EMERGENCY AIRWORTHINESS DIRECTIVE

Aircraft Certification Service
Washington, DC

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

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DATE: March 7, 2002
2002-05-51

Send to all U.S. owners and operators of Hamilton Sundstrand Corporation Model 568F-1 Propellers.

This Emergency Airworthiness Directive (AD) supersedes Emergency AD 2002-04-52 issued on February 15, 2002. AD 2002-04-52 superseded Emergency AD 2002-03-51 issued on February 7, 2002. AD 2002-03-51 was prompted by a report that a Hamilton Sundstrand propeller blade failed on an Aerospatiale ATR42-500 airplane. The failure occurred shortly after takeoff. The airplane was able to return safely to the point of departure. The position 5 blade failed outboard of the counterweight mounting flange. Additional damage to the propeller, engine, and nacelle was found. Root cause investigation has determined that the fracture began at an area of corrosion on the metallic portion of the blade just above and opposite the counterweight mounting flange. Engineering evaluation of the blade population that is susceptible to corrosion-induced fatigue has determined that the affected blades must be replaced to prevent blade failure. Subsequent investigation has determined that the suspect blade population must be inspected for fatigue cracks, due to corrosion pitting, using a repetitive ultrasonic shear wave inspection.

This condition, if not corrected, could result in blade failure due to corrosion-induced fatigue, which could result in blade separation and possible loss of airplane control.

Since an unsafe condition has been identified that is likely to exist or develop on other propellers of this same type design, this AD requires:

- Replacement of propeller blades, part numbers (P/N's) R815505-2 and R815505-3, that have a serial number (SN) of FR1698 or lower, with serviceable propeller blades.

- A prohibition against installing any propeller blades, P/N's R815505-2 and R815505-3, that have a SN of FR428 or lower, that were previously installed on an ATR-42-400 or an ATR-72 airplane, on any other airplane.

- Ultrasonic shear wave inspection of the blade tulip on installed blades P/N's R815505-2 and R815505-3, that have a SN of FR1698 or lower, within 50 hours after receipt to this AD.

- Repetitive ultrasonic shear wave inspection of the blade tulip on installed blades, P/N's R815505-2 and R815505-3, that have a SN of FR1698 or lower, within 50 flight hours since-last-inspection.

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.

2002-05-51 Hamilton Sundstrand Corporation: Docket No. 2002-NE-02-AD

Applicability:

This airworthiness directive (AD) is applicable to Hamilton Sundstrand Corporation (formerly Hamilton Standard Division) model 568F-1 propellers installed with blades, part numbers (P/N's) R815505-2 and R815505-3, that have a serial number (SN) of FR1698 or lower. These propellers are installed on, but not limited to, Aerospatiale ATR 42-400 and -500 and ATR 72 airplanes.

Note 1: This AD applies to each propeller 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 propellers 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 (i) 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:

Compliance with this AD is required as indicated, unless already done.

To prevent blade failure due to corrosion-induced fatigue, which could result in blade separation and possible loss of airplane control, do the following:

(a) For propeller blades P/N's R815505-2 and R815505-3, replace propeller blades SN FR265 or lower before further flight.

(b) For propeller blades P/N's R815505-2 and R815505-3, installed on ATR 72 and ATR 42-400 airplanes, replace the blade using the SN range and compliance times specified in the following table. After the receipt of this Emergency AD, propeller blades P/N's R815505-2 and R815505-3, with serial numbers in the following table installed on ATR 72 and ATR 42-400 airplanes, may not be installed on any other airplane.

Blade Removal Time Requirements

If the SN of the propeller blade is -	Then replace the blade by the earlier of -
(1) FR 266 to FR341.	Thirty-six days or 360 flight hours (FH) after receipt of Emergency AD 2002-03-51.
(2) FR 342 to FR428.	Fifty-two days or 520 FH after receipt of Emergency AD 2002-03-51.

(c) For propeller blades P/N's R815505-2 and R815505-3, with SN in the range of FR429 to FR1698, installed on ATR 72 and ATR 42-400 airplanes, after receipt of this Emergency AD replace the blade on or before June 30, 2002.

(d) For propeller blades P/N's R815505-2 and R815505-3, with SN in the range of FR266 to FR1698, installed on ATR 42-500 airplanes, after receipt of this Emergency AD replace the blade on or before December 31, 2002.

(e) After the receipt of this Emergency AD, propeller blades P/N's R815505-2 and R815505-3, with SN in the range of FR266 to FR1698, cannot be installed on any airplane, unless prior to installation, an ultrasonic shear wave inspection of the blade tulip is done in accordance with the Accomplishment Instructions of Hamilton Sundstrand ASB 568F-61-A35, Revision 1, dated March 7, 2002.

(f) Procedures for removing the propeller blade and installing a serviceable blade can be found in Hamilton Sundstrand Maintenance Manual P5206.

(g) Within 50 FH after receipt of this Emergency AD for propeller blades P/N's R815505-2 and R815505-3, that have a SN of FR1698 or lower, perform an ultrasonic shear wave inspection of the blade tulip in accordance with the Accomplishment Instructions of Hamilton Sundstrand ASB 568F-61-A35, Revision 1, dated March 7, 2002, and remove blades with unacceptable indications in accordance with the ASB.

(h) Thereafter, within 50 FH since-last-inspection, for propellers blades P/N's R815505-2 and R815505-3, that have a SN of FR1698 or lower, perform an ultrasonic shear wave inspection of the blade tulip in accordance with the Accomplishment Instructions of Hamilton Sundstrand ASB 568F-61-A35, Revision 1, dated March 7, 2002, and remove blades with unacceptable indications in accordance with the ASB.

Alternative Methods of Compliance

(i) 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, Boston Aircraft Certification Office (ACO). Operators must submit their requests through an appropriate FAA Principal Maintenance Inspector, who may add comments and then send it to the Manager, Boston ACO.

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

Special Flight Permits

(j) Special limited flight permits may be issued in accordance with §§ 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) for a nonrevenue flight to a location where the requirements of this AD can be done.

Effective Date

(k) **Emergency AD 2002-05-51, issued March 7, 2002, becomes effective upon receipt**.

FOR FURTHER INFORMATION CONTACT: Frank Walsh, Aerospace Engineer, Boston Aircraft Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803-5299; telephone (781) 238-7158; fax (781) 238-7170.

Issued in Burlington, Massachusetts on March 7, 2002.

Jay J. Pardee,
Manager, Engine and Propeller Directorate,
Aircraft Certification Service.