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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 2002-NE-12-AD; Amendment 39-13148; AD 2003-10-03]

RIN 2120-AA64

Airworthiness Directives; Rolls-Royce plc Model RB211 Turbofan Engines

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule.

SUMMARY: This amendment adopts a new airworthiness directive (AD), that is applicable to Rolls-Royce plc (RR) model RB211-535E4-37, RB211-535E4-B-37, and RB211-535E4-B-75 turbofan engines. This amendment requires removal from service of certain high pressure (HP) turbine discs before they reach newly established life limits. This amendment is prompted by the manufacturer's inspections and analysis of HP turbine discs that have accumulated high cycles. The actions specified by this AD are intended to prevent machining-induced cracking of the HP turbine disc which could cause an uncontained HP turbine disc failure and damage to the airplane.

DATES: Effective June 20, 2003.

ADDRESSES: Information regarding this action may be examined, by appointment, at the Federal Aviation Administration (FAA), New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA.

FOR FURTHER INFORMATION CONTACT: Ian Dargin, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803-5299, telephone (781) 238-7178; fax (781) 238-7199.

SUPPLEMENTARY INFORMATION: A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an AD that is applicable to RR model RB211-535E4-B-37 and RB211-535E4-B-75 turbofan engines was published in the **Federal Register** on November 6, 2002 (67 FR 69160). That

action proposed to require removal from service of certain HP turbine discs before they reach newly established life limits.

Comments

Interested persons have been afforded an opportunity to participate in the making of this amendment. Due consideration has been given to the comments received.

Change Explanation for Cracking

One commenter states that the explanation for cracking in the HP disc rim cooling hole area is machining damage from new manufacture, and has nothing to do with the discs being sensitive to corrosion-induced cracking, as stated in the proposal. The commenter also states that RR had previously indicated that the proposed life reduction was due to the condition described in RR Mandatory Service Bulletin (MSB) No. 72-C817. This MSB states that HP turbine discs part numbers (P/Ns) UL10323, UL27680, and UL27681 are sensitive to cracking in the disc rim cooling hole area due to machining damage from new manufacture.

The FAA agrees. The cracking has been identified as occurring at the disc rim cooling hole area on the disc rear face. Although problems have been reported during overhaul, presumably due to rework or repair associated with, in part, corrosion, the primary explanation for this AD is machining damage. Therefore, in the final rule the explanation for cracking is changed to machining damage.

Clarification of Part Numbers

One commenter requests that HP turbine discs P/Ns UL39766 and UL39767 be removed from the applicability and disc P/N UL10323 be added. The commenter states that disc P/N UL39766 is not listed in the RR Engine Illustrated Parts Catalogue or the Time Limits Manual. The commenter states that disc P/N UL39767 was introduced by RR Service Bulletin (SB) No. 72-C817 and is not subject to damage by machining. The commenter also states that disc P/N UL10323 is listed in the Time Limits Manual with a life limit of 14,800 cycles-since-new (CSN). Service Bulletin No. 72-C817 lists disc P/N UL10323, indicating that it is sensitive to cracking due to machining damage from manufacture.

The FAA agrees. We determined that HP turbine disc P/N UL39766 was never produced by RR and is, therefore, removed from the final rule. Also, disc P/N UL39767 was introduced as a new part to replace disc P/N UL27681, and

has, therefore, been removed from the final rule. Disc P/N UL10323 is affected by machining damage and is added to the final rule applicability with a life limit of 14,800 CSN.

Add Engine Model to Applicability

One commenter asks if the RB211-535E4-37 engine should be included in the applicability.

The FAA agrees that this AD should be applicable to engine model RB211-535E4-37. Therefore, this model is now listed in the final rule.

After careful review of the available data, including the comments noted above, the FAA has determined that air safety and the public interest require the adoption of the rule with the changes described previously. The FAA has determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

Economic Analysis

There are approximately 400 RR model RB211-535E4-37, RB211-535E4-B-37, and RB211-535E4-B-75 turbofan engines in the worldwide fleet containing the affected HP turbine discs, P/Ns UL10323, UL27680, and UL27681. The FAA estimates that 346 engines installed on airplanes of U.S. registry will be affected by this AD, that it will take approximately 112 work hours per engine to replace an affected disc, and that the average labor rate is \$60 per work hour. The FAA estimates that the prorated cost of the life reduction per engine would be approximately \$64,000. Based on these figures, the total cost of the AD to remove HP turbine discs P/Ns UL27680 and UL27681 from service before accumulating 15,000 cycles-since-new (CSN) and HP turbine discs P/N UL10323 from service before accumulating 14,800 CSN, rather than the former life limit of 20,000 CSN, is estimated to be \$24,469,120.

Regulatory Analysis

This final rule does not have federalism implications, as defined in Executive Order 13132, because it would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. Accordingly, the FAA has not consulted with state authorities prior to publication of this final rule.

For the reasons discussed above, I certify that this action (1) is not a "significant regulatory action" under Executive Order 12866; (2) is not a