

EMERGENCY AIRWORTHINESS DIRECTIVE



Aircraft Certification Service
Washington, DC

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

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**DATE: October 3, 2001
2001-20-51**

Send to all U.S. owners and operators of Rolls-Royce Corporation (formerly Allison Engine Company) models 250-C20, -C20B, -C20F, -C20R, -C20R/1, -C20R/2, -C20S, and -C20W turboshaft engines, and 250-B17, -B17C, -B17D, -B17E, -B17F, -B17F/1, and -B17F/2 turboprop engines. These engines are installed on, but not limited to, Aerospatiale AS355; Agusta A109; A109A, A109C; Bell 206B, 206L, 206LT; Enstrom TH28; McDonnell Douglas 500C, 500D, 500E, 520N; Rogerson-Hiller FH1100; Schweizer TH330; Soloy Conversions Bell 47/47G, Hiller UH-12; American Jet Industries/Cessna 402, 414; and ASTA/GAF Nomad N-22 aircraft.

This Emergency Airworthiness Directive (AD) is prompted by a report of uncontained release of power turbine blades and disk fragments caused by engine overspeed, resulting in an uncommanded engine shutdown, engine fire, and damage to the aircraft. This condition is caused by high-cycle fatigue (HCF) failure of the helical torque-meter gearshaft assembly which transmits the power generated by the engine. Investigation has revealed that the HCF failure was due to a preexisting crack. Investigation has also determined that helical torque-meter gearshaft assemblies with low hours of time-since-new (TSN) run a risk of failing, with little or no warning. For the purposes of this emergency AD, any helical torque-meter gearshaft assembly with 100 hours or less TSN is to be replaced with a serviceable helical torque-meter gearshaft assembly, before further flight. All helical torque-meter gearshaft assemblies with greater than 100 hours TSN require no action.

This condition, if not corrected, could result in uncontained release of power turbine blades and disk fragments caused by engine overspeed, resulting in an uncommanded engine shutdown, engine fire, and damage to the aircraft.

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 replacement of any helical torque-meter gearshaft assembly with 100 hours or less TSN with a serviceable helical torque-meter gearshaft assembly, before further flight.

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 emergency AD.

Applicability

This airworthiness directive (AD) is applicable to Rolls-Royce Corporation (formerly Allison Engine Company) models 250-C20, -C20B, -C20F, -C20R, -C20R/1, -C20R/2, -C20S, and -C20W turboshaft engines, and 250-B17, -B17C, -B17D, -B17E, -B17F, -B17F/1, and -B17F/2 turboprop engines. These engines are installed on, but not limited to, Aerospatiale AS355; Agusta A109; A109A, A109C; Bell 206B, 206L, 206LT; Enstrom TH28; McDonnell Douglas 500C, 500D, 500E, 520N; Rogerson-Hiller FH1100; Schweizer TH330; Soloy Conversions Bell 47/47G, Hiller UH-12; American Jet Industries/Cessna 402, 414; and ASTA/GAF Nomad N-22 aircraft.

Note 1: This airworthiness directive (AD) applies to each engine identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For engines that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (d) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

Compliance: Required as indicated, unless already done.

To prevent uncontained release of power turbine blades and disk fragments caused by engine overspeed, resulting in an uncommanded engine shutdown, engine fire, and damage to the aircraft, do the following:

(a) Before further flight, remove helical torque meter gearshaft assemblies P/N's 23035299 and 23038191 that have accumulated 100 hours or less time-since-new (TSN). Replace with a serviceable helical torque meter gearshaft assembly.

(b) After the receipt of this AD, do not install any helical torque meter gearshaft assembly P/N 23035299 or 23038191 that has accumulated 100 hours or less TSN.

Definition

(c) For the purposes of this AD, the following helical torque meter gearshaft assemblies are considered serviceable parts:

- (1) P/N's 23035299 and 23038191 that have greater than 100 hours TSN.
- (2) An assembly with a P/N other than P/N's 23035299 and 23038191.

Alternative Methods of Compliance

(d) 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, Certification Office. Operators shall submit their requests through an appropriate FAA Maintenance Inspector, who may add comments and then send it to the Manager, Certification Office.

Note 2: Information concerning the existence of approved alternative methods of compliance with this airworthiness directive, if any, may be obtained from the Chicago Aircraft Certification Office.

Special Flight Permits

(e) Special flight permits may be issued in accordance with sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the aircraft to a location where the requirements of this AD can be accomplished.

(f) **Emergency AD 2001-20-51, issued October 3, 2001, becomes effective upon receipt.**

FOR FURTHER INFORMATION CONTACT:

John Tallarovic, Aerospace Engineer, Chicago Aircraft Certification Office, FAA, Small Airplane Directorate, 2300 East Devon Avenue, Des Plaines, IL 60018; telephone (847) 294-8180, fax (847) 294-7834.

Issued in Burlington, Massachusetts on October 3, 2001.

Mark C. Fulmer,

*Acting Manager, Engine and Propeller Directorate,
Aircraft Certification Service.*