:</b>	<b>200801476</b>
<b>Phase of Flight:</b>	Circuit pattern - base leg	<b>UTC Date:</b>	16/02/2008
<b>Classification:</b>	Incident	<b>Location:</b>	Cranfield (CIT)
<b>Event Type:</b>	7200 Turbine engine Consequential events 7300 Engine fuel and control system 2800 Fuel system		

**Headline:**

Double ECU failure in the circuit, resulting in very rough running engine. Checklist actioned, priority landing requested, glide configuration adopted and safe landing carried out.

**Narrative:**

The defect was investigated with the assistance of the engine manufacturer with the following components replaced in accordance with the manufacturer's instructions; HP and LP fuel pumps, FADEC and rail pressure sensor valve. System check carried out and fed back to the manufacturer. There have been no further reports of this defect on this aircraft. Subsequent strip reports have indicated that the fuel pumps were faulty.

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<b>Make/mdl/srs:</b>	AIRBUS A340	<b>File Number:</b>	<b>200801555</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	17/02/2008
<b>Classification:</b>	Incident	<b>Location:</b>	London-Heathrow - LHR
<b>Event Type:</b>	7200 Turbine engine Rejected take-off 7300 Engine fuel and control system		

**Headline:**

Take-off rejected from 90kt due to nr3 engine FADEC fault.

**Narrative:**

Fuel gear motor, stop mechanism and VBV sensor replaced. FADEC motoring and power assurance completed with satisfactory results.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>200803351</b>
<b>Phase of Flight:</b>	Hovering	<b>UTC Date:</b>	02/04/2008
<b>Classification:</b>	Incident	<b>Location:</b>	Wattisham
<b>Event Type:</b>	7201 Turbine engine - generally Rejected take-off 7300 Engine fuel and control system		

**Headline:**

'Nr1 Degrade' caption activated as the aircraft lifted into the hover. Landed and closed down. On closing down both engines, 'FADEC' caption replaced the 'Degrade' warning. HMU replaced.

**Narrative:**

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<b>Make/mdl/srs:</b>	BOEING 737	<b>File Number:</b>	<b>200803424</b>
<b>Phase of Flight:</b>	Maintenance phases	<b>UTC Date:</b>	06/04/2008
<b>Classification:</b>	Incident	<b>Location:</b>	Maintenance
<b>Event Type:</b>	7200 Turbine engine 7600 Engine controls 7300 Engine fuel and control system 7700 Engine indicating system Any other event		

**Headline:**

During ground run nr2 engine failed to respond to power lever commands. HMU replaced.

**Narrative:**

The nr2 EEC had been replaced after interrogation had shown Maintenance Message 73-31032 (MSV always open). During the subsequent ground run the nr2 engine failed to respond to power lever commands. The engine also failed to respond with the EEC switched off and on both occasions there were no associated flight deck indications. The only EEC fault recorded was the original Maintenance Message. After further investigation the HMU was replaced, after which the engine responded correctly to commands and the Maintenance Message cleared.

CAA Closure: Subsequent investigations revealed that a solenoid valve within the HMU that regulates which nozzles are in use at any given thrust configuration became stuck in the full open position. The valve was within a high time P07 HMU (early model) and could have malfunctioned for any number of reasons, such as age related failure or contamination. Due to the valve failure, the fuel that would normally be distributed to 10 nozzles was sent to all forty nozzles, resulting in a localized fuel/air ratio too lean to support combustion. The engine would have operated fairly normally at high power settings. HMU replaced and operated satisfactorily.

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<b>Make/mdl/srs:</b>	AIRBUS A330	<b>File Number:</b>	<b>200805424</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	29/05/2008
<b>Classification:</b>	Accident	<b>Location:</b>	Manchester (MCT) (Greater Manc
<b>Event Type:</b>	Rejected take-off 3200 Landing gear Fire Evacuation 3210 Main landing gear 3242 Brakes 3244 Tyres 7700 Engine indicating system 7300 Engine fuel and control system 2900 Hydraulic system 5101 Airframe structure - general Aerodrome & ground aids 3260 Gear position & warning Aerodrome services / operations 3130 Data recording 2300 Communication system 3240 Wheels & brakes		

**Headline:**

AAIB Initial Notification: Smoke from/damage to LH MLG/tyres after rejected take-off. A/c stopped on taxiway. Precautionary disembarkation. No injuries to 250 POB. AAIB Field investigation.

**Narrative:**

CAA Closure: The aircraft suffered a loss of Engine Pressure Ratio (EPR) information for the left engine during the take-off roll. The take-off was rejected at about 120kts. During the deceleration the brake reaction rod on the LH main rear (nr5) wheel was released from its mounting, the brake pack rotated and caused damage to the brake hydraulic lines. The aircraft was decelerated to taxi speed and taxied clear of the runway to a parking area. During taxi two tyres deflated and most of the contents of the green hydraulic system were lost. The investigation found that the pin attaching the brake reaction rod to the brake unit had suffered an overload failure; evidence suggested that it was in a weakened condition following an earlier, unidentified event. The EPR problem was the result of a failure in a pressure sensing tube that supplied the FADEC on the Nr1 engine. See AAIB Bulletin 11/2009, Ref: EW/C2008/05/04.

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<b>Make/mdl/srs:</b>	AIRBUS A320	<b>File Number:</b>	<b>200807773</b>
<b>Phase of Flight:</b>	Normal descent	<b>UTC Date:</b>	20/07/2008
<b>Classification:</b>	Incident	<b>Location:</b>	London-Gatwick - LGW
<b>Event Type:</b>	7200 Turbine engine 7700 Engine indicating system 2400 Electrical power system 7300 Engine fuel and control system		

**Headline:**  
Nr1 engine overspeed protection failure.

**Narrative:**  
During descent an ECAM 'ENS 1 Sensor Fault' warning was displayed, followed by 'Eng 1 IDS Lo Oil Press' and associated 'Eng 1 Overspeed Protection Fault'. Nr1 IDS selected off and APU started as precaution. ECAM actions followed and a/c landed safely.

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<b>Make/mdl/srs:</b>	BOEING 757	<b>File Number:</b>	<b>200808001</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	26/07/2008
<b>Classification:</b>	Incident	<b>Location:</b>	Athens
<b>Event Type:</b>	Aircraft/system/component 3414 Airspeed/Mach indicating system 2200 Autoflight system 3416 Altitude system 2700 Aircraft flight control 7300 Engine fuel and control system 2100 Air conditioning & pressurization 3400 Navigation systems 3410 Flight Environment Data		

**Headline:**  
Uncommanded autopilot disconnect and multiple EICAS warnings.

**Narrative:**  
In cruise at FL370, an intermittent EICAS 'Overspeed' warning was observed accompanied by 'Autothrottle Disc', although both ASIs showed speed well below 'Barber's Pole'. A succession of EICAS annunciations followed. The RH altimeter was fluctuating noticeably and the RH IVSI showed a descent rate of about 300fpm, which was inconsistent with LH and standby flight instruments. QRH drill completed to turn off both EECs. With both autopilot and autothrottle re-engaged, and only advisory or status messages prevailing, the flight continued to the planned destination, which was one hour away. Maintrol were advised of the a/c's status and reported that the a/c had a history of this problem. The remainder of the flight was uneventful, except for one further uncommanded autopilot disconnect during descent. CAA Closure: Faulty Nr2 Air Data Computer found as root cause.

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<b>Make/mdl/srs:</b>	AIRBUS A319	<b>File Number:</b>	<b>200808865</b>
<b>Phase of Flight:</b>	Normal descent	<b>UTC Date:</b>	16/08/2008
<b>Classification:</b>	Incident	<b>Location:</b>	Biggin (BIG)
<b>Event Type:</b>	2700 Aircraft flight control 7200 Turbine engine Declared emergency Declared emergency - Urgency 7300 Engine fuel and control system		

**Headline:**

PAN declared due to an indication that when the slats extended, engines retarded to flight idle. Aircraft subsequently completed normal holding patterns.

**Narrative:**

CAA Closure: Engine FADEC fault shows huge lag between slat selection and nr2 thrust lever response. Engine did eventually respond but slowly. Nr2 engine EEC changed and tested with no further fault found. Aircraft has since operated 17 sectors with no recurrence. Consider an aircraft technical defect, which was correctly displayed and dealt with.

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<b>Make/mdl/srs:</b>	MD HELICOPTER MD900	<b>File Number:</b>	<b>200809203</b>
<b>Phase of Flight:</b>	Unknown	<b>UTC Date:</b>	07/08/2008
<b>Classification:</b>	Incident	<b>Location:</b>	Netheravon
<b>Event Type:</b>	7200 Turbine engine Noise / rattle Aircraft handling 7900 Engine oil system 7300 Engine fuel and control system		

**Headline:**

LH engine power turbine failure.

**Narrative:**

Whining noise heard from transmission/engine area during recovery from demonstration manoeuvre that involved a relatively rapid power demand from zero torque, to approx 60% in about three seconds. After landing, a 'Check Exceedance' message was displayed on Integrated Instrument Display System (IIDS) that related to low oil pressure on LH engine. Further check showed that oil pressure had fluctuated between approx 75% and 88%, with a further eight exceedance logs generated in quick succession. During engine shut down, a loud mechanical grinding sound was heard from rear of aircraft, and on inspection, LH engine oil filter bypass indicator had 'popped'. During engineering inspection of LH ECU, power turbine wheel found damaged with a missing blade that could not be located. ECU removed and sent for strip analysis. Total aircraft hours/cycles/landings 6466.55/3327/18951, total engine hours 5969.08, total engine hours since overhaul/repair 2975.91. Manufacturer advised.

CAA Closure: The manufacturer confirmed the failure and indicated a possible cause as 'continued operation after a hotstart'. The aircraft records do not show a hot start as having occurred. No further information forthcoming.

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<b>Make/mdl/srs:</b>	AIRBUS A320	<b>File Number:</b>	<b>200810165</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	13/09/2008
<b>Classification:</b>	Incident	<b>Location:</b>	Oporto
<b>Event Type:</b>	7200 Turbine engine Vibration / rattle / noise Noise / rattle Vibration/buffet 5300 Aircraft's fuselage structure Diversion 7300 Engine fuel and control system		

**Headline:**

Nr2 engine stall in cruise. Aircraft diverted.

**Narrative:**

At FL350 and Mach 77 in cruise, a loud bang was heard with airframe shudder likened to flying through jet wake, although none evident. ECAM caution 'Eng 2 stall' momentarily displayed, although all engine parameters were normal. On consultation with company engineering, decision made to return to UK and aircraft diverted with no further incident.

CAA Closure: Nr7C bleed handling valve replaced, engine power assurance test carried out with no faults. Shop report confirmed a leakage. A further occurrence was reported 28 October 2008, which was investigated with no faults found. A third occurrence dated 17 December 2008 led to replacement of the nr2 engine electronic engine control with an upgraded unit. Manufacturers mod SB A320-73-1088 embodied. No further related occurrences have been reported.

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<b>Make/mdl/srs:</b>	BOEING 757	<b>File Number:</b>	<b>200811102</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	27/09/2008
<b>Classification:</b>	Incident	<b>Location:</b>	Koksy (KOK)
<b>Event Type:</b>	Aircraft/system/component 2400 Electrical power system 7300 Engine fuel and control system 3600 Pneumatic system 7500 Engine air system 2200 Autoflight system Fuel burn off Aircraft return 2100 Air conditioning & pressurization		

**Headline:**

Multiple electrical system failures during climb. QRH actioned, fuel dumped and a/c returned.

**Narrative:**

Climbing through FL275, the Master Caution annunciated in association with the following EICAS messages: 'R Gen Off'; 'L/R Utility Buses'; 'R EEC'; 'R Bleed'; 'R IsIn'. Centre autopilot and autothrottle

dropped off line. Left autopilot selected and autothrottle re-engaged. QRH drills completed, MEL and Maintrol consulted, fuel dumped and a/c returned. Temperature in flight deck dropped to six degrees with light icing apparent on overhead circuit breaker panel. Investigation progressed under 200810659.

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<b>Make/mdl/srs:</b>	AIRBUS A319	<b>File Number:</b>	<b>200811807</b>
<b>Phase of Flight:</b>	Initial climb	<b>UTC Date:</b>	21/10/2008
<b>Classification:</b>	Incident	<b>Location:</b>	Frankfurt
<b>Event Type:</b>	Aircraft/system/component 7600 Engine controls 2200 Autoflight system 3418 Flight management system 7300 Engine fuel and control system		

**Headline:**

A/c defaulted to 'Engine Out' (EO) mode during initial climb.

**Narrative:**

Following autopilot engagement at 350ft, P1 noticed no flight plan predictions and no thrust reduction indications, while P2 noticed 'EO' prompt on FMGC. 'EO Clear' selected together with thrust reduction, a/c placed in Speed Reference System (SRS) mode, open climb selected and a/c cleaned up. No further problems reported.

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<b>Make/mdl/srs:</b>	AEROSPATIALE AS332	<b>File Number:</b>	<b>200811888</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	16/10/2008
<b>Classification:</b>	Incident	<b>Location:</b>	Safe Caledonia (North Sea)
<b>Event Type:</b>	7200 Turbine engine 7700 Engine indicating system 6201 Main rotor - general 7300 Engine fuel and control system		

**Headline:**

Nr2 engine momentary malfunction - recurring fault.

**Narrative:**

Immediately after Take-Off Decision Point (TDP) during deck take-off, a change of engine tone was evident together with 'OEI HI' and 'DIFF NG' warning lights and high T4 indications on nr2 engine. All warnings cleared within approx two seconds before a full fault diagnosis could be completed. Fault recurred later in cruise but again cleared before diagnosis could be completed. Aircraft flown back to base at reduced power.

CAA Closure: Investigation confirmed failure of nr1 digital engine control unit (DECU).

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<b>Make/mdl/srs:</b>	AIRBUS A320	<b>File Number:</b>	<b>200812166</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	06/11/2008
<b>Classification:</b>	Incident	<b>Location:</b>	Manchester (MCT)
<b>Event Type:</b>	7200 Turbine engine Vibration/buffet Diversion 7300 Engine fuel and control system Unknown		

**Headline:**

Loss of power on nr2 engine.

**Narrative:**

Vibration felt throughout the aircraft and a loss of power from nr2 engine experienced during the climb. TOGA power set and an open descent to FL360 initiated. Approximately 30 seconds after the start of the event, engine power returned to normal. No abnormal engine parameters were evident and all operations returned to normal. Aircraft diverted for an engine inspection.

CAA Closure: Extensive investigation did not identify the root cause of the power loss. The EEC had sensor fault messages and was replaced as a precaution. Manufacturer was consulted with no further recommendations.

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<b>Make/mdl/srs:</b>	DIAMOND DA42	<b>File Number:</b>	<b>200812286</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	03/11/2008
<b>Classification:</b>	Incident	<b>Location:</b>	Bournemouth
<b>Event Type:</b>	7200 Turbine engine Aircraft return 7300 Engine fuel and control system		

**Headline:**

Engine rundown during the cruise. Pressure regulating valve malfunction.

**Narrative:**

LH engine ran down to approximately 50% load during the cruise before recovering to normal climb power of 90%. On levelling at 4000ft, the engine then ran down to 2% load. The LH ECU 'A' and ECU 'B' cautions illuminated and the engine failed to respond to the power lever. Shutdown / feathering checks carried out and the aircraft was recovered to base. Subsequent investigation found a faulty pressure regulating valve.

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<b>Make/mdl/srs:</b>	DE HAVILLAND DHC8	<b>File Number:</b>	<b>200812634</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	21/11/2008
<b>Classification:</b>	Incident	<b>Location:</b>	Birmingham
<b>Event Type:</b>	Engine shutdown/flameout Declared emergency 7300 Engine fuel and control system Declared emergency - Urgency 7100 Powerplant package		

**Headline:**

Nr2 engine FADEC caution illuminated in cruise. Checklist actioned, engine shutdown and PAN declared. A/c landed safely.

**Narrative:**

CAA Closure: The engineering investigation identified Fault Code 912 A&B logged in the FADEC. This code identifies the P2.2 valve as suspected. The aircraft was returned to service and there have been no further occurrences of the reported defect. The Flight Safety issue with this incident is that the ECL does not give enough emphasis between the 2 FADEC failures. It is recommended that the aircraft manufacturer should consider highlighting this issue by highlighting the failures in the ECL by colour. This will identify between a caution and a warning. It is confirmed that the crew completed the incorrect drill in this case, which resulted in an unnecessary engine shutdown.

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<b>Make/mdl/srs:</b>	MD HELICOPTER MD900	<b>File Number:</b>	<b>200812726</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	19/10/2008
<b>Classification:</b>	Incident	<b>Location:</b>	Sheffield
<b>Event Type:</b>	7200 Turbine engine Aircraft/system/component 7700 Engine indicating system 7600 Engine controls 7300 Engine fuel and control system 6300 Main rotor drive system Evacuation 6700 Rotorcraft flight control system		

**Headline:**

Over torque on take-off.

**Narrative:**

Lifting into hover, the transition into forward flight was started. All indications appeared normal so the take-off decision point timer was started and the a/c accelerated forward. On clearing the timer and checking that the associated light had extinguished, it was noticed that LH engine IIDS indications were high while RH indications were minimal. The only caption displayed on the IIDS indicated a torque split. An immediate landing was carried out and the a/c was shut down. IIDS download showed that, as the a/c lifted into the hover, the nr2 engine/EEC had failed to respond to collective inputs and had frozen (at Ng 78%, torque 20%, EGT 530deg C) with no associated EEC fail caption, resulting in a LH transmission torque peak. Inspections carried out and all peaks assessed as within limits. Initial investigation of nr2

engine seizure suggests either FMU stepper motor failure or detent module malfunction.  
CAA Closure: Investigation revealed that the detent module was defective, which has been sent to the OEM for further investigation.

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<b>Make/mdl/srs:</b>	AIRBUS A319	<b>File Number:</b>	<b>200813700</b>
<b>Phase of Flight:</b>	Normal descent	<b>UTC Date:</b>	22/12/2008
<b>Classification:</b>	Incident	<b>Location:</b>	Sofia
<b>Event Type:</b>	7200 Turbine engine 7700 Engine indicating system 7600 Engine controls 7300 Engine fuel and control system		

**Headline:**

Engine slow to respond to increased thrust demand.

**Narrative:**

During cruise, the crew noticed a difference in parameters between the engines. Just prior to descent an ECAM 'Eng 1 Sensor Fail' caution was observed. A/c flown in accordance with ECAM instruction 'avoid rapid thrust changes'. During descent with engines at idle, nr1 engine parameters were much lower than nr2. Crew therefore commanded a thrust increase; nr2 responded normally but nr1 took approx 5 seconds to spool up. Subsequent approach made avoiding idle power. After landing engineering action was taken, which apparently rectified the problem. However, after departure the problem recurred.  
CAA Closure: Investigation revealed a faulty EEC unit, which was replaced. No further occurrences reported.

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<b>Make/mdl/srs:</b>	BOEING 747	<b>File Number:</b>	<b>200900148</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	06/01/2009
<b>Classification:</b>	Incident	<b>Location:</b>	Shanghai
<b>Event Type:</b>	Aircraft/system/component 3410 Flight Environment Data 3100 Indicating/recording systems 3414 Airspeed/Mach indicating system 3420 Attitude and direction data system 3416 Altitude system 2700 Aircraft flight control 7300 Engine fuel and control system Diversion		

**Headline:**

LH ADC failed during climb, resulting in loss of P1 instruments. Control handed to P2. RH ADC selected and indications returned to normal. A/c diverted on Maintrol advice.

**Narrative:**

<b>Make/mdl/srs:</b>	BOEING 767	<b>File Number:</b>	<b>200900795</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	26/01/2009
<b>Classification:</b>	Incident	<b>Location:</b>	Paderborn Lippstadt
<b>Event Type:</b>	Aircraft/system/component ACAS/TCAS warning triggered 7300 Engine fuel and control system 3416 Altitude system 3414 Airspeed/Mach indicating system Aircraft handling 2700 Aircraft flight control 3445 ACAS/TCAS Any other event		

**Headline:**

Incorrect IAS and LH altimeter display together with a TCAS RA 'Descend Now' .

**Narrative:**

Following engine start, intermittent EEC amber light momentarily triggered an EICAS warning. Following engineering consultation an engine run up was carried out satisfactorily. At approx 15,000ft with the A/P engaged the a/c's rate of climb decreased and airspeed increased together with an EICAS aileron lockout, rudder ratio, IAS disagree and left and right EEC's. QRH actioned. Cruising at 33,000ft a TCAS RA 'Descend Now' subsequently was received (B777 900ft above crossing left to right) and an immediate descent initiated during which it was noted that the P1's altimeter was reading 33,300ft. The other a/c climbed.

CAA Closure: No further action possible. AOC revoked.

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<b>Make/mdl/srs:</b>	DIAMOND DA40	<b>File Number:</b>	<b>200902602</b>
<b>Phase of Flight:</b>	Initial climb	<b>UTC Date:</b>	17/03/2009
<b>Classification:</b>	Incident	<b>Location:</b>	Wolverhampton
<b>Event Type:</b>	7200 Turbine engine Aircraft/system/component Declared emergency 7300 Engine fuel and control system 7900 Engine oil system 7700 Engine indicating system Declared emergency - Urgency		

**Headline:**

ECU 'A' failure on climb out. PAN declared and a tight circuit to an uneventful landing carried out.

**Narrative:**

Following take off at approx 300ft agl, during a circuit revision detail, a slight bang was heard from the engine, power reduced to approx 95% and ECU 'A' fail caution illuminated. Instructor took control, PAN declared and a tight circuit to an uneventful landing was carried out. Following the occurrence power fluctuated +/-10-20% of command setting. Investigation found waste gate actuator, p/n: 02-724-05106R1 had leaked. Actuator replaced and ground runs carried out satisfactory.

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<b>Make/mdl/srs:</b>	BOEING 777	<b>File Number:</b>	<b>200903780</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	20/04/2009
<b>Classification:</b>	Incident	<b>Location:</b>	Denver
<b>Event Type:</b>	Line maintenance 7200 Turbine engine 7600 Engine controls 7300 Engine fuel and control system		

**Headline:**

LH engine EPR low on take-off/initial climb. Thrust increased, EPR shortfall remained. A/P engaged and thrust became symmetrical when reduced at AA. LH engine EEC subsequently failed at TOD.

**Narrative:**

During the latter stage of the take-off roll it was noticed that the LH engine EPR gauge should a shortfall on the commanded de-rated take-off EPR. To compensate the left thrust lever was advanced but an EPR shortfall remained. Following take-off, at 200ft, the A/P was engaged to reduce workload and to allow closer monitoring of the LH engine performance during climb out. Thrust became symmetrical when reduced at AA. At TOC the LH engine was still indicating less EPR than the right with the left thrust lever staggered ahead by one knob width. LH engine EEC subsequently failed at TOD with EICAS 'Eng EEC Mode L' advisory message. Checklist actioned. It was noted that the yellow max EPR line on the left EPR gauge had shown a lower value than the right throughout this sector.

CAA Closure: The P0 line within the EEC housing was subject to mechanical stress due to misalignment at installation that resulted in leakage of P0 air, giving the throttle stagger and EPR problems on the aircraft. This is a very rare occurrence on a normally reliable item. There are satisfactory warnings within the AMM to ensure that this is unlikely to occur again.

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<b>Make/mdl/srs:</b>	AIRBUS A320	<b>File Number:</b>	<b>200904101</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	28/04/2009
<b>Classification:</b>	Incident	<b>Location:</b>	London-Heathrow - LHR
<b>Event Type:</b>	7200 Turbine engine Declared emergency 7300 Engine fuel and control system Declared emergency - Urgency Aircraft return		

**Headline:**

Nr2 engine failure. PAN declared. A/c returned.

**Narrative:**

After levelling at 6000ft, nr2 engine FADEC A and B failures were indicated followed by an ECAM 'Eng 2 Fail' caption. ECAM actioned and engine recovered but subsequently a fuel control fault was experienced. PAN declared and a/c returned.

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<b>Make/mdl/srs:</b>	SIKORSKY S76	<b>File Number:</b>	<b>200904137</b>
<b>Phase of Flight:</b>	Approach	<b>UTC Date:</b>	16/04/2009
<b>Classification:</b>	Incident	<b>Location:</b>	North Sea
<b>Event Type:</b>	2700 Aircraft flight control 7200 Turbine engine 7700 Engine indicating system 7300 Engine fuel and control system 2200 Autoflight system Aircraft return Aircraft operation general		

**Headline:**  
Temporary power loss.

**Narrative:**  
During approach, a large uncommanded left yaw was felt, accompanied by an engine out audio warning and a red warning light. A split second later the warnings self-cancelled and the system returned to normal. The autopilot was disengaged and the a/c returned to base at reduced speed. Once in the cruise the DECU's were checked and two failures were shown: '2 DECU A Fault (minor)' and '2 DECU B Fault (minor)'. Engines and systems were closely monitored for the remainder of the flight with no further problems. A precautionary run on landing was made. Fault traced to nr2 engine collective transducer, which was replaced.

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<b>Make/mdl/srs:</b>	BOEING 767	<b>File Number:</b>	<b>200906277</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	21/06/2009
<b>Classification:</b>	Incident	<b>Location:</b>	Nairobi
<b>Event Type:</b>	7200 Turbine engine Engine shutdown/flameout 7300 Engine fuel and control system Diversion		

**Headline:**  
Engine failure during the cruise.

**Narrative:**  
During cruise, the LH engine started to cycle, with power reducing to idle and then back to cruise settings. After approximately 10mins, during a power reduction to idle, the engine failed completely with no EICAS warnings or any vibration. Checklist performed and a diversion initiated. Initial investigation after landing found the LH Power Management Unit (PMU) to have failed, Channel A and B data bus inoperative and FMU control EEC / PMU disagree.  
CAA Closure: The organisation concluded its investigation and found that the PAG unit (pump and governor) was identified as the cause. The PAG governor piston had seized in the piston sleeve, however the reason for the seizure could not be established.

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<b>Make/mdl/srs:</b>	AIRBUS A319	<b>File Number:</b>	<b>200906710</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	30/06/2009
<b>Classification:</b>	Incident	<b>Location:</b>	Stansted
<b>Event Type:</b>	7200 Turbine engine Declared emergency 2200 Autoflight system 7800 Engine exhaust system 7830 Thrust reverser system Aircraft return Declared emergency - Urgency 7300 Engine fuel and control system		

**Headline:**

Nr2 Engine Interface Unit (EIU) fault.

**Narrative:**

'A/Thr Off' ECAM and Master Cautions displayed during the climb. ECAM actions completed, which resulted in the message cancelling. After auto thrust was re-engaged, the same message reappeared together with 'Eng 2 EIU Fault'. QRH actioned. Return to the departure airport initiated and a PAN declared. Approach carried out with one reverser inop.

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<b>Make/mdl/srs:</b>	MD HELICOPTER MD900	<b>File Number:</b>	<b>200906971</b>
<b>Phase of Flight:</b>	Initial climb	<b>UTC Date:</b>	04/07/2009
<b>Classification:</b>	Incident	<b>Location:</b>	Boreham, Essex
<b>Event Type:</b>	7200 Turbine engine 7700 Engine indicating system 7300 Engine fuel and control system Aircraft return Aircraft operation general		

**Headline:**

Nr2 ECU failure.

**Narrative:**

On transition to forward flight a large torque split was observed. A/c levelled at 200ft and torque settled but it became apparent that there was an EEC fault. Reset carried out and throttle returned to normal detent. 5secs later anr2 torque spike was observed accompanied by an EEC caption and followed by the torques hunting. Another reset was carried out with the same result. The a/c then returned and a run-on landing was carried out.

CAA Closure: The investigation found that the fuel metering unit linear voltage differential transformer and stepper motor to be operating outside of tolerances. LVDT and stepper motor replaced.

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<b>Make/mdl/srs:</b>	AIRBUS A320	<b>File Number:</b>	<b>200907783</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	27/07/2009
<b>Classification:</b>	Incident	<b>Location:</b>	London-Heathrow - LHR
<b>Event Type:</b>	7200 Turbine engine Declared emergency 7300 Engine fuel and control system 7600 Engine controls 7800 Engine exhaust system Declared emergency - Urgency Aircraft return		

**Headline:**

ECAM 'Eng 2 Stall' message during climb. PAN declared. A/c returned.

**Narrative:**

After nr2 engine start ECAM 'Eng 2 FADEC B Fault' and 'Overspeed Protection' messages were received. A momentary 'ENG 2 Stall' message was also observed but other engine indications were normal. Engineering advice was to shutdown and restart the engine as this would utilise the other system. After restart all indications were normal and no faults were displayed. Take-off and initial climb proceeded normally but passing FL160 the 'Eng 2 Stall' ECAM appeared again briefly. Advice was sought from Maintrol but before a reply was received a further momentary 'Eng 2 Stall' ECAM occurred at top of climb as power changed to 'cruise'. Subsequently an ACARS message was received from Maintrol advising that the a/c should return to base. As there were 15-20 minute holding delays, a PAN was declared to expedite approach. During descent ECAM 'Eng 2 FADEC B Fault' message illuminated but no further 'Stall' messages. Landing was normal but on reverse selection 'Eng 2 Thrust Reverser Fault' ECAM received.

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<b>Make/mdl/srs:</b>	AIRBUS A319	<b>File Number:</b>	<b>200908392</b>
<b>Phase of Flight:</b>	Standing	<b>UTC Date:</b>	09/08/2009
<b>Classification:</b>	Incident	<b>Location:</b>	Bristol International
<b>Event Type:</b>	7200 Turbine engine Line maintenance Any other event 7300 Engine fuel and control system Aircraft operation general		

**Headline:**

Following an earlier nr1 engine FADEC 'B' fault, a FADEC test with engine turnover was carried out with ground handling staff in close proximity.

**Narrative:**

At the time of the incident, the Captain was liaising with passengers on the ramp and the First Officer was in the rear cabin.

CAA Closure: With the area clear, engineer A went back to door 1L from where he observed the engine

spin through the FADEC test. Engineer B monitored the test from the cockpit. The maintenance provider has interviewed the engineers concerned and it is clear that in their haste to rectify the defect, they forgot to position a safety man on the ground and fully inform all concerned at each step of the trouble-shooting process. The personnel involved have been interviewed and reminded of the requirement to have a safety man/lookout in position to observe the engine and its surrounds when an engine is motored or run. The procedure relating to engine ground running and corresponding safety requirements has been reviewed, and an amendment to this procedure (eTPM 06-15) has been carried out.

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<b>Make/mdl/srs:</b>	AIRBUS A321	<b>File Number:</b>	<b>200908774</b>
<b>Phase of Flight:</b>	Approach	<b>UTC Date:</b>	18/08/2009
<b>Classification:</b>	Incident	<b>Location:</b>	Rome Fiumicino
<b>Event Type:</b>	7200 Turbine engine Aircraft/system/component Declared emergency 7700 Engine indicating system 7600 Engine controls 7300 Engine fuel and control system Declared emergency - Urgency 2200 Autoflight system 3140 Central Computers		

**Headline:**

Nr2 engine EPR mode failure followed by ECAM indications of idle thrust only on approach. ECAM drill carried out. PAN declared. Recurring fault.

**Narrative:**

Additional ECAM information appeared on status page including 'ENG 2 thrust idle with slats' and TLA plus FADEC faults. PAN declared and single engine automatic manual thrust approach briefed. On selection of slats, thrust was available on both engines and a normal two-engine landing carried out. Post flight report showed 'ENG EPR mode fault', 'Auto FLT A/THR off' at 1021Z, 'ENG - FADEC' and 'ENG 2 one TLA' fault @ 1024Z. Operational test of FADEC 2 accomplished and nil faults shown - nr2 engine ground runs with alternating FADEC channels satisfactory. Fault recurred on next sector same day. Subsequent investigation included replacement of throttle control unit (p/n 330400M01), EEC (p/n824972-11-020) and at request of aircraft manufacturer two FWCs (p/n 350E053021010).

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<b>Make/mdl/srs:</b>	DIAMOND DA40	<b>File Number:</b>	<b>200908951</b>
<b>Phase of Flight:</b>		<b>UTC Date:</b>	19/08/2009
<b>Classification:</b>	Incident	<b>Location:</b>	Bedford
<b>Event Type:</b>	7201 Turbine engine - generally Declared emergency Declared emergency - Urgency 7300 Engine fuel and control system Aerodrome services / operations		

**Headline:**

PAN declared due to 'Engine/ECU Fault'. Landed safely with AFS in attendance.

**Narrative:**

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<b>Make/mdl/srs:</b>	BOEING 757	<b>File Number:</b>	<b>200909333</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	30/08/2009
<b>Classification:</b>	Incident	<b>Location:</b>	Athens Intl - Spata
<b>Event Type:</b>	7200 Turbine engine Declared emergency 7300 Engine fuel and control system 7600 Engine controls Aircraft handling Declared emergency - Urgency Diversion Overweight landing 7700 Engine indicating system Aerodrome services / operations		

**Headline:**

'R Eng Limiter' and 'R Eng EEC' warnings. Aircraft diverted.

**Narrative:**

A series of "bangs / thumps" were heard from the RH side of the aircraft, accompanied by a slight yaw to the right. EICAS 'R Eng Limiter' and 'R Eng EEC' warnings displayed. Maximum continuous thrust selected on the LH engine with reduced thrust on the RH engine to maintain EGT below maximum, which allowed altitude and speed to be maintained. QRH actions carried out. PAN declared and the aircraft diverted for an overweight landing.

CAA Closure: Engineers identified that the RH dedicated generator windings had failed. Based on the low frequency of this type of event, no further action is required.

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<b>Make/mdl/srs:</b>	DIAMOND DA42	<b>File Number:</b>	<b>200909497</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	02/09/2009
<b>Classification:</b>	Incident	<b>Location:</b>	Cranfield (CIT)
<b>Event Type:</b>	7201 Turbine engine - generally Declared emergency 7300 Engine fuel and control system Declared emergency - Urgency Aerodrome services / operations		

**Headline:**

PAN declared due to ECU failure. Emergency services in attendance. Aircraft landed safely.

**Narrative:**

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<b>Make/mdl/srs:</b>	EUROCOPTER EC225	<b>File Number:</b>	<b>200909600</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	07/09/2009
<b>Classification:</b>	Incident	<b>Location:</b>	North Sea
<b>Event Type:</b>	Engine shutdown/flameout Declared emergency 7500 Engine air system 7700 Engine indicating system Declared emergency - Urgency Aircraft return Aircraft operation general 7300 Engine fuel and control system		

**Headline:**

Engine governor warning. PAN declared. Aircraft returned.

**Narrative:**

Torque fluctuation observed during the cruise, followed by 'CHQTQ' warning. A steady governor light then illuminated with TQ1 in the red and TQ2 indicating single engine figures. 'OEI HI' (One Engine Inoperative) warning activated with 'FLI Fail' (First Limit Indicator). Speed reduced, emergency procedures checked and a PAN declared. Aircraft returned to base for a running landing. During subsequent engineering investigation, FADEC 1 replaced.

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<b>Make/mdl/srs:</b>	DIAMOND DA42	<b>File Number:</b>	<b>200910621</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	29/09/2009
<b>Classification:</b>	Incident	<b>Location:</b>	KOK
<b>Event Type:</b>	7200 Turbine engine Declared emergency 7700 Engine indicating system 7300 Engine fuel and control system Aircraft handling Declared emergency - Urgency Diversion Precautionary landing		

**Headline:**

PAN declared due to RH engine fluctuations. Diversion.

**Narrative:**

RH engine fluctuated and hunted between 35 - 75% for approx five seconds. ECU swap switch selected to 'ECU B' iaw emergency and abnormal checklist. Approx 10mins later, RH engine oscillated between approx 10% - 75% with associated yaw. Uneventful precautionary landing. FADEC/ECU download sent to engine manufacturer for analysis. Aircraft manufacturer advised.

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<b>Make/mdl/srs:</b>	DE HAVILLAND DHC8	<b>File Number:</b>	<b>200911238</b>
<b>Phase of Flight:</b>	Approach	<b>UTC Date:</b>	15/10/2009
<b>Classification:</b>	Incident	<b>Location:</b>	Southampton (SAM)
<b>Event Type:</b>	Aircraft/system/component 7200 Turbine engine Aeroplane flight path deviation Engine shutdown/flameout Declared emergency 7300 Engine fuel and control system 7900 Engine oil system 2400 Electrical power system Aircraft handling Declared emergency - Urgency 6100 Propellers generally		

**Headline:**

Nr2 engine FADEC failure and aircraft swings to right and left. PAN declared.

**Narrative:**

During flight a swing to the right was experienced and at the same time 'Nr2 Eng FADEC Fail' warning caption, 'Nr2 Oil press' and 'Nr2 DC gen' captions illuminated. This was followed by a further swing to the left. Nr2 engine FADEC failure vital checklist actions completed followed by engine shut down drills. During shut down Alt Feather button was required to feather engine. PAN declared and aircraft given direct routing to destination.

<b>Make/mdl/srs:</b>	DIAMOND DA42	<b>File Number:</b>	<b>200911360</b>
<b>Phase of Flight:</b>	Approach	<b>UTC Date:</b>	15/10/2009
<b>Classification:</b>	Incident	<b>Location:</b>	Cambridge
<b>Event Type:</b>	Aircraft/system/component 7200 Turbine engine Engine shutdown/flameout Declared emergency 7300 Engine fuel and control system Propeller control Aircraft operation general Aerodrome services / operations		

**Headline:**

Uncommanded RH engine shut down with LH engine in simulated feather mode during test flight. LH engine brought back on line. Emergency declared. Uneventful landing with fire services in attendance.

**Narrative:**

Various fault codes generated - ECU/propeller valve fault suspected. Total aircraft/component hours since overhaul/Inspection 3. Engine manufacturer advised.

CAA Closure: Right Hand ECU contaminated with water, due to water leaking through the engine cowling into the 'dry bay' area where the ECU is located. The manufacturing defect occurred during aircraft manufacture, late 2005 and early 2006. Since delivery to the current owner in August 2006, the aircraft has required eight ECU's to remain serviceable as a result of this defect, which only occurs after a period of heavy rain. The aircraft had been previously modified in accordance with Mandatory Service Bulletin MSB-42-028 issued 2 Oct. 2006 "The sealant of the engine control harness may be broken, which due to heavy rain, water can enter the harness and accumulate within the ECU". As a result the ECU has been replaced and the 'open rivet' has been sealed in accordance with approved data.

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<b>Make/mdl/srs:</b>	AIRBUS A321	<b>File Number:</b>	<b>200911472</b>
<b>Phase of Flight:</b>	Taxi	<b>UTC Date:</b>	21/10/2009
<b>Classification:</b>	Incident	<b>Location:</b>	Glasgow (GOW)
<b>Event Type:</b>	Aircraft/system/component 7200 Turbine engine Declared emergency 7300 Engine fuel and control system 7800 Engine exhaust system Aircraft fire 8000 Engine starting system Aircraft operation general Declared emergency - Urgency Aerodrome services / operations		

**Headline:**

Nr2 engine EIU 2 fault resulting in tailpipe fire on auto start of nr2 engine. PAN declared and fire services requested.

**Narrative:**

Nr2 engine master switched off and tailpipe fire checklist actioned including dry crank. Flames disappeared quickly and confirmed by fire services. Aircraft towed back onto stand.

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<b>Make/mdl/srs:</b>	BOEING 757	<b>File Number:</b>	<b>200911815</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	29/10/2009
<b>Classification:</b>	Incident	<b>Location:</b>	Luton (LUT)
<b>Event Type:</b>	7200 Turbine engine Aircraft/system/component Aircraft handling 2200 Autoflight system 7300 Engine fuel and control system 7600 Engine controls Aircraft return		

**Headline:**

Significant yaw to left and autothrottle disconnect with 'R ENG EEC' and 'R ENG LIM' EICAS messages passing FL140 during climb. QRH drill completed. Aircraft returned.

**Narrative:**

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<b>Make/mdl/srs:</b>	AEROSPATIALE AS355	<b>File Number:</b>	<b>200912687</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	23/11/2009
<b>Classification:</b>	Incident	<b>Location:</b>	Cumbernauld
<b>Event Type:</b>	Aircraft/system/component 7201 Turbine engine - generally 7700 Engine indicating system 7600 Engine controls 7300 Engine fuel and control system Aircraft return		

**Headline:**

Nr1 engine torque gauge failure and engine beep trim failure. Emergency checklist actioned. Aircraft returned.

**Narrative:**

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<b>Make/mdl/srs:</b>	BOEING 757	<b>File Number:</b>	<b>200913626</b>
<b>Phase of Flight:</b>	Approach	<b>UTC Date:</b>	29/12/2009
<b>Classification:</b>	Incident	<b>Location:</b>	Alicante
<b>Event Type:</b>	Engine shutdown/flameout 7300 Engine fuel and control system		

**Headline:**

Nr1 engine rundown/failure on final approach. Continued to land.

**Narrative:**

Engine failure checklist completed except for the fuel control switch which was shut off following landing. Normal taxi to the ramp using single engine. The reporter notes that halfway through the flight, the LH engine EEC failed. QRH actions completed and the flight continued with manual thrust. CAA Closure: Investigation found that the cause of the event was dual failure of the PCCU's (power conditioning control units). This failure mode also causes damage to the BVCU (bleed valve control unit) rendering it inoperative, which in low power conditions can leave the engine vulnerable to stall and allow the engine to run-down. Components replaced and no further reports to date.

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<b>Make/mdl/srs:</b>	AGUSTA A109	<b>File Number:</b>	<b>201003172</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	08/04/2010
<b>Classification:</b>	Incident	<b>Location:</b>	Shawbury (SWB)
<b>Event Type:</b>	Aircraft/system/component 7300 Engine fuel and control system		

**Headline:**

During the cruise, nr2 ECU fail caption illuminated. Airspeed reduced and drills completed as per the Flight Reference Cards. Aircraft recovered without further incident.

**Narrative:**

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<b>Make/mdl/srs:</b>	CESSNA 510	<b>File Number:</b>	<b>201003255</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	12/04/2010
<b>Classification:</b>	Incident	<b>Location:</b>	Nice
<b>Event Type:</b>	7201 Turbine engine - generally 7200 Turbine engine 7600 Engine controls 7700 Engine indicating system 7300 Engine fuel and control system		

**Headline:**

RH engine failed to respond to thrust lever movement and remained at idle thrust when take-off thrust applied. No EICAS cautions or warnings prior to or during malfunction.

**Narrative:**

Aircraft taxied back to stand and both engines shut down.  
CAA Closure: Investigation found an Electronic Engine Control (EEC) fault. Possible cause was due to an intermittent Thrust Lever Angle (TLA) output from the RH throttle channel B output. Detailed inspection of the throttle quadrant assembly found an incorrectly positioned pin on the throttle quadrant RH connector. The throttle quadrant was relocated and the EEC replaced. Correct throttle operation was then verified.

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<b>Make/mdl/srs:</b>	AEROSPATIALE AS350	<b>File Number:</b>	<b>201004790</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	25/05/2010
<b>Classification:</b>	Incident	<b>Location:</b>	Brize Norton
<b>Event Type:</b>	7200 Turbine engine Declared emergency 7700 Engine indicating system Declared emergency - Urgency Diversion Aircraft operation general Aeroplane flight path deviation Aircraft handling 7300 Engine fuel and control system		

**Headline:**

Engine oscillation.

**Narrative:**

"Regular oscillations" in yaw noted during the cruise with engine instruments recording  $\pm 4\%$  torque, with

confirmatory Mg and T4 indications. FRC actions carried out. PAN declared and the aircraft diverted for a running landing with manual Nr control. Investigation found a Fuel Control Unit malfunction.

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<b>Make/mdl/srs:</b>	BOEING 747	<b>File Number:</b>	<b>201005556</b>
<b>Phase of Flight:</b>	Initial climb	<b>UTC Date:</b>	07/06/2010
<b>Classification:</b>	Incident	<b>Location:</b>	London-Gatwick - LGW
<b>Event Type:</b>	Line maintenance 7200 Turbine engine 7700 Engine indicating system 7300 Engine fuel and control system		

**Headline:**

Throttle staggered following take-off to maintain settings. Low N1 and fuel flow noted.

**Narrative:**

Inspection revealed nr4 engine ECU pressure ports were incorrectly blanked.

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<b>Make/mdl/srs:</b>	AIRBUS A320	<b>File Number:</b>	<b>201005780</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	18/06/2010
<b>Classification:</b>	Incident	<b>Location:</b>	Corfu
<b>Event Type:</b>	7200 Turbine engine Rejected take-off 7300 Engine fuel and control system		

**Headline:**

Rejected take-off at 50kts as nr2 engine failed to achieve 'bump', which was required for the weight and conditions.

**Narrative:**

FADEC reset, subsequently performed a normal 'bump' take-off.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135 SAAB 340	<b>File Number:</b>	<b>201005971</b>
<b>Phase of Flight:</b>	Cruise Normal descent	<b>UTC Date:</b>	24/06/2010
<b>Classification:</b>	Incident	<b>Location:</b>	Weston Supermare
<b>Event Type:</b>	Aircraft/system/component 7300 Engine fuel and control system		

**Headline:**

Double degrade caption in flight due to FADEC fault.

**Narrative:**

During cruise both 'DEGRADE' captions illuminated simultaneously with no other malfunctions and all FLI functions normal. Actions carried out iaw manufacturer's FLM and a/c recovered to base. Both FADECs downloaded iaw maintenance manual and RH FADEC replaced due to previous history of fault. Ground run and flight check satisfactorily carried out. Manufacturer advised.

<b>Make/mdl/srs:</b>	AIRBUS A320	<b>File Number:</b>	<b>201006426</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	30/06/2010
<b>Classification:</b>	Incident	<b>Location:</b>	Thessaloniki
<b>Event Type:</b>	7201 Turbine engine - generally Rejected take-off 7600 Engine controls Aircraft handling 7300 Engine fuel and control system		

**Headline:**

Low speed RTO due to significant thrust mismatch and associated directional control problems.

**Narrative:**

Post Flight Report (PFR) indicated nr1 engine Fuel Metering Unit (FMU) and Electronic Engine Control (EEC) failure.

<b>Make/mdl/srs:</b>	BOEING 777	<b>File Number:</b>	<b>201007021</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	14/07/2010
<b>Classification:</b>	Incident	<b>Location:</b>	Chicago Ohare
<b>Event Type:</b>	7200 Turbine engine Turbine engine - multiple failures Flight crew 7300 Engine fuel and control system Aircraft operation general Aircraft handling Unknown Noise / rattle		

**Headline:**

Popping and banging from both engines during different phases of flight, with all engine parameters normal. Airspeed reduced below flap-up speed on approach.

**Narrative:**

A/c despatched with EEC defect from previous sector - when engines spooled up on command rate seemed greater than normal but at one stage on approach engines did not spool up quickly on command,

resulting in a 10kt fall below flap-up speed - speed manually increased to compensate. Tech Log entry made and SESMA representative informed.

CAA Closure: Investigation could not establish the cause of the noises. No abnormal data was found from the QAR. No confirmation of the 'popping' or 'banging' noises could be found in the flight data. The noises could not be reproduced on the ground run checks and there has been no further reports since.

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<b>Make/mdl/srs:</b>	BOEING 747	<b>File Number:</b>	<b>201008221</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	07/08/2010
<b>Classification:</b>	Incident	<b>Location:</b>	En Route
<b>Event Type:</b>	Aircraft/system/component 3418 Flight management system 7300 Engine fuel and control system 2200 Autoflight system Aircraft operation general 3445 ACAS/TCAS Fuel dumping Aircraft return 3414 Airspeed/Mach indicating system Aircraft handling		

**Headline:**

During climb, a brief EICAS 'overspeed' message noticed with Captain's PFD fluctuating, which was followed by EICAS messages 'eng 1,2,3,4 EEC mode', 'A/T disc', 'no autoland', and 'TCAS RA caption'.

**Narrative:**

Captain's PFD was also only showing a horizon. QRH actioned. 55 tonnes of fuel dumped at FL160. A/c returned.

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<b>Make/mdl/srs:</b>	SIKORSKY S76	<b>File Number:</b>	<b>201009015</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	20/08/2010
<b>Classification:</b>	Incident	<b>Location:</b>	Coltishall
<b>Event Type:</b>	Aircraft/system/component 7300 Engine fuel and control system 6700 Rotorcraft flight control system Aircraft return		

**Headline:**

Digital Engine Control Unit (DECU) collective position fault in-flight warnings. A/c returned.

**Narrative:**

'2DECU A fault coll posn LVL1' and '2DECU fault coll posnLVL2' indicated during in-flight cruise check. A/c returned and shut down to reset - fault cleared on restart. A/c again departed but DECU warnings

recurred during subsequent cruise checks and a/c returned again. Reporter confirms that S76 Training Circular requires a Tech Log entry to be made following a 'Collective Position Fault' and for collective position transducer to be replaced as a precautionary measure. Collective position transducer (p/n 76900-01821-104) replaced and set up iaw AMM. Collective friction check satisfactorily carried out and a/c returned to service.

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<b>Make/mdl/srs:</b>	AIRBUS A340	<b>File Number:</b>	<b>201009927</b>
<b>Phase of Flight:</b>	Initial climb	<b>UTC Date:</b>	10/09/2010
<b>Classification:</b>	Incident	<b>Location:</b>	Dover (DVR)
<b>Event Type:</b>	7200 Turbine engine Declared emergency Aircraft return Fuel dumping Declared emergency - Urgency 7300 Engine fuel and control system		

**Headline:**

ECAM eng nr2 'Ctl Sys Fault' illuminated (Max N2 95%) at approx 2000ft. Fuel dumped. PAN declared. A/c returned.

**Narrative:**

Investigations undertaken, HMU and RACSB VLV replaced with subsequent checks carried out satisfactorily.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC225	<b>File Number:</b>	<b>201009976</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	13/09/2010
<b>Classification:</b>	Incident	<b>Location:</b>	Aberdeen (ADN) (North Sea)
<b>Event Type:</b>	7200 Turbine engine Declared emergency 7500 Engine air system 7700 Engine indicating system 7300 Engine fuel and control system Aircraft operation general Declared emergency - Urgency Aircraft return		

**Headline:**

Random instrumentation failure during cruise - amber warning illuminated together with 'ENG', 'GOV', 'Tq2', 'FLI FAIL' and degraded 'ALT'. PAN declared. A/c returned. Nr2 engine FADEC fault.

**Narrative:**

Squawk 7700 selected, power reduced to safe single engine setting and normal approach and landing carried out. VMS maintenance pages interrogated and fault 'FADEC 2 permanent torque failure' found

stored. Nr2 engine FADEC (p/n 70CMG01060) replaced and subsequent ground runs and flight test satisfactorily completed.

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<b>Make/mdl/srs:</b>	BOEING 757	<b>File Number:</b>	<b>201010229</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	15/09/2010
<b>Classification:</b>	Incident	<b>Location:</b>	En Route
<b>Event Type:</b>	Aircraft/system/component 7300 Engine fuel and control system 3400 Navigation systems 3414 Airspeed/Mach indicating system 3418 Flight management system		

**Headline:**  
TAT probe fault.

**Narrative:**

During the cruise, it became apparent that the temperature readings in the FMC and on the EICAS were in error, as they were showing an ISA deviation of around +25. Although IAS seemed appropriate, and all three ASIs reading the same speeds, it was evident that the Mach being flown was incorrect. ATC throughout the flight requested indicated Mac hand a/c was continually either overtaking the a/c in front, or falling back on the one behind when flying the requested speed. Another of the operator's a/c came on frequency at the same altitude. On the company frequency, SAT/TAT/IAS/Mach compared and discrepancy noticed. At higher thrust settings, the right thrust lever needed to be advanced approximately 5cm ahead of the left to achieve the same thrust. Fuel calculations in the FMC disappeared, and optimum level in the FMC became corrupted and eventually 'R ENG EEC' message received. QRH drill carried out. After consultation on the ground with Maintrol, it was decided to change the TAT probe. On return flight, all readings were normal.

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<b>Make/mdl/srs:</b>	AIRBUS A320	<b>File Number:</b>	<b>201010300</b>
<b>Phase of Flight:</b>	Normal descent	<b>UTC Date:</b>	19/09/2010
<b>Classification:</b>	Incident	<b>Location:</b>	London-Heathrow - LHR
<b>Event Type:</b>	7200 Turbine engine Declared emergency 7700 Engine indicating system 7600 Engine controls 7300 Engine fuel and control system Declared emergency - Urgency Aerodrome services / operations		

**Headline:**

Nr2 engine failed and retarded to idle thrust.

**Narrative:**

Nr2 engine 'Thrust Lever Disagree' warning on base leg. Warning appeared four times. Thrust retarded to idle and autothrust was non-responsive. PAN declared. A/c landed with nr2 engine still at idle thrust. Fire services reported no fire or damage. The reporter notes that during start-up, a spurious indication of 'Nr2 Engine Over limit' activated with EGT indicating 463deg before immediately disappearing. A normal start followed. During engineering investigation, EEC replaced but then failed during engine run. EEC replaced again and ground run completed satisfactorily. Investigation being progressed under 201010560.

<b>Make/mdl/srs:</b>	AGUSTA A109	<b>File Number:</b>	<b>201010853</b>
<b>Phase of Flight:</b>	Unknown	<b>UTC Date:</b>	27/09/2010
<b>Classification:</b>	Incident	<b>Location:</b>	Hawarden
<b>Event Type:</b>	Aircraft/system/component Declared emergency 7300 Engine fuel and control system Declared emergency - Urgency		

**Headline:**

During flight, nr2 ECU failed with associated warning caption illuminating.

**Narrative:**

Whilst carrying out the emergency actions the nr2 ECU data caption illuminated followed by the torque limiter caption. PAN declared. A/c landed safely with one engine under manual control.

<b>Make/mdl/srs:</b>	SIKORSKY S76	<b>File Number:</b>	<b>201011386</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	10/10/2010
<b>Classification:</b>	Incident	<b>Location:</b>	Unknown
<b>Event Type:</b>	Aircraft/system/component 7300 Engine fuel and control system Aircraft return 3140 Central Computers		

**Headline:**

During cruise nr2 engine DECU fault. A/c returned. Pilot IIDS screen failed on landing. RDAU (remote data acquisition unit) found to be unserviceable. RDAU replaced and calibrated.

**Narrative:**

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<b>Make/mdl/srs:</b>	AIRBUS A319	<b>File Number:</b>	<b>201012200</b>
<b>Phase of Flight:</b>	Normal descent	<b>UTC Date:</b>	31/10/2010
<b>Classification:</b>	Incident	<b>Location:</b>	London-Heathrow - LHR
<b>Event Type:</b>	7200 Turbine engine Declared emergency 7700 Engine indicating system 7300 Engine fuel and control system 7600 Engine controls Aircraft handling Declared emergency - Urgency		

**Headline:**

PAN declared due to unusual engine behaviour.

**Narrative:**

ECAM 'Engine 1 Sensor' warning as thrust retarded to idle at the top of descent. Nr1 engine then retarded to a lower idle condition than nr2 engine. PAN declared due to crew considering the engine was unreliable. During subsequent investigation, EEC1 replaced, during which the connection union was found to be contaminated with a white powder.

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<b>Make/mdl/srs:</b>	FOKKER F28	<b>File Number:</b>	<b>201012499</b>
<b>Phase of Flight:</b>	Initial climb	<b>UTC Date:</b>	07/11/2010
<b>Classification:</b>	Incident	<b>Location:</b>	Birmingham
<b>Event Type:</b>	Engine shutdown/flameout Consequential events Declared emergency Declared emergency - Distress Aircraft return 2600 Fire protection system 3130 Data recording 7300 Engine fuel and control system		

**Headline:**

Engine failure during the climb. MAYDAY declared. A/c returned.

**Narrative:**

LH engine failure due, it was initially believed, to multiple birdstrike at 1000ft during climb out. 'Nr1 Engine Fail' warning on Central Display. Engine shut down and nr1 fire bottle discharged. MAYDAY declared although subsequently downgraded to PAN. A/c returned. FDR downloaded, which confirmed nr1 engine fuel control unit failure.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>201012830</b>
<b>Phase of Flight:</b>	Standing	<b>UTC Date:</b>	14/11/2010
<b>Classification:</b>	Incident	<b>Location:</b>	Warton
<b>Event Type:</b>	Aircraft/system/component 7300 Engine fuel and control system		

**Headline:**  
Nr1 Engine Degrade' caution displayed during shutdown.

**Narrative:**  
VEMD ( Vehicle and Engine Multifunction Display) fault suspected.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC225	<b>File Number:</b>	<b>201013264</b>
<b>Phase of Flight:</b>	Hovering	<b>UTC Date:</b>	23/11/2010
<b>Classification:</b>	Incident	<b>Location:</b>	Aberdeen (ADN)
<b>Event Type:</b>	7200 Turbine engine Turbine engine - multiple failures 7700 Engine indicating system 7600 Engine controls 7300 Engine fuel and control system Aircraft handling Aircraft operation general		

**Headline:**  
Nr FADEC caption illuminated with Nr decaying from 103.8%to approximately 98% when lifting into the hover, resulting in an uncommanded descent whilst maintaining collective position. Take-off aborted

**Narrative:**  
A/c manufacturer alerted. Investigation being progressed under 201013265.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC225	<b>File Number:</b>	<b>201013293</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	24/11/2010
<b>Classification:</b>	Incident	<b>Location:</b>	North Sea
<b>Event Type:</b>	7200 Turbine engine Turbine engine - multiple failures 7700 Engine indicating system 7600 Engine controls 7300 Engine fuel and control system Aircraft operation general Any other event		

**Headline:**

Nr FADEC caption illuminated during take-off with 4% drop in Nr. At 55kts, FADEC caption extinguished with no recurrence during the remainder of the flight.

**Narrative:**

A/c manufacturer alerted. Investigation being progressed under 201013265.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC225	<b>File Number:</b>	<b>201013294</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	25/11/2010
<b>Classification:</b>	Incident	<b>Location:</b>	Aberdeen (ADN)
<b>Event Type:</b>	7200 Turbine engine Turbine engine - multiple failures 7700 Engine indicating system 7600 Engine controls 7300 Engine fuel and control system Aircraft operation general Any other event		

**Headline:**

Nr FADEC caption activated with a reduction of Nr as the a/c settled into the hover on take-off. No sink occurred. Flight continued and Nr recovered as the airspeed approached VTOSS.

**Narrative:**

A/c manufacturer alerted. Investigation being progressed under 201013265.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC225	<b>File Number:</b>	<b>201013295</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	25/11/2010
<b>Classification:</b>	Incident	<b>Location:</b>	North Sea
<b>Event Type:</b>	7200 Turbine engine Turbine engine - multiple failures 7700 Engine indicating system 7600 Engine controls 7300 Engine fuel and control system Any other event Aircraft operation general		

**Headline:**

Nr FADEC caption activated on rotation with Nr decreasing from 102% to 99%. Take-off continued. Nr FADEC caption cleared at approximately 55kts with Nr increasing back to normal.

**Narrative:**

A/c manufacturer alerted. Investigation being progressed under 201013265.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC225	<b>File Number:</b>	<b>201013299</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	24/11/2010
<b>Classification:</b>	Incident	<b>Location:</b>	North Sea
<b>Event Type:</b>	7200 Turbine engine Turbine engine - multiple failures 7700 Engine indicating system 7600 Engine controls 7300 Engine fuel and control system Aircraft handling Aircraft operation general Any other event		

**Headline:**

Nr FADEC caption activated during take-off. A/c started to sink slightly but take-off continued. Caption cleared once IAS had passed through VTOSS for approximately 10secs.

**Narrative:**

A similar caption activated during the following take-off approximately 10mins later. A/c manufacturer alerted. Investigation being progressed under 201013265.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC225	<b>File Number:</b>	<b>201013794</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	07/12/2010
<b>Classification:</b>	Incident	<b>Location:</b>	Captain platform (North Sea)
<b>Event Type:</b>	Aircraft/system/component 7200 Turbine engine 7300 Engine fuel and control system 7600 Engine controls 6201 Main rotor - general 3410 Flight Environment Data 3400 Navigation systems Aircraft operation general		

**Headline:**

'NR FADEC' caption on lift to hover - no reduction in NR so departure continued. 'NR FADEC' caption extinguished on passing 60kts IAS with no recurrence during return flight when speed below 60kts.

**Narrative:**

VMS maintenance pages and NV memory of APM units accessed and codes for ADU temperature discrepancy observed. Reporter confirms that 'NR FADEC' captions are caused by decrease of NR due to rotor governing system adopting conservative NR datum for density altitude following introduction of new software for VMS, AFCS and FADEC. A/c manufacturer currently analysing FDR data - in meantime software in process of being reverted to pre-mod software status for entire fleet. Investigation progressed under 201013265.

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<b>Make/mdl/srs:</b>	DIAMOND DA42	<b>File Number:</b>	<b>201014111</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	17/12/2010
<b>Classification:</b>	Incident	<b>Location:</b>	Abbot
<b>Event Type:</b>	Aircraft/system/component 2800 Fuel system 7300 Engine fuel and control system Aircraft handling Aircraft return		

**Headline:**

LH engine low pressure and LH engine double ECU failure during cruise.

**Narrative:**

A/c started to yaw momentarily to the left. 'Left Engine ECU A' failure caption illuminated. A second momentary yaw left occurred which was followed by a 'Left Engine ECU B' failure caption along with 'Left Fuel Pressure Low' warning. Checklist reviewed, although the checklist provides actions for an individual ECU failure but none for a double failure. A/c continued with normal flight although the captions remained. A/c returned and landed safely. LH wing fuel pumps replaced after liaison with manufacturer.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>201100148</b>
<b>Phase of Flight:</b>	Hovering	<b>UTC Date:</b>	07/01/2011
<b>Classification:</b>	Incident	<b>Location:</b>	Benson
<b>Event Type:</b>	Aircraft/system/component 7300 Engine fuel and control system 7700 Engine indicating system Weather encounters		

**Headline:**

On lifting to the hover, flight crew observed multiple cautions/captions relating to the nr1 engine (Fli Degr, Eng Manual, Fadec Fail, Fadec Minr) leading to FADEC failure.

**Narrative:**

On selecting nr1 to idle it was observed that the nr1 first level indicator (FLI) was already indicating zero. A/c landed and engineering consulted. Investigations found fault to be caused by the N1 sensor input failure, which was not evident when FADEC selected on. Fault diagnosis of thenr1 engine N1 sensor found it to be within limits. A/c had been parked in heavy rain for prolonged period and suspected water ingress at sensor plug thought to be a factor.

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<b>Make/mdl/srs:</b>	AIRBUS A320	<b>File Number:</b>	<b>201100230</b>
<b>Phase of Flight:</b>	Taxi	<b>UTC Date:</b>	08/01/2011
<b>Classification:</b>	Incident	<b>Location:</b>	Hurghada
<b>Event Type:</b>	7200 Turbine engine 7300 Engine fuel and control system		

**Headline:**

Nr2 engine failure during taxi-out.

**Narrative:**

During taxi, just after completing out flight control checks, nr2 engine failed. Initial indications in the flight deck were a slight dimming of the lights and a clunk as the nr2 generator dropped out. ECAM showed 'Eng 2 fail' and 'FADEC fault'. A/c taxied back. Local engineers attended a/c.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>201100515</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	18/01/2011
<b>Classification:</b>	Incident	<b>Location:</b>	En Route
<b>Event Type:</b>	7200 Turbine engine 7300 Engine fuel and control system Aircraft operation general 7700 Engine indicating system 7500 Engine air system		

**Headline:**

Nr1 engine 'degrade' caution with associated aural warning enroute from maintenance base. Flight Manual actions carried out and a/c continued to base. P3 failure diagnosed on shut down.

**Narrative:**

On engineering advice numerous start/stop cycles carried out but fault could not be replicated. A/c returned to service but fault recurred twice next day.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>201100547</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	19/01/2011
<b>Classification:</b>	Incident	<b>Location:</b>	Warton
<b>Event Type:</b>	7200 Turbine engine 7300 Engine fuel and control system Aircraft operation general 7700 Engine indicating system Aircraft return 7500 Engine air system		

**Headline:**

Nr1 engine 'degrade' caution with associated aural warning when collective raised to commence take-off. Recurring fault.

**Narrative:**

Collective lowered and engines shut down. Post flight report on VEMD indicated a P3 failure. Engineering assistance sought but no fault found following several ground runs and a maintenance check flight. A/c returned to service later same day but fault recurred during check flight. A/c returned to base and engineering advised.

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<b>Make/mdl/srs:</b>	AIRBUS A319	<b>File Number:</b>	<b>201102101</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	03/03/2011
<b>Classification:</b>	Incident	<b>Location:</b>	Amsterdam
<b>Event Type:</b>	7201 Turbine engine - generally Aircraft return Aircraft handling 7300 Engine fuel and control system		

**Headline:**

A/c returned due to reported defect with nr2 engine.

**Narrative:**

On setting power for take-off, nr2 engine was noticed lagging behind nr1 and took approx 5-7secs longer to achieve take-off power. Additional rudder input was also required to maintain directional control. After both engines reached required power the indications were normal and flight continued normally until an ACARS message from Maintrol asking if crew had any issues with nr2 engine. Engineers contacted and a decision was made to return. No emergency declared and normal landing made.

CAA Closure: The EEC was removed and sent for a full and in-depth investigation. Further testing was devised in collaboration with the engine manufacturer which is still ongoing. The operator continues to pursue the investigation of the failed unit. No further reports since replacement of the EEC.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC120	<b>File Number:</b>	<b>201102718</b>
<b>Phase of Flight:</b>	Unknown	<b>UTC Date:</b>	06/03/2011
<b>Classification:</b>	Incident	<b>Location:</b>	Rochester
<b>Event Type:</b>	7201 Turbine engine - generally 2700 Aircraft flight control Declared emergency 7700 Engine indicating system 6201 Main rotor - general 6700 Rotorcraft flight control system 7600 Engine controls Declared emergency - Urgency Diversion 7300 Engine fuel and control system		

**Headline:**

PAN declared due to rising RPM. Made precautionary landing diversion for checks. A/c then continued to destination using minimum power.

**Narrative:**

Investigation found metal contamination on the Fuel Control Unit HP fuel filter. FCU replaced.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>201103024</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	25/03/2011
<b>Classification:</b>	Incident	<b>Location:</b>	Ripley
<b>Event Type:</b>	7201 Turbine engine - generally 7300 Engine fuel and control system Aircraft return 7700 Engine indicating system		

**Headline:**

During cruise 'Fli Degr' and 'Redund' captions operated and no TOT system 2 indications. A/c returned.

**Narrative:**

Investigations found the EGT thermocouple on nr2 engine had failed. Component replaced.

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<b>Make/mdl/srs:</b>	AIRBUS A330	<b>File Number:</b>	<b>201103447</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	04/04/2011
<b>Classification:</b>	Incident	<b>Location:</b>	En Route
<b>Event Type:</b>	Aircraft/system/component 7300 Engine fuel and control system 2400 Electrical power system		

**Headline:**

ECAM message, circuit breaker FADEC B ENG 1 popped during cruise.

**Narrative:**

Troubleshooting carried out at destination. Power control unit pins found degraded. A/c downgraded non ETOPS iaw MEL, and nr1 engine PCU replaced on return.

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<b>Make/mdl/srs:</b>	BOEING 757	<b>File Number:</b>	<b>201104635</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	03/05/2011
<b>Classification:</b>	Incident	<b>Location:</b>	Birmingham
<b>Event Type:</b>	Aircraft/system/component Rejected take-off 2200 Autoflight system 7300 Engine fuel and control system		

**Headline:**

Rejected take-off at low speed due to EICAS Autothrottle Warnings. Message cleared and take-off continued. A/c encountered further problems with autothrottle enroute.

**Narrative:**

Whilst engines spooling up for take-off, EICAS 'autothrottle' and 'autothrottle disconnect' occurred. Further problems with autothrottle and EEC/limiter enroute.

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<b>Make/mdl/srs:</b>	BOEING 737	<b>File Number:</b>	<b>201104972</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	10/05/2011
<b>Classification:</b>	Incident	<b>Location:</b>	Palma
<b>Event Type:</b>	Aircraft/system/component 7201 Turbine engine - generally Rejected take-off 7300 Engine fuel and control system		

**Headline:**

Rejected take-off at 70kts due to "Master Caution". A/c returned to stand for investigation. Engine nr2 "Engine Control" illuminated. Fault traced to a Transient EEC Malfunction.

**Narrative:**

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<b>Make/mdl/srs:</b>	EUROCOPTER EC225	<b>File Number:</b>	<b>201105659</b>
<b>Phase of Flight:</b>	Unknown	<b>UTC Date:</b>	24/05/2011
<b>Classification:</b>	Incident	<b>Location:</b>	En Route
<b>Event Type:</b>	Aircraft/system/component 3410 Flight Environment Data 7700 Engine indicating system 6300 Main rotor drive system 3418 Flight management system 7500 Engine air system 7300 Engine fuel and control system Aircraft return Aircraft operation general		

**Headline:**

Aircraft Data Computer nr1 crashed with total loss of engine and main gearbox information on centre screen. A/c returned.

**Narrative:**

Screens reconfigured to Aircraft Data Computer nr2, all engine and gearbox information displayed with steady GOV light on nr1 engine with 8% split, diff power light and OEI FADEC stops armed.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC225	<b>File Number:</b>	<b>201107494</b>
<b>Phase of Flight:</b>	Standing	<b>UTC Date:</b>	30/06/2011
<b>Classification:</b>	Incident	<b>Location:</b>	Aberdeen (ADN)
<b>Event Type:</b>	Engine shutdown/flameout 7300 Engine fuel and control system		

**Headline:**

Nr1 engine uncommanded shutdown from idle.

**Narrative:**

Both engine retarded to idle to enable compressor washes when a loud popping/banging noise was heard from nr1 engine commensurate with compressor stall/surge. The noises cleared just as the pilot was about to shut down the engine. A short while after the wash rig was connected, an uncommanded engine shut down occurred with no warnings or unusual indications. Investigation found a malfunction within nr1 engine BIM box (engine interconnection box) which appeared to have caused an internal failure of the AMC (Aircraft Management Computer).

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<b>Make/mdl/srs:</b>	DIAMOND DA40	<b>File Number:</b>	<b>201107523</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	01/07/2011
<b>Classification:</b>	Incident	<b>Location:</b>	Cranfield (CIT)
<b>Event Type:</b>	7200 Turbine engine Rejected take-off 7300 Engine fuel and control system		

**Headline:**

Engine failure during take-off roll.

**Narrative:**

During take-off roll, a/c reached approx 60kts when a bang was heard followed by total loss of power. Propeller windmilled for a few seconds then stopped. ECU 'A' fail displayed. Initial investigations indicate loss of fuel rail pressure.

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<b>Make/mdl/srs:</b>	AIRBUS A330	<b>File Number:</b>	<b>201108679</b>
<b>Phase of Flight:</b>	Standing	<b>UTC Date:</b>	26/07/2011
<b>Classification:</b>	Incident	<b>Location:</b>	Unknown
<b>Event Type:</b>	Aircraft/system/component 2400 Electrical power system 7300 Engine fuel and control system		

**Headline:**

Nr1 engine FADEC power C/B found tripped prior to pushback.

**Narrative:**

Nr1 engine power supply module replaced.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC225	<b>File Number:</b>	<b>201109217</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	08/08/2011
<b>Classification:</b>	Incident	<b>Location:</b>	En Route
<b>Event Type:</b>	7201 Turbine engine - generally Declared emergency Aircraft operation general Declared emergency - Urgency 7500 Engine air system 2400 Electrical power system 7700 Engine indicating system 7300 Engine fuel and control system 3130 Data recording		

**Headline:**

PAN declared due to engine governor warning and loss of N1 signal during cruise.

**Narrative:**

ECL actioned for 'Minor Governor Malfunction'. The nr2 engine dual alternator stator body was removed from the engine and the alternator shaft was found to be sheared. All the reported indications and events (with the exception of the HUMS) are consistent with an engine dual alternator failure. The HUMS is believed to be a non related failure which on investigation, could not be replicated. Illumination of the FADEC caption on shut down (GOV extinguished) is to be expected due to system software. No delta N1 from the alternator available to run the engine to the IDLE setting so FADEC declared itself unserviceable. The nr2 engine was replaced.

<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>201109704</b>
<b>Phase of Flight:</b>	Unknown	<b>UTC Date:</b>	15/08/2011
<b>Classification:</b>	Incident	<b>Location:</b>	
<b>Event Type:</b>	Aircraft/system/component 3150 Central warning 7300 Engine fuel and control system Aircraft return		

**Headline:**

Several in-flight degrade cautions activated in flight. A/c returned to base and closed down without further incident.

**Narrative:**

Nr1 and 2 EECUs replaced.

<b>Make/mdl/srs:</b>	SAAB 340	<b>File Number:</b>	<b>201109811</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	21/08/2011
<b>Classification:</b>	Incident	<b>Location:</b>	
<b>Event Type:</b>	7200 Turbine engine 7700 Engine indicating system 7300 Engine fuel and control system		

**Headline:**

RH engine torque drop and ITT fluctuation of 20-30deg during the cruise. ITT then reduced by 200deg. Power reduced 20-30%. Flight continued with reduced RH engine power.

**Narrative:**

Investigation found DECU electrical plugs contaminated.

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<b>Make/mdl/srs:</b>	AGUSTA BELL AB139	<b>File Number:</b>	<b>201110354</b>
<b>Phase of Flight:</b>	Standing	<b>UTC Date:</b>	01/09/2011
<b>Classification:</b>	Incident	<b>Location:</b>	Dorchester
<b>Event Type:</b>	7200 Turbine engine 7300 Engine fuel and control system		

**Headline:**

Nr1 EEC failed shortly after both engines had been selected to idle following landing. Actions carried out iaw ECL and nr1 engine shut down.

**Narrative:**

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<b>Make/mdl/srs:</b>	BOEING 747	<b>File Number:</b>	<b>201111151</b>
<b>Phase of Flight:</b>	Standing	<b>UTC Date:</b>	11/09/2011
<b>Classification:</b>	Incident	<b>Location:</b>	London-Heathrow - LHR
<b>Event Type:</b>	7201 Turbine engine - generally 8000 Engine starting system 7300 Engine fuel and control system 7700 Engine indicating system		

**Headline:**

Nr3 engine auto start led to rapid acceleration with peak EGT of 703deg C.

**Narrative:**

Crew debriefed. HMU and EEC replaced. Engine ground run with normal indications.

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<b>Make/mdl/srs:</b>	SIKORSKY S76	<b>File Number:</b>	<b>201111302</b>
<b>Phase of Flight:</b>	Taxi	<b>UTC Date:</b>	19/09/2011
<b>Classification:</b>	Incident	<b>Location:</b>	Humberside
<b>Event Type:</b>	7201 Turbine engine - generally 7300 Engine fuel and control system		

**Headline:**

DECU fault during taxi.

**Narrative:**

A/c returned to stand. Fault occurred twice during previous flight. Fault traced to air vent blower motor.

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<b>Make/mdl/srs:</b>	BOEING 737	<b>File Number:</b>	<b>201112413</b>
<b>Phase of Flight:</b>	Initial climb	<b>UTC Date:</b>	07/10/2011
<b>Classification:</b>	Incident	<b>Location:</b>	Nottingham East Midlands
<b>Event Type:</b>	Aircraft/system/component 7200 Turbine engine 7300 Engine fuel and control system		

**Headline:**  
Nr1 engine PMC (Power Management Control) failure.

**Narrative:**  
Passing approx 1400ft, nr1 engine N1 increased by approx 4%. Shortly afterwards, nr1 PMC inop light illuminated.

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<b>Make/mdl/srs:</b>	SIKORSKY S76	<b>File Number:</b>	<b>201112551</b>
<b>Phase of Flight:</b>	Unknown	<b>UTC Date:</b>	09/10/2011
<b>Classification:</b>	Incident	<b>Location:</b>	
<b>Event Type:</b>	7201 Turbine engine - generally 7300 Engine fuel and control system Aircraft return		

**Headline:**  
Nr2 DECU minor fault in flight. A/c returned.

**Narrative:**  
Air vent blower motor removed and flapper valve springs found to be inoperative.

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<b>Make/mdl/srs:</b>	AIRBUS A340	<b>File Number:</b>	<b>201112964</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	15/10/2011
<b>Classification:</b>	Incident	<b>Location:</b>	En Route
<b>Event Type:</b>	Aircraft/system/component 2800 Fuel system Declared emergency 7300 Engine fuel and control system 3418 Flight management system Declared emergency - Urgency Flight crew/ANS 8000 Engine starting system		

**Headline:**

Dual FCMC (Fuel Control and Monitoring Computer) fault.

**Narrative:**

FCMC 1 + 2 fault occurred approximately one hour into flight. Numerous resets failed to rectify fault. FCMC 1 + 2 resets performed every 45mins to conduct fuel cross feed. FRMCS remained online for approx 5mins after each reset. Due to nature of the fuel fault, PAN declared and a/c squawked 7700 to ensure an uninterrupted straight in approach. Cross feed valves selected open for safe operation. CAA Closure: The FCMC's were returned for shop analysis where no fault was found. It is believed that an unfavourable No Power Break Transfer at engine start upset the FCMC's. The master FCMC was controlling as it should have. This event is related to a known issue referenced in TFU 28.51.00.024of which the manufacturer will update by the end 2011.

<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>201113925</b>
<b>Phase of Flight:</b>	Initial climb	<b>UTC Date:</b>	06/11/2011
<b>Classification:</b>	Incident	<b>Location:</b>	Milton Keynes
<b>Event Type:</b>	7200 Turbine engine 7300 Engine fuel and control system 7700 Engine indicating system		

**Headline:**

Loss of engine power during flight.

**Narrative:**

Upon deactivating CAT 'A' it was found the FLI needle on nr1 engine increased towards 10 whilst nr2 engine FLI needle decreased to approx 5. Torque readings showed 65% torque on nr1 engine and 30% torque on nr2 engine. No cautions, captions or warnings displayed at any time during flight. Upon return, a/c shut down and everything switched off. After 10secs the electrics switched back on and a FADEC fail caption for both FADECs alerted. CAA Closure: The downloads were investigated by the engine manufacturer and found the EECUs fitted were causing problems. This was also coupled with a defective CAT 'A' switch. Research into the history of EECU that was fitted RH shows previous history of similar faults before software upgrade was carried out. The operator reports no further occurrences since pre mod EECUs fitted and new CAT A switch. TC holder has been kept informed.

<b>Make/mdl/srs:</b>	DIAMOND DA42	<b>File Number:</b>	<b>201115674</b>
<b>Phase of Flight:</b>	Approach	<b>UTC Date:</b>	22/12/2011
<b>Classification:</b>	Incident	<b>Location:</b>	Cranfield (CIT)
<b>Event Type:</b>	7201 Turbine engine - generally Declared emergency Declared emergency - Urgency 7300 Engine fuel and control system Aircraft return		

**Headline:**

PAN declared due to ECU failure. A/c returned.

**Narrative:**

<b>Make/mdl/srs:</b>	BOEING 777	<b>File Number:</b>	<b>201201415</b>
<b>Phase of Flight:</b>	Approach	<b>UTC Date:</b>	09/02/2012
<b>Classification:</b>	Incident	<b>Location:</b>	Chicago Ohare
<b>Event Type:</b>	Aircraft/system/component 7200 Turbine engine 7600 Engine controls 7300 Engine fuel and control system		

**Headline:**

During descent, uncommanded power increase from RH engine followed by uncommanded decrease to idle power with 'R EICAS Engine Fail' annotating.

**Narrative:**

Engine shutdown checklist actioned. Engine control 'R STSMMSG' appeared during fluctuations. Autoland carried out without further incident. Following engineering investigation, Electronic Engine Control changed.

CAA Closure: Powerplant and the operator's engineering dept determined through FIM (Fault Isolation Manual) test and Flight Data that the FMU had experienced a dual channel resolver fault. FMU and EEC (Electronic Engine Control) removed for investigation. The OEM have investigated the FMU / EEC and have determined the dual fault occurred through a channel B resolver malfunction and believe the failure of channel A to be contamination of the harness electrical connector.

<b>Make/mdl/srs:</b>	BOEING 747	<b>File Number:</b>	<b>201204571</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	28/04/2012
<b>Classification:</b>	Incident	<b>Location:</b>	En Route
<b>Event Type:</b>	Icing conditions 7300 Engine fuel and control system 7200 Turbine engine Turbine engine - multiple failures Aircraft/system/component 7700 Engine indicating system 2200 Autoflight system 3418 Flight management system		

**Headline:**

Multiple engine defects and primary flight display (PFD) fault.

**Narrative:**

During moderate turbulence N1 vibration levels for nr1 and nr2 engines exceeded 2 units. Nr3 engine

EEC mode failed leading to a loss of autothrust and a 'duct leak' message was displayed. In an unrelated incident later during the flight the P2's PFD display failed. Reporter states previous history of these defects.

CAA Closure: The event was attributed to high altitude ice crystals. The EEC and P2 PFD failures could not be identified. The 'duct leak' message was attributed to the AFOLTS (automatic fire and overheat logic and test system) card.

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<b>Make/mdl/srs:</b>	EUROCOPTER EC135	<b>File Number:</b>	<b>201205308</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	15/05/2012
<b>Classification:</b>	Incident	<b>Location:</b>	Hawarden
<b>Event Type:</b>	7201 Turbine engine - generally Aircraft return 7700 Engine indicating system 7300 Engine fuel and control system		

**Headline:**

A/c returned due to nr1 engine FADEC failure.

**Narrative:**

FRC's actioned and a/c returned for engineering assistance. Fault traced to oil contamination of the 'NG A' sensor plug.

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<b>Make/mdl/srs:</b>	BOEING 737	<b>File Number:</b>	<b>201205389</b>
<b>Phase of Flight:</b>	Cruise	<b>UTC Date:</b>	18/05/2012
<b>Classification:</b>	Incident	<b>Location:</b>	En Route
<b>Event Type:</b>	7201 Turbine engine - generally 7300 Engine fuel and control system		

**Headline:**

In cruise at FL360 Master Caution 'ENG' appeared. Both 'ALTN' EEC lights illuminated on engine control panel overhead. QRH checklists completed. Entry made in Tech Log.

**Narrative:**

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<b>Make/mdl/srs:</b>	BOEING 767	<b>File Number:</b>	<b>201205433</b>
<b>Phase of Flight:</b>	Maintenance phases	<b>UTC Date:</b>	19/05/2012
<b>Classification:</b>	Incident	<b>Location:</b>	London-Heathrow - LHR
<b>Event Type:</b>	Aircraft/system/component 2400 Electrical power system 7300 Engine fuel and control system		

**Headline:**

Failure of emergency back-up power supply.

**Narrative:**

Discovered whilst checking a fault with being unable to review messages from RH PIMU during daily/weekly checks. A defective connector was found in the emergency back-up supply which caused it to fail. This 28vDC supply is used for: Maintenance PIMU test, power during the first phase of engine start and as an emergency power source for the FAFC. The concern is for the possible consequences if the associated dedicated generator had failed during flight with no emergency back-up supply available. No reports of engine control faults.

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<b>Make/mdl/srs:</b>	BOEING 737	<b>File Number:</b>	<b>201205533</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	23/05/2012
<b>Classification:</b>	Incident	<b>Location:</b>	London-Gatwick - LGW
<b>Event Type:</b>	7201 Turbine engine - generally 7600 Engine controls 7300 Engine fuel and control system Aircraft return		

**Headline:**

Thrust lever stagger during take-off and climb. A/c diverted.

**Narrative:**

CAA Closure: Investigations led to the defect being considered to be Power Management Control Unit 1 (PMC 1), which was subsequently replaced. The removed PMC was routed for overhaul and extensively tested. The unit went through two thermal cycles of testing, monitoring the PMC on the thermal ramps in addition to normal three temperature acceptance testing, with no failures. The PMC was also opened and a detailed wire inspection of the internal wiring was performed with no findings. The unit could not be faulted so the cause could have been loose connections which were rectified through the replacement action.

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<b>Make/mdl/srs:</b>	AIRBUS A319	<b>File Number:</b>	<b>201206823</b>
<b>Phase of Flight:</b>	Climb to cruising level or altitude	<b>UTC Date:</b>	19/06/2012
<b>Classification:</b>	Incident	<b>Location:</b>	En route
<b>Event Type:</b>	7201 Turbine engine - generally 7300 Engine fuel and control system Declared emergency - Urgency Aircraft return		

**Headline:**

PAN declared and a/c returned due to nr2 engine malfunction.

**Narrative:**

ECAM status message 'ENG2 N1 Degraded Mode'. A/c landed safely. Pre-existing ADD contributed to the return due to EPR mode being inoperative on nr2 engine. Electronic Engine Controller 2 replaced.

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<b>Make/mdl/srs:</b>	AIRBUS A320	<b>File Number:</b>	<b>201209622</b>
<b>Phase of Flight:</b>	Take-off	<b>UTC Date:</b>	13/08/2012
<b>Classification:</b>	Incident	<b>Location:</b>	Frankfurt
<b>Event Type:</b>	7201 Turbine engine - generally 7300 Engine fuel and control system Rejected take-off Aircraft handling Aerodrome services / operations		

**Headline:**

Abandoned take-off following engine surge and uncontrolled movement.

**Narrative:**

On setting take-off thrust, there was a loud bang and the a/c yawed to the right. Nr2 engine was shut down and a/c vacated the runway. Fire services attended to inspect a/c. The a/c had just undergone maintenance action after an engine surge on the previous take-off.

CAA Closure: The organisation carried out a full review of the previous maintenance and noted that the ECU had been changed. An engine run was carried out which confirmed the problem of engine surging. During the fault finding process, the ECU was diagnosed as the prime defect and was again changed. A high power engine run was carried out with no faults noted. The ECU was returned to the vendor.

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<b>Make/mdl/srs:</b>	DE HAVILLAND DHC8	<b>File Number:</b>	<b>201211759</b>
<b>Phase of Flight:</b>	Approach	<b>UTC Date:</b>	26/09/2012
<b>Classification:</b>	Incident	<b>Location:</b>	Glasgow (GOW)
<b>Event Type:</b>	7201 Turbine engine - generally Engine shutdown/flameout Declared emergency 7600 Engine controls Declared emergency - Urgency Aerodrome services / operations 7300 Engine fuel and control system		

**Headline:**

PAN declared and single engine landing carried out due to nr2 engine FADEC failure at 4000ft.

**Narrative:**

A/c landed safely with emergency services in attendance.

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<b>Make/mdl/srs:</b>	MD HELICOPTER MD900	<b>File Number:</b>	<b>201302943</b>
<b>Phase of Flight:</b>	Approach - holding	<b>UTC Date:</b>	02/03/2013
<b>Classification:</b>	Incident	<b>Location:</b>	United Kingdom-Workso p
<b>Event Type:</b>	7600 Engine controls 7400 Engine ignition system 7201 Turbine engine - generally 7300 Engine fuel and control system Aircraft return		

**Headline:**

Electronic engine control (EEC) failure. A/c returned.

**Narrative:**

A/c in orbit at 300ft to check for landing site. EEC failure warning. RH engine torque frozen at 47%, LH engine normal parameters. EEC reset procedure carried had no effect. A/c returned using manual throttle control for an uneventful arrival. Oil found on three RH engine plugs.

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<b>Make/mdl/srs:</b>	AIRBUS A320	<b>File Number:</b>	<b>201306382</b>
<b>Phase of Flight:</b>	Normal descent	<b>UTC Date:</b>	03/06/2013
<b>Classification:</b>	Incident	<b>Location:</b>	En route
<b>Event Type:</b>	7300 Engine fuel and control system Declared emergency - Urgency		

**Headline:**

Differences displayed in a/c engine parameters during descent. PAN declared.

**Narrative:**

During descent at idle thrust a marked difference was seen in all engine parameters, fuel flow, EPR, N1, N2 and EGT. Neither engine approached or exceeded any limitations. Level off to FL150 requested, in level flight both engines equalised. Differences could have been one engine in ground idle and the other in flight idle. PAN declared as a precaution to obtain expeditious approach. Fire services requested to inspect engines after landing. All appeared normal.

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Number of Records: 249