Airworthiness Directive

AD No.: 2016-0122

Issued: 21 June 2016

Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EC) 216/2008 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation.

This AD is issued in accordance with Regulation (EU) 748/2012, Part 21.A.3B. In accordance with Regulation (EU) 1321/2014 Annex I, Part M.A.301, the continuing airworthiness of an aircraft shall be ensured by accomplishing any applicable ADs. Consequently, no person may operate an aircraft to which an AD applies, except in accordance with the requirements of that AD, unless otherwise specified by the Agency [Regulation (EU) 1321/2014 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [Regulation (EC) 216/2008, Article 14(4) exemption].

Design Approval Holder's Name:

AIRBUS

Type/Model designation(s):

A319, A320 and A321 aeroplanes

Effective Date: 05 July 2016

TCDS Number(s): EASA.A.064

Foreign AD: Not applicable

Supersedure: This AD supersedes DGAC France AD 1998-226-119(B)R1 dated 22 January 2000 and AD 1999-411-140(B)R1 dated 13 May 2000.

ATA 22 – Auto Flight – Flight Management and Guidance Computer – Replacement

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Manufacturer(s):
Airbus (formerly Airbus Industrie)

Applicability:
Airbus A319-111, A319-112, A319-113, A319-114, A319-115, A319-131, A319-132, A319-133, A320-211, A320-212, A320-214, A320-231, A320-232, A320-233, A321-111, A321-112, A321-131, A321-211, A321-212, A321-213, A321-231 and A321-232 aeroplanes, all manufacturer serial numbers.

Reason:
Following an instrument landing system (ILS) approach, during night, in rainy condition, an A321 aeroplane experienced a longitudinal runway excursion. Investigation revealed that the approach was not stabilized with an overspeed of 19 knots (kts) over the runway threshold, followed by a long flare (18 seconds) with touchdown far behind the touchdown zone. The aeroplane exited the runway at 75 kts and came to rest around 300 meters beyond the end of the runway. During the final approach, at 150 feet Radio Altimeter (RA) altitude, the corrected airspeed of the aeroplane was 165 kts (24 kts overspeed). Auto thrust (ATHR) commanded a transient N1 increase up to 70% due to the ATHR speed Mach control law.

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The ATHR system on A320 family aeroplane was designed to maintain accurately the aircraft speed/Mach to speed/Mach target by commanding the thrust, featuring also a trade-off at low altitude between thrust corrections to maintain speed equal to speed target and too large thrust corrections destabilizing the aircraft trajectory near the ground. The conclusions of the investigations were that the main contributor to this runway excursion was a non-stabilized approach not followed by a go-around. ATHR misbehaviour in case of large overspeed led to an unexpected thrust increase, which is considered as a contributor to the long flare.

This ATHR characteristic, reported as “Spurious thrust increase during approach”, was initially found in 1996 and a modification was developed and introduced in Flight Guidance (FG) 2G standard “C8 or I8” (C for CFM engines and I for IAE engines) in 2001.

Prompted by these findings, Airbus introduced a programme to encourage operators to replace the FMGC Legacy with the FMGC equipped with Flight Management System type 2 (FMS2) and FG standard, which introduces additional operational capabilities, including Runway Overrun Protection System / Runway Overrun Warning (ROPS/ROW) and Autopilot/Traffic Collision Avoidance System (AP/TCAS). It was determined that the ROPS, in a scenario similar to the one described above, would have triggered a «RUNWAY TOO SHORT» aural alert before touchdown. Information was made available through Airbus Service Information Letter (SIL) 22-039 (later superseded by Word In Service Experience (WISE) In Service Information 22.83.00003), and EASA published Safety Information Bulletin (SIB) 2013-19, recommending the FMGC upgrade.

Since EASA SIB was published, it was determined that many operators have chosen not to implement the optional upgrade that improves the ATHR behaviour.

More recently, prompted by a recommendation from the BEA (Bureau d'Enquêtes et d'Analyses pour la sécurité de l'aviation civile) of France, to reduce the risk of further runway excursions due to uninterrupted unstable approaches performed with the legacy FMGC standard, EASA decided to require installation of at least the first version of the FMS2 and associated FG for legacy aeroplanes.

DGAC France issued AD 1999-411-140(B)R1 and AD 1998-226-119(B)R1 to address different unsafe conditions, requiring to install a certain previous FMGC standard that may be susceptible to the “Spurious thrust increase during approach”.

For the reasons described above, this AD supersedes DGAC France AD 1999-411-140(B)R1 and AD 1998-226-119(B)R1, and requires replacement of the affected FMGC units with upgraded units.

Required Action(s) and Compliance Time(s):
Required as indicated, unless accomplished previously:

Note 1: For the purpose of this AD, an “affected FMGC” is an FMGC having a Part Number (P/N) listed in Appendix 1 of this AD.

(1) Within 36 months after the effective date of this AD, identify the FMGC P/N installed on aeroplane.
A review of aeroplane maintenance records is acceptable to make this identification, provided those records can be relied upon for the purpose of this requirement.

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(2) If, during the identification as required by paragraph (1) of this AD, an affected FMGC is found installed, within 36 months after the effective date of this AD, replace the affected FMGC with a serviceable FMGC, having a P/N not listed in Appendix 1 of this AD (hereafter referred to as "serviceable FMGC" in this AD), in accordance with aeroplane modification instructions approved by EASA or by Airbus Design Organisation Approval (DOA). Appendix 2 of this AD provides a list of approved FMGC that are eligible for installation, as well as a list of Airbus SBs that constitute, for certain aeroplanes and configurations, an acceptable method to comply with this modification requirement.

Note 2: Appendix 2 of this AD provides the list of Airbus SB issued at time of issue date of this AD, providing instructions to replace an affected FMGC with a serviceable FMGC. Airbus SB, providing instructions to replace a serviceable FMGC with a serviceable FMGC, having different P/N, are not listed in Appendix 2.

(3) An aeroplane that has been modified in service in accordance with the instructions of an Airbus SB providing instructions to install serviceable FMGCs, as applicable to aeroplane configuration, is not affected by the requirement of paragraph (1) of this AD, provided it is determined that no affected FMGC is installed on that aeroplane.

(4) An aeroplane on which Airbus modification (mod) 31896 or mod 31897 has been embodied in production is not affected by the requirement of paragraph (1) of this AD, provided it is determined that no affected FMGC is installed on that aeroplane.

(5) Do not install on any aeroplane an affected FMGC, as required by paragraph (5.1) or (5.2) of this AD, as applicable.

(5.1) For an aeroplane that, on the effective date of this AD, has an affected FMGC installed: After modification of that aeroplane as required by paragraph (2) of this AD.

(5.2) For an aeroplane that, on the effective date of this AD, does not have an affected FMGC installed: From the effective date of this AD.

(6) Installation on an aeroplane of a FMGC standard, approved after the effective date of this AD, is equal to compliance with the requirements of paragraph (2) of this AD for that aeroplane, provided the conditions as specified in paragraphs (6.1) and (6.2) of this AD are met.

(6.1) The software and/or hardware standard, as applicable, must be approved by EASA, or approved under Airbus DOA; and

(6.2) The installation must be accomplished in accordance with aeroplane modification instructions approved by EASA, or approved under Airbus DOA.

Ref. Publications:
See Appendix 2 of this AD.

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Remarks:

1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD.

2. This AD was posted on 19 April 2016 as PAD 16-055 for consultation until 17 May 2016. The Comment Response Document can be found at http://ad.easa.europa.eu.

3. Enquiries regarding this AD should be referred to the EASA Safety Information Section, Certification Directorate. E-mail: ADs@easa.europa.eu.

4. For any question concerning the technical content of the requirements in this AD, please contact: AIRBUS – Airworthiness Office – EIAS; Fax +33 5 61 93 44 51;
E-mail: account.airworth-eas@airbus.com.

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Appendix 1 – Affected FMGC

Aeroplanes	FMGC P/N			
A319-111, A319-112, A319-113, A319-114, A319-115, A320-211, A320-212, A320-214, A321-111, A321-112, A321-211, A321-212 and A321-213 (all CFM56)	B398AAM0303	B398AAM0304	B398AAM0405	B398AAM0406
	B398AAM0407	B398AAM0408	B398AAM0409	B398AAM0410
	B398AAM0411	B398AAM0412	B398BAM0101	B398BAM0202
	B398BAM0203	B398BAM0204	B398BAM0205	B398BAM0206
	B398BAM0207	B398BAM0208	B398BAM0209	B546BAM0101
	B546BAM0202	B546BAM0203	B546BAM0204	B546BAM0205
	B546BAM0206	B546CAM0101	B546CAM0102	B546CAM0103
	B546CAM0104			
A319-131, A319-132, A319-133, A320-231, A320-232, A320-233, A321-131, A321-231 and A321-232 (all V2500)	B398BCM0101	B398BCM0102	B398BCM0103	B398BCM0104
	B398BCM0105	B398BCM0106	B398BCM0107	B398BCM0108
	B398BCM0109	B546BCM0101	B546BCM0102	B546BCM0203
	B546BCM0204	B546BCM0205	B546CCM0101	B546CCM0102
	B546CCM0103	B546CCM0104	B546CCM0105	B546CCM0106

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Appendix 2

Table 1 – List of approved eligible FMGC certified at the issue date of this AD

Aeroplanes	FMGC P/N	
	FMGC Hardware	FG Software
A319-111, A319-112, A319-113, A319-114, A319-115, A320-211, A320-212, A320-214, A321-111, A321-112, A321-211, A321-212 and A321-213 (all CFM56)	C13042AA01	
	C13042AA02	
	C13042AA03	
	C13042AA04	
	C13042AA05	
	C13042AA06	
	C13042AA07	
	C13043AA01	
	C13043AA02	
	C13043AA03	
	C13043AA04	
	C13043AA05	
	C13043AA06	
	C13207AA00	G2858AAA01
	C13207CA00	G2858AAA02
	C13207CA00	G2858AAA03
	C13208AA00	G2858AAA01
	C13208AA00	G2858AAA02
	C13208AA00	G2858AAA03

Aeroplanes	FMGC P/N	
	FMGC Hardware	FG Software
A319-131, A319-132, A319-133, A320-231, A320-232, A320-233, A321-131, A321-231 and A321-232 (all V2500)	C13042BA01	
	C13042BA02	
	C13042BA03	
	C13042BA04	
	C13042BA05	
	C13042BA06	
	C13042BA07	
	C13042BA08	
	C13043BA01	
	C13043BA02	
	C13043BA03	
	C13043BA04	
	C13043BA05	
	C13043BA06	
	C13043BA07	
	C13043BA08	
	C13207BA00	G2859AAA01
	C13207DA00	G2859AAA02
	C13207DA00	G2859AAA03
	C13207DA00	G2859AAA04
	C13208BA00	G2859AAA01
	C13208BA00	G2859AAA02
	C13208BA00	G2859AAA03
	C13208BA00	G2859AAA04

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Table 2a lists all Airbus SB issued at time of issue date of this AD, providing instructions to replace an FMGC having a P/N listed in Appendix 1 of this AD. Table 2b lists, for each SB listed in Table 2a, the revision status and relevant issue dates.

Table 2a – List of published SB acceptable to comply with para 2 of this AD

SB reference	FMGC/FG install	SB reference	FMGC/FG install
A320-22-1089	C13042AA01	A320-22-1235	C13042BA03
A320-22-1090	C13042BA01	A320-22-1243	C13043BA04
A320-22-1103	C13043AA01	A320-22-1274	C13042AA04
A320-22-1116	C13043BA01	A320-22-1318	C13042AA04
A320-22-1152	C13043AA02	A320-22-1331	C13043BA04
A320-22-1153	C13043BA02	A320-22-1349	C13042AA04
A320-22-1163	C13042AA01	A320-22-1352	C13043AA04
A320-22-1166	C13042AA01	A320-22-1390	C13042AA04
A320-22-1180	C13043BA02	A320-22-1398	C13043BA04
A320-22-1196	C13043AA03	A320-22-1473	C13043AA05
A320-22-1197	C13043BA02	A320-22-1485	C13042BA03
A320-22-1209	C13043BA02	A320-22-1495	C13043BA05
A320-22-1218	C13043AA03	A320-22-1501	C13043AA05
A320-22-1219	C13043BA03	A320-22-1519	C13207CA00
A320-22-1233	C13042AA03	A320-22-1535	C13043AA06

Table 2b – SB revision status

SB reference	SB Revisions	Issue Dates
A320-22-1089	up to 10	18 January 2002, 15 April 2002, 11 June 2002, 1 October 2002, 26 November 2002, 16 January 2003, 03 March 2003, 07 August 2003, 17 October 2003, 22 January 2004, 05 November 2004
A320-22-1090	up to 11	5 March 2002, 15 April 2002, 14 June 2002, 01 October 2002, 26 November 2002, 13 January 2003, 03 March 2003, 26 June 2003, 15 October 2003, 07 November 2003, 22 January 2004, 20 July 2004
A320-22-1103	up to 04	08 October 2002, 01 April 2003, 28 August 2003, 15 October 2003, 12 March 2004
A320-22-1116	up to 04	31 January 2003, 04 August 2003, 17 October 2003, 25 February 2004, 29 March 2004
A320-22-1152	up to 03	05 May 2004, 06 July 2004, 15 October 2004, 18 February 2005
A320-22-1153	up to 01	05 May 2004, 25 January 2005
A320-22-1163		13 December 2004
A320-22-1166		07 December 2004
A320-22-1180		10 August 2005
A320-22-1196		03 April 2006
A320-22-1197	up to 02	20 March 2006, 20 December 2006, 27 March 2007
A320-22-1209	up to 01	12 June 2006, 20 December 2006
A320-22-1218	up to 01	31 January 2007, 08 August 2007

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SB reference	SB Revisions	Issue Dates
A320-22-1219	up to 01	19 January 2007, 12 September 2007
A320-22-1233		12 June 2007
A320-22-1235	up to 01	29 August 2007, 07 February 2008
A320-22-1243	up to 05	16 October 2007, 01 April 2008, 10 September 2008, 17 February 2009, 03 March 2010, 31 May 2010
A320-22-1274		13 November 2008
A320-22-1318		25 August 2010
A320-22-1331		04 November 2010
A320-22-1349		10 March 2011
A320-22-1352	up to 06	18 March 2011, 10 June 2011, 22 August 2011, 16 March 2012, 04 May 2012, 27 February 2013, 25 July 2014
A320-22-1390	up to 01	28 February 2012, 11 March 2014
A320-22-1398	up to 03	04 May 2012, 27 February 2013, 19 September 2013, 13 March 2014
A320-22-1473	up to 01	13 March 2014, 07 July 2015
A320-22-1485		16 June 2014
A320-22-1495	up to 02	17 October 2014, 10 March 2015, 01 September 2015
A320-22-1501		24 October 2014, 20 July 2015
A320-22-1519	up to 02	26 June 2015, 26 August 2015, 21 December 2015
A320-22-1535		12 October 2015

The use of later approved revisions of these documents is acceptable for compliance with the requirements of this AD.

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