LUFTFARTSVERKET
Luftfartsinspektionen

LUFTVÄRDIGHETSDIREKTIV (LVD)

Motor
AlliedSignal(Garret)
LVD Nr 2589

Sektion 2. Utlandstillverkad flygmateriel

TITEL: **Kontroll av bränslekontrollenhetens drivaxel och ändring av flyghandboken (AFM)**

GÄLLER: ModellernaTPE331-3, -5, -6, -10, -11U, och -12 med installerade kontrollenheter i enlighet med bifogad kopia av FAA AD 94-26-07

ÅTGÄRD: Utför åtgärder angivna i FAA AD 94-26-07

TID FÖR ÅTGÄRD: Ändra flyghandboken (AFM) inom 20 dagar och åtgärder i tid och intervaller angivna i FAA AD 94-26-07 räknat från detta LVD`s utgivningsdatum

UNDERLAG: FAA AD 94-26-07 och där angivna underlag

REFERENS: FAA AD 94-26-07

UTGIVNINGS-DATUM: 1995-01-05

LFS: 1995:2

Åtgärd enligt LVD utgör nödvändig förutsättning för ifrågavarende flygmateriels luftvärdighet. Referens BCL M 1.11. Anteckning om åtgärd, som vidtagits i enlighet med LVD, skall införas i teknisk journal för berörd flygmateriel med hänvisning till ifrågavarande LVD-nummer. Angivet underlag refererar till senaste gällande revision/utgåva. LVD utges i luftfartsverkets författningssamlingar LFS.

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L 1563-1

Bilaga till LVD Nr 2589

PRIORITY LETTER AIRWORTHINESS DIRECTIVE

FLIGHT STANDARDS SERVICE
REGULATORY SUPPORT DIVISION
P.O. BOX 26460
OKLAHOMA CITY, OKLAHOMA 73125-0460

U.S. Department
of Transportation
**Federal Aviation
Administration**

DATE: December 13, 1994
94-26-07

This priority letter Airworthiness Directive (AD) is prompted by reports of excessive wear of the internal fuel control drive splines in fuel controls, Part Numbers (P/N) 897770-1 through -8, and 897780-1 through -11, installed on certain AlliedSignal Inc. TPE331 series turboprop engines. In two instances the spline wear resulted in loss of fuel control governor drive. If this occurs, the underspeed fuel governor increases fuel flow, while the overspeed governor is inoperative and cannot limit engine speed.

The FAA has determined that the most serious consequence of a loss of fuel control governor drive is during reverse thrust when the engine suddenly develops uncommanded forward thrust causing an asymmetric thrust condition on a twin-engine aircraft. Another serious consequence of a loss of fuel control governor drive is during engine start when rapid engine acceleration beyond normal idle speed could result in rotor speed sufficient to cause an uncontained turbine separation. During flight, when the propeller is in propeller-governing mode, the result will be uncommanded increased engine torque and turbine temperature. These conditions, if not corrected, could result in an uncontained engine failure, damage to the aircraft, or loss of aircraft control.

The FAA has reviewed and approved the technical contents of the following service bulletins (SB): AlliedSignal Inc. Alert SB No. TPE331-A73-0221, Revision 2, dated October 10, 1994, applicable to model TPE331-11U engines, that describes procedures for dimensionally inspecting fuel control drive shaft splines; AlliedSignal Inc. SB No. TPE331-73-0224, dated August 17, 1994, and Revision 1, dated September 8, 1994, applicable to model TPE331-11U engines, that describe procedures for replacing affected fuel controls with alternate fuel controls; AlliedSignal Inc. Alert SB No. TPE331-A73-0226, dated October 10, 1994, applicable to certain TPE331-3, -5, -6, -10, and -12 series engines, that describe procedures for dimensionally inspecting fuel control drive shaft splines; and AlliedSignal Inc. SB No. TPE331-73-0228, dated September 16, 1994, applicable to certain TPE331-3, -5, -6, -10, and -12 series engines TPE331 engines, that describe procedures for replacing affected fuel controls with alternate fuel controls.

Since an unsafe condition has been identified that is likely to exist or develop on other engines of this same type design, this AD requires an amendment to the Emergency Procedures section of the applicable FAA Approved Airplane Flight Manual (AFM) for each applicable engine installation in an aircraft. This amendment to the applicable AFM describes conditions inflight, during ground start, and during reverse thrust operation that might indicate loss of fuel control governor drive, and provides required procedures for engine shutdown. These AFM changes have been coordinated with the FAA Directorate responsible for the certification of the aircraft involved.

In addition, this AD requires either initial and repetitive dimensional inspections of the fuel control drive shaft splines for wear, or replacing the affected fuel controls with alternate fuel controls. Replacement with the alternate fuel controls constitutes terminating action to the repetitive inspections. The actions are required to be accomplished in accordance with the service bulletins described previously.

This rule is issued under 49 U.S.C. Section 44701 (formerly section 601 of the Federal Aviation Act of 1958) pursuant to the authority delegated to me by the Administrator, and is effective immediately upon receipt of this Priority Letter.

94-26-07 AlliedSignal Inc.: Priority Letter issued on December 13, 1994. Docket No. 94-ANE-46.

Applicability: AlliedSignal Inc. Models TPE331-3, -5, -6, -10, -11U, and -12 series turboprop engines with fuel control assembly Part Numbers (P/N) 897770-1 through 897770-8 and 897780-1 through 897780-11 installed in accordance with AlliedSignal Inc. Service Bulletin (SB) No. TPE331-73-0217, dated July 9, 1993. These engines are installed on but not limited to Mitsubishi MU-2B series (MU-2 series) Solitaire/Marquise, Construcciones Aeronauticas, S.A. C-212 series, British Aerospace (BAe) Jetstream 3101 and 3201 (31 and 32) series, Fairchild SA226 and SA227 series (Swearingen Merlin and Metro series), Twin Commander Models 680, 690, 695 (Jetprop Commander), Short Brothers and Harland, Ltd. SC7 (Skyvan), Dornier 228 series, Beech Model B-100 series aircraft, and Ayres S-2R series aircraft.

Compliance: Required as indicated, unless accomplished previously.

To prevent failure of the fuel control governor drive from excessive wear of the internal fuel control drive splines, which can result in loss of aircraft control, accomplish the following:

(a) Amend the applicable FAA Approved Airplane Flight Manual (AFM) to provide interim emergency procedures to flight crews, within 20 calendar days after receipt of this priority letter Airworthiness Directive (AD), by adding the following to the Emergency Procedures section. This may be accomplished by inserting a copy of this AD into the AFM:

"**Inflight:** in the event of an uncommanded engine torque and turbine temperature increase, or if engine power fails to respond when the power level is retarded, shut down the affected engine as soon as possible consistent with the safe operation of the aircraft.

Warning: be aware that the affected engine with a failed fuel control governor drive will typically exhibit an increase in power, and if the accepted "dead foot--dead engine" logic is employed, the wrong engine could be shut down because the malfunction will result in an increase in forward thrust from the affected engine. Use caution and monitor cockpit engine indications to aid in identifying the failure mode and the malfunctioning engine.

During Ground Start: if an engine exhibits rapidly increasing RPM above idle values, immediately terminate the start.

If an engine has been shutdown inflight as a result of exhibiting an uncontrolled increase in torque and turbine temperature, do not attempt a ground start until the fuel control is inspected in accordance with the applicable service bulletin.

During Reverse Operation: if an engine suddenly develops forward thrust, immediately terminate reverse thrust. If necessary, shutdown both engines in order to maintain directional control."

(b) For AlliedSignal Model TPE331-11U engines:

(1) Conduct initial and repetitive dimensional inspections of the fuel control drive shaft splines for wear in accordance with the compliance times and procedures described in AlliedSignal Alert Service Bulletin (SB) No. TPE331-A73-0221, Revision 2, dated October 10, 1994. The initial inspection compliance times start upon receipt of this priority letter AD.

(2) Prior to further flight replace with a serviceable part those fuel controls with drive shaft splines that do not meet the return to service criteria specified in AlliedSignal Alert SB No. TPE331-A73-0221, Revision 2, dated October 10, 1994.

(3) Replacement of fuel controls in accordance with the procedures described in AlliedSignal SB No. TPE331-73-0224, dated August 17, 1994, or Revision 1 of that SB, dated September 8, 1994, with alternate fuel controls constitutes terminating action to the AFM amendment specified in paragraph (a) of this AD, and the inspections specified in paragraph (b)(1) of this AD.

(c) For AlliedSignal TPE331-3, -5, -6, -10, and -12 series engines:

(1) Conduct initial and repetitive dimensional inspections of the fuel control drive shaft splines for wear in accordance with the compliance times and procedures described in AlliedSignal Inc. Alert SB No. TPE331-A73-0226, dated October 10, 1994. The initial inspection compliance times become effective upon receipt of this priority letter AD.

(2) Prior to further flight replace with a serviceable part those fuel controls with drive shaft splines that do not meet the return to service criteria specified in AlliedSignal Inc. Alert SB No. TPE331-A73-0226, dated October 10, 1994.

(3) Replacement of fuel controls in accordance with the procedures described in AlliedSignal Inc. SB No. TPE331-73-0228, dated September 16, 1994, with alternate fuel controls constitutes terminating action to the AFM amendment specified in paragraph (a) of this AD, and the inspections specified in paragraph (c)(1) of this AD.

(d) For the purpose of this AD, specific driveshaft operating hours as referenced in AlliedSignal Alert SB No. TPE331-A73-0221, Revision 2, dated October 10, 1994, and AlliedSignal Inc. Alert SB No. TPE331-A73-0226, dated October 10, 1994, may be calculated using fuel control time tracking based on engine operating hours.

(e) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, Los Angeles Aircraft Certification Office. The request should be forwarded through an appropriate FAA Maintenance Inspector, who may add comments and then send it to the Manager, Los Angeles Aircraft Certification Office.

NOTE: Information concerning the existence of approved alternative methods of compliance with this airworthiness directive, if any, may be obtained from the Los Angeles Aircraft Certification Office.