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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 2002-NE-19-AD]

RIN 2120-AA64

Airworthiness Directives; Rolls-Royce plc RB211 Trent 875, 877, 884, 892, 892B, and 895 Series Turbofan Engines

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The Federal Aviation Administration (FAA) proposes to adopt a new airworthiness directive (AD) that is applicable to Rolls-Royce plc (RR) RB211 Trent 875, 877, 884, 892, 892B, and 895 series turbofan engines. This proposal would require initial and repetitive visual inspections of the intermediate pressure (IP) compressor rear stubshaft and IP turbine shaft for load-bearing spline flank wear, and replacement of these shafts if necessary. This proposal is prompted by reports of IP compressor rear stubshaft and IP turbine shaft load-bearing spline flank wear, revealed at inspection during overhaul. The actions specified by the proposed AD are intended to prevent the loss of drive between the IP turbine and the IP compressor, which could result in a turbine rotor overspeed condition, possible uncontained engine failure, and damage to the airplane.

DATES: Comments must be received by March 28, 2003.

ADDRESSES: Submit comments in triplicate to the Federal Aviation Administration (FAA), New England Region, Office of the Regional Counsel, Attention: Rules Docket No. 2002-NE-19-AD, 12 New England Executive Park, Burlington, MA 01803-5299. Comments may be inspected at this location, by appointment, between 8 a.m. and 4:30 p.m., Monday through Friday, except Federal holidays. Comments may also be sent via the Internet using the following address: 9-ane-adcomment@faa.gov. Comments sent via the Internet must contain the docket number in the subject line.

FOR FURTHER INFORMATION CONTACT:

James Lawrence, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803-5299; telephone: (781) 238-7176, fax: (781) 238-7199.

SUPPLEMENTARY INFORMATION:

Comments Invited

Interested persons are invited to participate in the making of the proposed rule by submitting such written data, views, or arguments as they may desire. Communications should identify the Rules Docket number and be submitted in triplicate to the address specified above. All communications received on or before the closing date for comments, specified above, will be considered before taking action on the proposed rule. The proposals contained in this action may be changed in light of the comments received.

Comments are specifically invited on the overall regulatory, economic, environmental, and energy aspects of the proposed rule. All comments submitted will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons. A report summarizing each FAA-public contact concerned with the substance of this proposal will be filed in the Rules Docket.

Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this action must submit a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket Number 2002-NE-19-AD." The postcard will be date stamped and returned to the commenter.

Availability of NPRM's

Any person may obtain a copy of this NPRM by submitting a request to the FAA, New England Region, Office of the Regional Counsel, Attention: Rules Docket No. 2002-NE-19-AD, 12 New England Executive Park, Burlington, MA 01803-5299.

Discussion

The Civil Aviation Authority (CAA), which is the airworthiness authority for the United Kingdom (U.K.), notified the FAA that an unsafe condition may exist on RR RB211 Trent 875, 877, 884, 892, 892B, and 895 series turbofan engines. The CAA advises that twelve reports have been received of overhaul inspections revealing unacceptable levels of flank wear on IP compressor rear stubshaft splines and IP turbine shaft splines. This unacceptable wear is

attributed to the current design air/oil mist lubrication method used for the splines. Excessive wear can lead to loss of spline drive between the IP compressor and the IP turbine shaft, resulting in IP turbine rotor overspeed and possible uncontained engine failure.

Pending Optional Terminating Action

RR has informed the FAA that they are planning an optional terminating action for the repetitive inspections specified in paragraph (a) of this proposal. This optional terminating action will incorporate improved modules with new identities. RR is planning to introduce information in the first quarter of 2003 on modifying affected modules to new module identities in RR Major Modification Bulletin No. 72-D495.

Bilateral Agreement Information

This engine model is manufactured in the U.K. and is type certificated for operation in the United States under the provisions of Section 21.29 of the Federal Aviation Regulations (14 CFR 21.29) and the applicable bilateral airworthiness agreement. Pursuant to this bilateral airworthiness agreement, the CAA has kept the FAA informed of the situation described above. The FAA has examined the findings of the CAA, reviewed all available information, and determined that AD action is necessary for products of this type design that are certificated for operation in the United States.

Proposed Requirements of this AD

Since an unsafe condition has been identified that is likely to exist or develop on other RR RB211 Trent 875, 877, 884, 892, 892B, and 895 series turbofan engines of the same type design, the proposed AD would require initial and repetitive visual inspections of the IP compressor rear stubshaft and IP turbine shaft for load-bearing spline flank wear, and replacement of these shafts if necessary.

Economic Analysis

There are approximately 350 engines of the affected design in the worldwide fleet. The FAA estimates that 102 engines installed on aircraft of U.S. registry would be affected by this proposed AD. The FAA also estimates that it would take approximately 0.5 work hour per engine to accomplish the proposed inspection for parts determined not worn, and an additional 1.5 work hours per engine for parts determined worn that would require further inspection. The average labor rate is \$60 per work hour. Based on