AD/BAe 146/75 Removal of Altitude Limitation in Icing Conditions 11/99

Applicability: British Aerospace BAe 146-100, -200 and -300 aircraft with AlliedSignal ALF502R series engines.

Requirement:

1. For each engine installation, incorporate modifications to prevent uncommanded power reductions in icing conditions in accordance with British Aerospace Service Bulletin 71-72-30473A, Revision 1 dated 2 November 1998, Accomplishment Instructions, Paragraph 2.A.

   Note 1: AD/ALF/16 mandates engine specific modifications to improve the fan core inlet anti-icing capability.

   Note 2: CAA (UK) AD 004-02-94R1 and FAA AD 99-15-06 also refer.

2. For fully modified aircraft, remove the existing altitude limitation and N2 limitation placards in accordance with British Aerospace Service Bulletin 71-72-30473A, Revision 1 dated 2 November 1998, Accomplishment Instructions, Paragraph 2.B, Item 1.

   For the purpose of this AD, a "fully modified aircraft" is one that incorporates the anti-icing improvement modifications referenced in Requirement 1 on all four engines.

3. Ensure the respective aircraft flight manuals comply with the configuration specified in British Aerospace Service Bulletin 71-72-30473A, Revision 1 dated 2 November 1998, Accomplishment Instructions, Paragraph 2.B, Item 2.

   Upon compliance with Paragraph 2.B, Item 2, remove the following "green" page amendments, titled *Maximum Operating Altitude* from the respective aircraft flight manuals:

   AFM No. 3.7 - A/146-200/41 dated 8 August 1997
   AFM No. 3.10..- A/146-300/9 dated 26 June 1996
   AFM No. 3.12 - A/146-300/19 dated 26 June 1996
   AFM No. 3.13 - A/146-100/20 dated 26 June 1996

4. For each aircraft that has at least one unmodified engine fitted in any position, install altitude limitation and N2 limitation placards in accordance with British Aerospace Service Bulletin 11-137-30405A.

   Use of a locally manufactured altitude limitation placard denoting a more restrictive altitude limitation (ie. < 26,000') satisfies the intent of this Requirement.

   For the purpose of this airworthiness directive an "unmodified " engine in one that does not incorporate AlliedSignal Service Bulletin ALF/LF 72-1020, Revision 2.

Note 3: Requirement 4 addresses the action previously mandated by AD/BAe 146/69 to identify aircraft subject to the altitude limitation when operating in icing conditions. AD/BAe/69 has been cancelled.

Note 4: Requirement 4 also provides for installation of an unmodified engine on a fully modified aircraft. If such action occurs the altitude restrictions in icing conditions must be re-applied. Operators are responsible to ensure flight crews and maintenance personnel are made aware of this requirement according to the dictates of their respective internal procedures.

Compliance:

1. Before installation of a modified engine or no later than 31 December 2003 whichever occurs first.

2. On any occasion a fully modified aircraft is to be operated with the altitude limitation in icing conditions removed, but no later than 31 December 2003.

3. Within 2 months after the effective date of this airworthiness directive or prior to operating a fully modified aircraft with the altitude limitation in icing conditions removed, whichever occurs first.

4. Whenever an aircraft is operated after the effective date of this airworthiness directive with an unmodified engine installed in any position.

This Airworthiness Directive becomes effective on 4 November 1999.

Background: ALF502 engines installed on BAe146 aircraft are prone to a phenomenon known as “rollback” which is an uncommanded power reduction condition and loss of thrust control in certain icing conditions. There have been instances where simultaneous rollback occurred on multiple engines on the same aircraft.

Altitude restrictions have been successful as an interim means to prevent rollback events. The modifications mandated by this directive will restore the full certificated operating envelope of the aircraft.

This AD also identifies actions that are required if an unmodified engine is installed on an aircraft and removes CASA imposed altitude restrictions from the aircraft flight manual.