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Dorenda D. Baker,

Acting Manager, Small Airplane Directorate, Aircraft Certification Service.

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 2000–NE–47–AD; Amendment 39–12916; AD 2002–21–10]

RIN 2120–AA64

Airworthiness Directives; Pratt and Whitney PW4000 Series Turbofan Engines

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule; request for comments.

SUMMARY: This amendment supersedes an existing airworthiness directive (AD) that is applicable to Pratt and Whitney (PW) model 4000 series turbofan engines. That action required PW4000 engines with potentially reduced stability margin to be limited to no more than one engine on each airplane, and required removing engines that exceed high pressure compressor (HPC) cycles-since-overhaul (CSO) or cycles-since-new (CSN) from service based on the engine's configuration and category. That action also required establishing a minimum build standard for engines that are returned to service, and performing cool-engine fuel spike testing (Testing-21) on engines to be returned to service after having exceeded HPC cyclic limits or after shop maintenance.

This amendment establishes requirements similar to those in the existing AD being superseded, and introduces a rules-based criterion to determine the engine category classification for engines installed on Airbus A300 airplanes. This amendment also adds requirements to manage the engine configurations installed on Boeing 747 airplanes, and requires that repetitive Testing-21 be performed on certain configuration engines. This amendment also establishes criteria that requires Testing-21 on certain engines with Phase 0 or Phase 1, FB2T, or FB2B fan blade configurations. In addition, this amendment re-establishes high pressure compressor (HPC)-to-high pressure-turbine (HPT) cycles-since-overhaul (CSO) cyclic mismatch criteria, and adds criteria to address engine installation changes, engine transfers, and thrust rating changes. Also, this amendment establishes criteria to allow engine stagger without performing Testing-21 for engines which are over their respective limits. This amendment also introduces new requirements on the Phase 3, first run subpopulation engines which were identified after the issuance of NPRM Docket No. 2000–NE–47–AD.

The Phase 3, first run subpopulation engines have a significant increase in surge rate and Testing-21 failure rate than the rest of the PW4000 fleet. In order to manage the subpopulation engines to preclude a dual-engine surge, immediate action is required.

This immediately adopted rule includes the requirements proposed in the NPRM as well as the required actions for the Phase 3, first run subpopulation engines.

This amendment is prompted by investigation and evaluation of PW4000 series turbofan engines surge data, and continuing reports of surges in the PW4000 fleet. The actions specified in this AD are intended to prevent engine takeoff power losses due to HPC surge.

DATES: Effective November 12, 2002. The incorporation by reference of certain publications listed in the rule is approved by the Director of the Federal Register as of November 12, 2002.

The incorporation by reference of certain other publications, as listed in the regulations, was approved previously by the Director of the Federal Register as of January 17, 2002 (67 FR 1, January 2, 2002).

Comments for inclusion in the Rules Docket must be received on or before December 24, 2002.

ADDRESSES: Submit comments in triplicate to the Federal Aviation Administration (FAA), New England Region, Office of the Regional Counsel, Attention: Rules Docket No. 2000–NE–47–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.

The Pratt & Whitney service information referenced in this AD may be obtained from Pratt & Whitney, 400 Main St., East Hartford, CT 06108, telephone (860) 565–6600; fax (860) 565–4503. All service information may be examined, by appointment, at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA; or at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC.

FOR FURTHER INFORMATION CONTACT: Diane Cook, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803–5299; telephone (781) 238–7133; fax (781) 238–7199.

SUPPLEMENTARY INFORMATION: A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) by superseding AD 2001–25–11, Amendment 39–12564 (67 FR 1, January 2, 2002), which is applicable to Pratt and Whitney (PW) model 4000 series turbofan engines, was published in the **Federal Register** on July 23, 2002. That action proposed to establish requirements similar to those in AD 2001–25–11, to introduce rules-based criterion to determine the engine category classification for engines installed on Airbus A300 airplanes, and to add requirements to manage the engine configurations installed on Boeing 747 airplanes. That action also proposed to require repetitive Testing-21 be performed on certain configuration engines. That action also proposed to establish criteria which would require Testing-21 on certain engines with Phase 0 or Phase 1, FB2T or FB2B fan blade configurations. In addition, that action proposed to re-establish HPC-to-HPT cycles-since-overhaul cyclic mismatch criteria, and add criteria to address engine installation changes, engine transfers, and thrust rating changes. Also, that action proposed to establish criteria to allow engine stagger without performing Testing-21 for engines over their respective limits.

This final rule; request for comments supersedes AD 2001–25–11 by requiring the same actions as the proposal, and in addition, introduces new requirements for the Phase 3, first run subpopulation engines that were identified after the issuance of the proposal.

Manufacturer's Service Information

The FAA has reviewed and approved the technical contents of the following Pratt & Whitney service information:

- Service Bulletin PW4ENG72–714, Revision 1, dated November 8, 2001.
- Service Bulletin PW4ENG72–749, dated June 17, 2002.
- Internal Engineering Notice IEN 96KC973D, dated October 12, 2001.
- Temporary Revision (TR) TR 71–0018, dated November 14, 2001.
- TR 71–0026, dated November 14, 2001.

• TR 71 71–0035, dated November 14, 2001.
• Cleaning, Inspection, and Repair (CIR) procedure CIR 51A357, Section 72–35–68, Inspection/Check-04, Indexes 8–11, dated September 15, 2001.
• CIR 51A357, Section 72–35–68, Repair 16, dated June 15, 1996.
• PW4000 PW engine manual (EM) 50A443, 71–00–00, TESTING–21, dated March 15, 2002.
• PW4000 PW EM 50A822, 71–00–00, TESTING–21, dated March 15, 2002.
• PW 4000 PW EM 50A605, 71–00–00, TESTING–21, dated March 15, 2002.

Additional Service Information

The FAA has reviewed and approved the technical contents of Chromalloy Florida Repair Procedures, 00 CFL–039–0, dated December 27, 2000 and 02 CFL–024–0, dated September 15, 2002.

FAA's Determination of an Unsafe Condition and Required Actions

Since an unsafe condition has been identified that is likely to exist or develop on other Pratt & Whitney PW4000 series turbofan engines of this same type design, the AD is issued to prevent engine takeoff power losses due to HPC surges, and supersedes AD 2001–25–11 to require:

• Establishing requirements similar to those in the existing AD, and use of a rules-based criterion to determine the engine category classification for engines installed on Airbus A300 airplanes.
• Adding requirements to manage the engine configurations installed on Boeing 747 airplanes. This engine and airplane combination would allow, for certain engine configurations, one of the four installed engines to remain on-wing until the HPC has accumulated up to 2,600 CSN or CSO before Testing-21 or until an HPC overhaul is required.
• Configuration F engines to repeat Testing-21 every 800 CST.
• Establishing criteria which would require Testing-21 on engines with Phase 0 or Phase 1, FB2T or FB2B fan blade configurations complying with the requirements of AD 2001–09–05, (66 FR 22908, May 7, 2001); AD 2001–09–10, (66 FR 21853, May 2, 2001), or AD 2001–01–10, (66 FR 6449, January 22, 2001).
• Re-establishing HPC-to-HPT CSO cyclic mismatch criteria.
• Establishing criteria to address engine installation changes, engine transfers, and thrust rating changes.
• Establishing criteria to allow an engine to be removed from service and reinstalled on an airplane, without requiring Testing-21, if this engine is the unmanaged engine for that airplane.
• Adding Configuration G engines, which represents the Phase 3, first run subpopulation engines and establishes requirements that reduces stagger limits.
• Adding Configuration H engines, which represents the Phase 3, first run subpopulation engines to repeat Testing-21 every 600 CST.

The actions are required to be done in accordance with the service information described previously, and have been coordinated with the Transport Airplane Directorate.

Immediate Adoption of This AD

Since a situation exists that requires the immediate adoption of this regulation, it is found that notice and opportunity for prior public comment hereon are impracticable, and that good cause exists for making this amendment effective in less than 30 days.

Comments Invited

Although this action is in the form of a final rule that involves requirements affecting flight safety and, thus, was not preceded by notice and an opportunity for public comment, comments are invited on this rule. Interested persons are invited to comment on this 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 under the caption **ADDRESSES**. All communications received on or before the closing date for comments will be considered, and this rule may be amended in light of the comments received. Factual information that supports the commenter's ideas and suggestions is extremely helpful in evaluating the effectiveness of the AD action and determining whether additional rulemaking action would be needed.

Comments are specifically invited on the overall regulatory, economic, environmental, and energy aspects of the rule that might suggest a need to modify the 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 that summarizes each FAA-public contact concerned with the substance of this AD 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 2000–NE–47–AD.'' The postcard will be date stamped and returned to the commenter.

Comments

The FAA received several comments to NPRM, Docket No. 2000–NE–47. Even though this amendment is a final rule; request for comments, the FAA has chosen to address all comments received. Interested persons have been afforded an opportunity to participate in the making of this amendment. Due consideration has been given to the comments received, from the nine commenters.

Request Reason for Engine Category 1, 2, or 3 Limit Threshold Values

One commenter states that there is no reason why 200,000 cycles and 1.45 exhaust pressure ratio (EPR) should be the threshold values used in the AD to determine A300 4158 engine category 1, 2, or 3 limits, and asks for a technical reason for these values. The FAA disagrees. The FAA asked the original equipment manufacturer (OEM) to establish a rules-based criterion in which to determine the engine category classification for engines installed on Airbus A300 airplanes. The OEM chose a statistical approach and derived the values of 200,000 cycles and 1.45 EPR to represent the boundary conditions in determining the categories. The FAA has reviewed and concurs with this approach. This commenter also states that parameters in addition to EPR could better define the categorization. This commenter suggests using parameters such as rear hook wear and heat shield wear. The FAA disagrees. Although the FAA would support using additional parameters, there is not enough data to do so. Currently, data supports EPR as a parameter to correlate takeoff EPR values to a possible group 3 surge event. While the FAA agrees that rear hook wear may contribute to surge events, there is not enough data to develop a correlation of rear hook wear and heat shield wear to a surge event. The OEM indicates and the FAA agrees, that the heat shield wear is a third-order effect. This commenter also states that the definition of surge is unclear and that noise alone is insufficient to justify a Group 3 surge event. The FAA agrees. It was never the intent to imply that noise alone would classify an event as a Group 3 surge. The FAA also agrees with this first commenter that noise is a good reason to check the DFDR data and follow the trouble shooting process. The FAA has reviewed the definition of surge and has added words to the Group 3 surge definition for clarification.

Intent To Approve ''On-Wing'' Version of Testing-21

One commenter questions if it is the FAA's intent to approve the ''on-wing'' version of Testing-21 and include it into proposed paragraph (h)(1) as an equivalent to the ''test cell'' version. The FAA is reviewing the data for ''on wing'' version of Testing-21 but has yet to approve it. Therefore, ''on wing'' version of Testing-21 is not included in this paragraph of the AD. The FAA agrees with the commenter that, if approved, the FAA would have added this as an option into the paragraph, thereby eliminating the need for alternative methods of compliance (AMOC's). Unfortunately adequate data does not yet exist to approve the ''on wing'' version of Testing-21. If, at a later date, the FAA makes a finding of equivalence, the operator or the OEM can request an alternate method of compliance to use the ''on-wing'' version of Testing-21 in place of the ''test cell'' Testing-21.

Unnecessary and Confusing Text

This commenter also states that the following text of AD paragraph, under the heading Engines That Surge, ''* * * or before further flight if airplane-level troubleshooting procedures require immediate engine removal'' is unnecessary and may create confusion. The FAA disagrees. It is implied that the airplane level troubleshooting is surge related troubleshooting, because the paragraph states ''airplane-level surge''. However, to prevent possible confusion, wording in the paragraph has been changed to ''airplane level surge troubleshooting.'' This commenter also requests that any regulatory action on the Phase 3, fist run subpopulation engines be incorporated within this AD. The FAA agrees. This AD adds Configurations G and H engines, which represent these Phase 3, first run subpopulation engines requiring reduced limits. This subpopulation was identified after the issuance of the NPRM. Since an unsafe condition has been identified, immediate actions are required on these Phase 3, first run subpopulation engines.

Date of AD Should Coincide With Availability of the Ring Style HPC Case

Another commenter suggests that the effective date of this AD should coincide with the availability of the ring style HPC case, since this new HPC case is the terminating action. The FAA disagrees. Although we agree that the terminating action to this AD requires a hardware change to a ring style HPC case, the current rate of risk accumulation indicates corrective action must be initiated before hardware availability. The ring style HPC case will complete its certification within the first quarter of 2003, with Service Bulletins issuance expected shortly thereafter. However, AD action is required now to minimize the risk. This AD implements action necessary to ensure the risk remains at acceptable levels. This commenter also requests clarification of the requirements on engines which have passed Testing-21. The FAA confirms that once an engine has passed Testing-21, it becomes a Configuration F or H engine and will remain a Configuration F or H engine until the HPC is overhauled, or is replaced with a new or overhauled HPC. Configuration F and H engines are required to repeat Testing-21 within 800 cycles and 600 cycles respectively, since last test or be removed for HPC overhaul, unless it will be used as a single unmanaged engine as permitted by this AD. This commenter also requests that the FAA consider increasing the hard-time limit for HPC overhaul to 2,900 cycles so that any engine which is removed for stagger at HPC 2,100 cycles since overhaul (CSO) in accordance with the AD, can be used up to 2,900 cycles after passing Testing-21. The FAA partially agrees. The 2,100 cycles is not a hard-time limit, but a stagger limit for PW 4056 Configuration B or C engines installed on Boeing 747 airplanes in accordance with Table 3 of the NPRM. Unless designated as the unmanaged engine, these engines on the Boeing 747 must be removed from service before accumulating 2,100 CSN or CSO and perform Testing-21 or complete an HPC overhaul. If Testing-21 is successful, the engine is returned to service as a Configuration F engine. As a Configuration F engine, Testing-21 is required within 800 cycles since last test. In the commenter's example, 800 cycles since last test would be 2,900 CSO. As additional clarification, one of the four installed engines may remain on-wing until the HPC has accumulated up to 2,600 CSN or CSO before Testing-21 or until an HPC overhaul is required.

Question on Unmanaged Engine Concept

Another commenter questions why the new unmanaged engine concept of the Boeing 747/PW4056 fleet is limited to 2,600 HPC cycles since new or since overhaul. Since the Phase 3, first run engine configuration's stagger limit is already at 2,600 cycles, this commenter asks the FAA to consider similar manageable time allowance for these engines over its stagger limit. The FAA disagrees. In order to safely manage the fleet risk, PW and Boeing needed to adjust the B747/PW4056 fleet risk. It is a coincidence that the Phase 3, first run engine's stagger limit is also 2,600 cycles. To safely manage the overall program risk, the FAA must maintain the stagger limits and add cycle limits on the unmanaged engine configuration installed on the Boeing 747 airplane. In addition, since the NPRM was issued, a subpopulation of the Phase 3, first run engines has been identified which requires a further limit reduction.

This commenter also states that operators who have been initially categorized as an A300 PW4158 category 2 operator should not have to reassess their category. The commenter states that since the low surge rate of category 2 operators has been proven through their surge experience for a dedicated period of time with respective fleet takeoff EPR application, it is felt that reevaluation is unnecessary. The commenter requests the FAA allow initial category 2 operators to retain the same category throughout the field management plan. The FAA agrees that if takeoff EPR application does not change, the operator will likely remain a category 2 operator. However, additional data suggests that an operator may have a shift in its takeoff EPR values due to various reasons, like route changes. Since the possibility exists of an operator changing their takeoff EPR application, the FAA requires a takeoff EPR re-assessment to ensure proper categorization of the operator. This commenter objects to the retest requirement of Testing-21 on any shop-visited engine. This commenter states that without detailed analysis on the effect of module separation, retest requirement against every engine that has module separation for shop minor maintenance would result in an unnecessary burden to the operator without any benefit on surge risk reduction. The FAA agrees. However, to identify the workscopes that may be exempt from Testing-21 would require knowledge of the specific details of each workscope. By using the AMOC process, each workscope can be evaluated on a case-by-case basis to ensure continued stability of the engine.

Change the Limitation for Configuration F Engines

Another commenter requests that the FAA change the limitation for Configuration F engines from 800 cycles to an option of either 800 cycles or the applicable threshold in Table 2 or Table 3 in the NPRM, whichever is greater. The FAA disagrees. The cyclic limit threshold manages overall risk, taking into account the HPC surge margin

deterioration. Using the commenter's example, this AD requires that if a Configuration C engine is in the shop at 300 cycles and performs Testing-21, it becomes a Configuration F engine and must repeat Testing-21 within 800 cycles. Allowing it to continue in-service until its stagger limit of 2,100 cycles before requiring Testing-21, as the commenter suggests, doesn't take into account the possible HPC surge margin deterioration effects created due to the malfunction that brought the engine into the overhaul shop. Depending upon the workscope of this engine, a technical argument could be developed to support the engine remaining on-wing longer than the 800 cycles. However, this must be done on a case-by-case basis to fully evaluate the workscope and its effect on engine stability. If the workscope was non-evasive to the engine's HPC surge margin, the AMOC process could be used by the operator. This commenter also states that the most current published dates of the PW4000 engine manual (EM) 50A605, 71–00–00, TESTING–21 procedure, and PW4000 CIR Manual 51A357, Section 72–35–68 Inspection/Check-04, are March 15, 2002. The FAA agrees and the appropriate changes have been made to the AD.

Question Regarding Off-Wing and On-Wing Maintenance

This commenter also questions if proposed paragraph (i)(1) is applicable to both on-wing and off-wing maintenance. Proposed paragraph (i)(1) is only applicable during a shop visit when the HPC is not overhauled and a major engine flange separation does not take place. If complying with the listed AD's in proposed paragraph (k) Testing-21 is required whenever any quantity of fan blades are replaced with new blades, overhauled or have the leading edges recontoured. This commenter also requests that the FAA consider the following as an exception to proposed paragraph (m)(3): Testing-21 would not be required on engines with more than 800 cycles remaining to the thresholds listed in Tables 2 and 3, when separating a major flange if the purpose of the workscope was to repair oil leaks in the forward sump, 2.5 bleed system, exhaust case cracks, or to replace fan exit vanes, provided no other work was done to the gas path. The commenter also states that the exception should also permit the removal of gas path items provided they are returned to the same engine. The FAA agrees that depending upon the workscope, some exceptions to this paragraph can be made. However, specific details of the entire workscope would have to be identified to assess the possible effects of HPC surge margin. The AMOC process allows for a case-by-case review of the overall workscope. Those that do not affect HPC surge margin could be candidates for an AMOC. This commenter also suggests an additional requirement be added to proposed paragraph (r)(2)(ii). This paragraph currently states that Configuration E engines require removal within 25 cycles, or immediately, based on troubleshooting. But it does not state what to do with the engine. The commenter suggests adding a requirement to remove the cutback stator configuration from the engine. The FAA understands the concern. After the engine removal, HPC overhaul is required before return to service. Although not economically practical, an HPC overhaul could occur without replacing the cutback stators and this engine could be returned to service until it reaches 1,300 cycles-since-new limit. As long as this engine is removed from service before accumulating 1,300 CSN, it meets the risk criteria of the field management plan that is acceptable to the FAA. Therefore, this paragraph has not been modified but now appears as paragraph (q)(2)(ii).

Disagree With Economic Analysis

A commenter disagrees with the economic analysis as noted in the NPRM. The increased restrictions on the Boeing 747 fleet in addition to PW's projected Testing-21 failure rate of 30% increased the number of Testing-21 performed and increased the required HPC overhauls for the years 2002 and 2003. The FAA agrees. The economic analysis also needs to include the effects of the reduced limits on the Phase 3, first run subpopulation engines. The economic analysis has been revised. Based on field data, the non-subpopulation engine Testing-21 failure rate is 12% and not 30%. In addition, the subpopulation engine Testing-21 failure rate is 20%. The economic analysis has been revised to include these failure rates, the increased restrictions on the Boeing 747 fleet, and the reduced limits on the Phase 3, first run subpopulation engines. Although the FAA recognizes that the subpopulation fleet management plan and the added restrictions on the Boeing 747 fleet have increased the economic burden to some of the operators, the FAA believes these actions are necessary to safely manage the Boeing 747 fleet risk.

Concern for Engines Needing To Use Testing-21 Following Split Shipment

A commenter is concerned that newly overhauled engines which are split at flange E for split shipment transportation reasons must perform Testing-21 based on the stability testing requirements of the AD. This would become an open loop if the customer had no test cell. The FAA agrees, and has added a paragraph to exempt split-shipped engines from Testing-21, if the engine's HPC was overhauled or Testing-21 was successfully passed following the engine shop visit.

Question Regarding Category 2 Criteria

One commenter is currently operating to the category 2 limits in accordance with AD 2001–25–11. Under the requirements of the proposal, this operator, who has a small fleet, will not have accumulated 200,000 cycles and, therefore, will no longer be a category 2 operator. In addition, because they will not have enough EPR data to support operation to category 1 limits, they will be required to operate to the category 3 limits. This operator has asked the FAA to reconsider their fleet categorization. The FAA has reviewed this situation with the OEM. The OEM has suggested it may be feasible for the operator to obtain a sufficient amount of EPR data that can be used as the basis for an AMOC to operate to Category 1 limits. By using the AMOC process, the feasibility of an alternate method can be evaluated on a case-by-case basis.

One commenter has no objections to the rule as proposed.

Changes to A300 Category 1, 2, 3 Criteria

In addition, the FAA has reviewed additional data from the OEM regarding changes to the A300 Category 1, 2, 3 Takeoff EPR criteria based on further assessment of A300 operator takeoff data. The OEM data suggests a need to change the limits of the percentage of takeoffs greater than 1.45 takeoff EPR data to values that are less conservative relative to the original limits in the NPRM. The original NPRM values were conservative to allow additional time to access the takeoff EPR field data. The FAA has reviewed the data and agrees that changes are necessary. Therefore, the limits in paragraphs (f)(9), (h)(1), and (h)(2) in this AD have been revised. Also, the FAA has reviewed and approved PW SB PW4ENG–72–749 and Chromalloy Florida Repair Procedure 02 CFL–024–0 as acceptable methods to repair the HPC inner case mid hook. Therefore, these procedures are incorporated by reference and are added

as additional methods of compliance to paragraph (k)(2)(i) of this AD.

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 not increase the scope of the AD. The FAA has determined, however, that an additional opportunity for comment should be afforded because of the changes made to this AD.

Economic Analysis

There are approximately 2,115 engines of the affected design in the worldwide fleet. The FAA estimates that 711 engines installed on airplanes of U.S. registry would be affected by this AD. The economic analysis estimates an annual cost from November 2002 through the end of March 2007, (4.4 years or 53 months) at which time the ring style HPC case is predicted to be 100% incorporated into the fleet. However, the cost of the ring case incorporation is not being assessed within this analysis. The FAA estimates 30 test cell stability tests per month based on the latest Testing-21 reports from the total fleet. Over 4.4 years (or 53 months), the FAA estimates a fleetwide total of 1590 test cell stability tests or on average 361 test cell stability tests per year. For the domestic fleet (33.6% of worldwide fleet), a yearly rate of 121 test cell stability tests per year is estimated. Assuming a 12% Testing-21 failure rate using the latest statistics, 14 engines per year for the domestic fleet would require an HPC overhaul. In addition, the FAA estimates 2 surges per month based on April 2001 through September 2002 actual Group 3 surge events. Over 4.4 years (or 53 months), the FAA estimates a total of 106 HPC surges and on average 24 fleetwide surges per year. For the domestic fleet, the FAA estimates 8 surges per year. Therefore, the FAA estimates for the domestic fleet 121 test cell stability tests per year and 22 HPC overhauls per year. It is estimated that the cost to industry of a test cell stability test will average $15,000 and an HPC overhaul will cost approximately $400,000. Based on these figures, the total average annual cost of the AD to U.S. operators is estimated to be $10,615,000.

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.

The FAA has determined that this regulation is an emergency regulation that must be issued immediately to correct an unsafe condition in aircraft, and is not a ''significant regulatory action'' under Executive Order 12866. It has been determined further that this action involves an emergency regulation under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979). If it is determined that this emergency regulation otherwise would be significant under DOT Regulatory Policies and Procedures, a final regulatory evaluation will be prepared and placed in the Rules Docket. A copy of it, if filed, may be obtained from the Rules Docket at the location provided under the caption **ADDRESSES**.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (14 CFR part 39) as follows:

PART 39—AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. Section 39.13 is amended by removing Amendment 39–12564 (67 FR 1, January 2, 2002), and by adding the following new airworthiness directive:

2002–21–10 Pratt & Whitney: Amendment 39–12916. Docket No. 2000–NE–47–AD. Supersedes AD 2001–25–11, Amendment 39–12564.

Applicability: This airworthiness directive (AD) is applicable to Pratt and Whitney (PW) model PW4050, PW4052, PW4056, PW4060, PW4060A, PW4060C, PW4062, PW4152, PW4156, PW4156A, PW4158, PW4160, PW4460, PW4462, and PW4650 turbofan engines. These engines are installed on, but not limited to, certain models of Airbus Industrie A300, Airbus Industrie A310, Boeing 747, Boeing 767, and McDonnell Douglas MD–11 series airplanes.

Note 1: This 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 (s) 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 engine takeoff power losses due to HPC surges, do the following:

(a) When complying with this AD, determine the configuration of each engine on each airplane using the following Table 1:

TABLE 1.—ENGINE CONFIGURATION LISTING

Configuration	Configuration description	Description
(1) Phase 1 without high pressure turbine (HPT) 1st turbine vane cut back (1TVCB).	A	Engines that did not incorporate the Phase 3 configuration at the time they were originally manufactured, or have not been converted to Phase 3 configuration; and have not incorporated HPT 1TVCB using any revision of service bulletin (SB) PW4ENG 72–514.
(2) Phase 1 with 1TVCB	B	Same as Configuration A except that HPT 1TVCB has been incorporated using any revision of SB PW4ENG 72–514.
(3) Phase 3, 2nd Run	C	Engines that incorporated the Phase 3 configuration at the time they were originally manufactured, or have been converted to the Phase 3 configuration during service; and that have had at least one high pressure compressor (HPC) overhaul since new.
(4) Phase 3, 1st Run	D	Same as Configuration C except that the engine has not had an HPC overhaul since new, except those engines that are defined as Configuration Designator G.

TABLE 1.—ENGINE CONFIGURATION LISTING—Continued

Configuration	Configuration description	Description
(5) HPC Cutback Stator Configuration Engines.	E	Engines that currently incorporate any revision of SB's PW4ENG72–706, PW4ENG72–704, or PW4ENG72–711.
(6) Engines that have passed Testing-21	F	Engines which have successfully passed Testing-21 performed in accordance with paragraph (i) of this AD. Once an engine has passed a Testing-21, it will remain a Configuration F engine until the HPC is overhauled, or is replaced with a new or overhauled HPC.
(7) Phase 3, 1st Run Subpopulation Engines. These engines are identified by model and serial numbers (SN's) as follows: PW4152: SN 724942 through SN 724944 inclusive; PW4158: SN 728518 through SN 728533 inclusive; PW4052, PW4056, PW4060, PW4060A, PW4060C, PW4062: SN 727732 through SN 728000 inclusive and SN 729001 through SN 729010 inclusive; PW4460, PW4462: SN 733813 through SN 733840 inclusive.	G	Engines that incorporated the Phase 3 configuration at the time they were originally manufactured, that were built from August 29, 1997 up to the incorporation of the HPC inner rear case with the Haynes material rear hook at the original engine manufacturer and have not had an HPC overhaul since new.
(8) Engines from Configuration G that have passed Testing-21.	H	Engines that have successfully passed Testing-21 performed in accordance with paragraph (i) of this AD. Once an engine has passed a Testing-21, it will remain a Configuration H engine until the HPC is overhauled, or is replaced with a new or overhauled HPC.

Configuration E Engines Installed on Boeing 747, 767, and MD–11 Airplanes

(b) For Configuration E engines, do the following:

(1) Before further flight, limit the number of engines with Configuration E as described in Table 1 of this AD, to one on each airplane.

(2) Remove all engines with Configuration E from service before accumulating 1,300 cycles-since-new (CSN) or cycles-since-conversion to Configuration E, whichever is later.

Configuration G and H Engines Installed on Boeing 747, 767, MD–11, and Airbus A300 and A310 Airplanes

(c) For Configuration G engines installed on Boeing 747, 767, MD–11, and Airbus A300 and A310 airplanes, except as provided in paragraph (b) of this AD:

(1) Within 30 days after the effective date of this AD, remove from service engines that exceed the CSN limits for Configuration G engines listed in Row A of the following Table 2.

TABLE 2.—CONFIGURATION G AND H LIMITS

Row	Configuration designator	B747 PW4056	B767 PW4052	B767 PW4056	B767 PW4060 PW4060A PW4060C PW4062	MD–11 PW4460 PW4462	A300/310 PW4152 4156A PW4158
A	G	3,000 CSN	4,400 CSN	3,600 CSN	3,000 CSN	2,800 CSN	4,400 CSN
B	G	1,700 CSN	3,000 CSN	2,100 CSN	1,350 CSN	1,150 CSN	2,800 CSN
C	H	600 cycles-since-passing Testing-21 (CST)	600 CST	600 CST	600 CST	600 CST	600 CST

(2) Within 60 days after the effective date of this AD, remove from service engines that exceed the CSN limits for Configuration G engines listed in Row B of Table 2 of this AD.

(3) Thereafter, ensure that no Configuration G engine exceeds the HPC CSN limits listed in Row B of Table 2 of this AD.

(4) Within 60 days after the effective date of this AD, remove from service engines that exceed the CST limits for Configuration H engines listed in Row C of Table 2 of this AD.

(5) Thereafter, ensure that no Configuration H engine exceeds the CST limits listed in Row C of Table 2 of this AD.

(6) Configuration G and H engines may be returned to service after completing paragraph (i) of this AD.

Engines Installed on Boeing 767 and MD–11 Airplanes

(d) For engines installed on Boeing 767 and MD–11 airplanes, except as provided in paragraph (b) and (c) of this AD, within 50 airplane cycles after the effective date of this AD, limit the number of engines that exceed the HPC CSN, HPC cycles-since-overhaul (CSO), or HPC CST limits in Table 3 of this AD, to not more than one engine per airplane. Thereafter, ensure that no more than one engine per airplane exceeds the HPC CSN, CSO, or CST limit in Table 3 of this AD. *See* paragraph (i) of this AD for return to service requirements.

Engines Installed on Boeing 747 Airplanes

(e) Except as provided in paragraph (b) and (c) of this AD, within 50 airplane cycles after the effective date of this AD, and thereafter, manage the engine configurations installed on Boeing 747 airplanes as follows:

(1) Limit the number of Configuration A, B, C, or E engines that exceed the HPC CSN or HPC CSO limits listed in Table 3 of this AD, to not more than one engine per airplane. Table 3 follows:

TABLE 3.—ENGINE LIMITS FOR BOEING AIRPLANES

Configuration designator	B747–PW4056	B767–PW4052	B767–PW4056	B767–PW4060 PW4060A PW4060C PW4062	MD–11 PW4460 PW4462
A	1,400 CSN or CSO	3,000 CSN or CSO	1,600 CSN or CSO	900 CSN or CSO	800 CSN or CSO.
B	2,100 CSN or CSO	4,400 CSN or CSO	2,800 CSN or CSO	2,000 CSN or CSO	1,200 CSN or CSO.
C	2,100 CSO	4,400 CSO	2,800 CSO	2,000 CSO	1,300 CSO.
D	2,600 CSN	4,400 CSN	3,000 CSN	2,200 CSN	2,000 CSN.
E	750 CSN or CSO	750 CSN or CSO	750 CSN or CSO	750 CSN or CSO	750 CSN or CSO.
F	800 CST	800 CST	800 CST	800 CST	800 CST.

(2) The single Configuration A, B, C, or E engine per airplane that exceeds the HPC CSN or CSO limits listed in Table 3 of this AD, must be limited to 2,600 HPC CSN or CSO for Configuration A, B, or C engines, or 1,300 HPC CSN or cycles-since-conversion to Configuration E, whichever is later, for Configuration E engines.

(3) Remove from service Configuration D engines before accumulating 2,600 CSN.

(4) Remove from service Configuration F engines before accumulating 800 CST.

(5) Configuration A, B, C, D, and F engines may be returned to service after completing paragraph (i) of this AD.

Engines Installed on Airbus A300 and A310 Airplanes

(f) Use paragraphs (f)(1) through (f)(9) to determine which Airbus A300 PW4158 engine category 1, 2, or 3 limits of the following Table 4 of this AD apply to your engine fleet:

TABLE 4.—ENGINE LIMITS FOR AIRBUS AIRPLANES

Configuration designator	A300 PW4158 category 1, and A310 PW4156 and PW4156A	A300 PW4158 category 2, and A310 PW4152	A300 PW4158 category 3
A	900 CSN or CSO	1,850 CSN or CSO	500 CSN or CSO.
B	2,200 CSN or CSO	4,400 CSN or CSO	1,600 CSN or CSO.
C	2,200 CSO	4,400 CSO	1,600 CSO.
D	4,400 CSN	4,400 CSN	4,400 CSN.
E	Not Applicable	Not Applicable	Not Applicable.
F	800 CST	800 CST	800 CST.

(1) Determine the number of Group 3 takeoff surges experienced by engines in your fleet before April 13, 2001. Count surge events for engines that had an HPC overhaul and incorporated either SB PW 4ENG 72–484 or SB PW4ENG 72–575 at the time of overhaul. Do not count surge events for engines that did not have the HPC overhauled (*i.e.* 1st run engine) or had the HPC overhauled but did not incorporate either SB PW4ENG 72–484 or SB PW4ENG 72–575. See paragraph (r)(5) of this AD for a definition of a Group 3 takeoff surge.

(2) Determine the number of cumulative HPC CSO accrued by engines in your fleet before April 13, 2001. Count HPC CSO for engines that had an HPC overhaul and incorporated either SB PW4ENG 72–484 or SB PW4ENG 72–575 at the time of overhaul. Do not count HPC CSO accrued on your engines while operating outside your fleet.

(3) Calculate the surge rate by dividing the number of Group 3 takeoff surges determined in paragraph (f)(1) of this AD, by the number of cumulative HPC CSO determined in paragraph (f)(2) of this AD, and then multiply by 1,000.

(4) If the surge rate calculated in paragraph (f)(3) of this AD is less than 0.005, go to paragraph (f)(5) of this AD. If the surge rate calculated in paragraph (f)(3) of this AD is greater than or equal to 0.005, go to paragraph (f)(6) of this AD.

(5) If the cumulative HPC CSO determined in paragraph (f)(2) of this AD is greater than or equal to 200,000 cycles, use A300 PW4158 Category 2 limits of Table 4 of this AD. If less than 200,000 cycles, go to paragraph (f)(7) of this AD.

(6) If the surge rate calculated in paragraph (f)(3) of this AD is greater than 0.035, use A300 PW 4158 Category 3 limits of Table 4 of this AD. If less than or equal to 0.035, go to paragraph (f)(7) of this AD.

(7) Determine the percent of takeoffs with greater than a 1.45 Takeoff engine pressure ratio (EPR) data for engines operating in your fleet. Count takeoffs from a random sample of at least 700 airplane takeoffs that has occurred over at least a 3-month time period, for a period beginning no earlier than 23 months prior to the effective date of this AD. See paragraph (r)(6) of this AD for definition of Takeoff EPR data.

(8) If there is insufficient data to satisfy the criteria of paragraph (f)(7) of this AD, use A300 PW4158 Category 3 limits of Table 4 of this AD.

(9) If the percentage of takeoffs with greater than a 1.45 Takeoff EPR data determined in paragraph (f)(7) of this AD is greater than 31%, use A300 PW 4158 Category 3 limits listed in Table 4 of this AD. If the percentage of takeoffs with greater than a 1.45 Takeoff EPR data determined in paragraph (f)(7) of this AD is less than or equal to 31%, use A300 PW 4158 Category 1 limits listed in Table 4 of this AD.

(g) For engines installed on Airbus A300 or A310 airplanes, except as provided in paragraph (c) of this AD, within 50 airplane cycles after the effective date of this AD, limit the number of engines that exceed the CSN, CSO, or CST limits listed in Table 4 of this AD, to no more than one engine per airplane. Thereafter, ensure that no more than one engine per airplane exceeds the HPC CSN, CSO, or CST limits listed in Table 4 of this AD. See paragraph (i) of this AD for return to service requirements.

(h) For Airbus A300 PW4158 engine operators, except those operators whose engine fleets are determined to be Category 3 classification based on surge rate in accordance with paragraph (f)(6) of this AD, re-evaluate your fleet category within 6 months from the effective date of this AD, and thereafter, at intervals not to exceed 6 months, using the following criteria:

(1) For operators whose engine fleets are initially classified as Category 1 or 3 in accordance with paragraph (f) of this AD, determine the percent of takeoffs with greater than a 1.45 Takeoff EPR data for engines operating in your fleet. Count takeoffs from a sample of at least 200 takeoffs that occurred over the most recent six month time period since the last categorization was determined, or the total number of takeoffs accumulated over 6 months if less than 200 takeoffs. See

paragraph (r)(6) of this AD for definition of takeoff EPR data.

(i) If there is insufficient data to satisfy the criteria of paragraph (h)(1) of this AD, use A300 PW4158 Category 3 limits listed in Table 4 of this AD.

(ii) If the percentage of takeoffs with greater than a 1.45 Takeoff EPR data determined in paragraph (h)(1) of this AD is greater than 31%, use A300 PW4158 Category 3 limits listed in Table 4 of this AD.

(iii) If the percentage of takeoffs with greater than a 1.45 Takeoff EPR data determined in paragraph (h)(1) of this AD is less than or equal to 31%, use A300 PW4158 Category 1 limits listed in Table 4 of this AD.

(2) For operators whose engine fleets are initially classified as Category 2 in accordance with paragraph (f) of this AD, determine the percent of takeoffs with greater than a 1.45 Takeoff EPR data for engines operating in your fleet. Count takeoffs from a sample of at least 200 takeoffs that occurred over the most recent six month time period since the last categorization was determined, or the total number of takeoffs accumulated over 6 months if less than 200 takeoffs. *See* paragraph (r)(6) of this AD for definition of takeoff EPR data.

(i) If there is insufficient data to satisfy the criteria of paragraph (h)(2) of this AD, use A300 PW4158 Category 3 limits listed in Table 4 of this AD.

(ii) If the percentage of takeoffs with greater than a 1.45 Takeoff EPR data determined in paragraph (h)(2) of this AD is greater than 37%, use A300 PW4158 Category 3 limits listed in Table 4 of this AD.

(iii) If the percentage of takeoffs with greater than a 1.45 Takeoff EPR data determined in paragraph (h)(2) of this AD is greater than or equal to 21% and less than or equal to 37%, use A300 PW4158 Category 1 limits listed in Table 4 of this AD.

(iv) If the percentage of takeoffs with greater than a 1.45 Takeoff EPR data determined in paragraph (h)(2) of this AD is less than 21%, use A300 PW4158 Category 2 limits listed in Table 4 of this AD.

Return to Service Requirements for All Engines (Testing-21)

(i) Engines removed from service in accordance with paragraph (c), (d), (e), or (g) of this AD may be returned to service under the following conditions:

(1) After passing a cool-engine fuel spike stability test (Testing-21) that has been done in accordance with one of the following PW4000 Engine Manuals (EM) as applicable, except for engines configured with Configuration E, or engines that have experienced a Group 3 takeoff surge:

(i) PW4000 EM 50A443, 71–00–00, TESTING–21, dated March 15, 2002.

(ii) PW4000 EM 50A822, 71–00–00, TESTING–21, dated March 15, 2002.

(iii) PW4000 EM 50A605, 71–00–00, TESTING–21, dated March 15, 2002; or

(2) Engines tested before the effective date of this AD, in accordance with any of the following PW4000 EM Temporary Revisions, meet the requirements of Testing-21:

(i) PW4000 EM 50A443, Temporary Revision No. 71–0026, dated November 14, 2001.

(ii) PW4000 EM50A822, Temporary Revision No. 71–0018, dated November 14, 2001.

(iii) PW4000 EM50A605, Temporary Revision No. 71–0035, dated November 14, 2001; or

(3) Engines tested before the effective date of this AD, in accordance with PW IEN 96KC973D, dated October 12, 2001, meet the requirements of Testing-21; or

(4) The engine HPC was replaced with an HPC that is new from production with no time in service; or

(5) The engine HPC has been overhauled, or the engine HPC replaced with an overhauled HPC with zero cycles since overhaul; or

(6) An engine that is either below or exceeds the limits of Table 3 or Table 4 of this AD may be removed and installed on another airplane without Testing-21, as long as the requirements of paragraph (c), (d), (e), or (g) of this AD are met at the time of engine installation.

Phase 0 or Phase 1, FB2T or FB2B Fan Blade Configurations

(j) For engines with Phase 0 or Phase 1, FB2T or FB2B fan blade configurations complying with the requirements of AD 2001–09–05, (66 FR 22908, May 5, 2001), AD 2001–09–10, (66 FR 21853, May 2, 2001), or AD 2001–01–10, (66 FR 6449, January 22, 2001), do the following:

(1) Operators complying with the AD's listed in paragraph (j) of this AD using the weight restriction compliance method, must perform Testing-21 in accordance with paragraph (i)(1) of this AD whenever any quantity of fan blades are replaced with new fan blades, overhauled fan blades, or with fan blades having the leading edges recontoured after the effective date of this AD, if during the shop visit the HPC is not overhauled and separation of a major engine flange, located between ''A'' flange and ''T'' flange, does not occur.

(2) If an operator changes from the weight restriction compliance method to the fan blade leading edge recontouring method after the effective date of this AD, testing-21 in accordance with paragraph (i)(1) of this AD is required each time fan blade leading edge recontouring is done, if the fan blades accumulate more than 450 cycles since new or since fan blade overhaul, or since the last time the fan blade leading edges were recontoured.

Minimum Build Standard

(k) Use the following minimum build standards:

(1) After the effective date of this AD, do not install an engine with HPC and HPT modules where the CSO of the HPC is 1,500 cycles or greater than the CSN or CSO of the HPT.

(2) For any engine that undergoes an HPC overhaul after the effective date of this AD:

(i) Inspect the HPC mid hook and rear hook of the HPC inner case for wear in accordance with PW Clean, Inspect and Repair (CIR) Manual PN 51A357, section 72–35–68 Inspection/Check-04, indexes 8–11, dated September 15, 2001. If the HPC rear hook is worn beyond serviceable limits, replace the HPC inner case rear hook with an improved durability hook in accordance with PW SB PW4ENG 72–714, Revision 1, dated November 8, 2001, or Chromalloy Florida Repair Procedure 00 CFL–039–0, dated December 27, 2000. If the HPC inner case mid hook is worn beyond serviceable limits, repair the HPC inner case mid hook in accordance with PW CIR PN 51A357 section 72–35–68, Repair-16, dated June 15, 1996, or in accordance with PW SB PW4ENG 72–749, dated June 17, 2002, or Chromalloy Florida Repair Procedure 02 CFL–024–0, dated September 15, 2002.

(ii) After the effective date of this AD, any engine that undergoes an HPC overhaul may not be returned to service unless it meets the build standard of PW SB PW4ENG 72–484, PW4ENG 72–486, PW4ENG 72–514, and PW4ENG 72–575. Engines that incorporate the Phase 3 configuration already meet the build standard defined by PW SB PW4ENG 72–514.

(3) After the effective date of this AD, any engine that undergoes separation of the HPC and HPT modules must not be installed on an airplane unless it meets the build standard of PW SB PW4ENG 72–514. Engines that incorporate the Phase 3 configuration already meet the build standard defined by PW SB PW4ENG 72–514.

Stability Testing Requirements

(l) After the effective date of this AD, Testing-21 must be performed in accordance with paragraph (i)(1) of this AD, before an engine can be returned to service after having undergone maintenance in the shop, except under any of the following conditions:

(1) The engine HPC was overhauled, or replaced with an overhauled HPC with zero cycles since overhaul; or

(2) The engine HPC was replaced with an HPC that is new from production with no time in service; or

(3) The shop visit did not result in the separation of a major engine flange located between ''A'' flange and ''T'' flange; or

(4) Engines with an HPC having zero CSN or CSO, or engines that successfully passed Testing-21 with zero CST; and are split at Flange E for transportation reasons as specified in the applicable Storage/Transport section of the applicable Engine Manual.

Thrust Rating Changes, Installation Changes, and Engine Transfers

(m) When a thrust rating change has been made by using the Electronic Engine Control (EEC) programming plug, or an installation change has been made during an HPC overhaul period, use the lowest cyclic limit of Table 3 or Table 4 of this AD, associated with any engine thrust rating change or with any installation change made during the affected HPC overhaul period. *See* paragraph (r)(1) for definition of HPC overhaul period.

(n) When a PW4158 engine is transferred to another PW4158 engine operator whose engine fleet has a different category, use the lowest cyclic limit in Table 4 of this AD that was used or will be used during the affected HPC overhaul period.

(o) When a PW 4158 engine operator whose engine fleet changes category in accordance with paragraph (h) of this AD,

use the lowest cyclic limits in Table 4 of this AD that were used or will be used during the affected HPC overhaul period.

(p) Engines with an HPC having zero CSN or CSO at the time of thrust rating change, or installation change, or engine transfer between PW4158 engine operators, or subsequent change in operator engine fleet category in accordance with paragraph (h) of this AD in the direction of lower to higher Table 4 limits, are exempt from the lowest cyclic limit requirement in paragraphs (m), (n), and (o) of this AD.

Engines That Surge

(q) For engines that experience a surge, and after troubleshooting procedures are completed for airplane-level surge during forward or reverse thrust, do the following:

(1) For engines that experience a Group 3 takeoff surge, remove the engine from service before further flight and perform an HPC overhaul.

(2) For any engine that experiences a forward or reverse thrust surge at EPR's greater than 1.25 that is not a Group 3 takeoff surge, do the following:

(i) For Configuration A, B, C, D, F, G, and H engines, remove engine from service within 25 CIS or before further flight if airplane-level troubleshooting procedures require immediate engine removal, and perform Testing-21 in accordance with paragraph (i)(1) of this AD.

(ii) For Configuration E engines, remove engine from service within 25 CIS or before further flight if airplane-level troubleshooting procedures require immediate engine removal.

Definitions

(r) For the purposes of this AD, the following definitions apply:

(1) An HPC overhaul is defined as restoration of the HPC stages 5 through 15 blade tip clearances to the limits specified in the applicable fits and clearances section of the engine manual.

(2) An HPC overhaul period is defined as the time period between HPC overhauls.

(3) An HPT overhaul is defined as restoration of the HPT stage 1 and 2 blade tip clearances to the limits specified in the applicable fits and clearances section of the engine manual.

(4) A Phase 3 engine is identified by a (−3) suffix after the engine model number on the data plate if incorporated at original manufacture, or a ''CN'' suffix after the engine serial number if the engine was converted using PW SB's PW4ENG 72–490, PW4ENG 72–504, or PW4ENG 72–572 after original manufacture.

(5) A Group 3 takeoff surge is defined as the occurrence of any of the following engine symptoms that usually occur in combination during an attempted airplane takeoff operation (either at reduced, derated or full rated takeoff power setting) after takeoff power set, which can be attributed to no specific and correctable fault condition after completing airplane-level surge during forward thrust troubleshooting procedures:

(i) Engine noises, including rumblings and loud ''bang(s).''

(ii) Unstable engine parameters (EPR, N1, N2, and fuel flow) at a fixed thrust setting.

(iii) Exhaust gas temperature (EGT) increase.

(iv) Flames from the inlet, the exhaust, or both.

(6) Takeoff EPR data is defined as Maximum Takeoff EPR if takeoff with Takeoff-Go-Around (TOGA) is selected or Flex Takeoff EPR if takeoff with Flex Takeoff (FLXTO) is selected. Maximum Takeoff EPR or Flex Takeoff EPR may be recorded using any of the following methods:

(i) Manually recorded by the flight crew read from the Takeoff EPR power management table during flight preparation (*see* Aircraft Flight Manual (AFM) chapter 5.02.00 and 6.02.01, or Flight Crew Operation Manual (FCOM) chapter 2.09.20) and then adjusted by adding 0.010 to the EPR value recorded; or

(ii) Automatically recorded during Takeoff at 0.18 Mach Number (Mn) (between 0.15 and 0.20 Mn is acceptable) using an aircraft automatic data recording system and then adjusted by subtracting 0.010 from the EPR value recorded; or

(iii) Automatically recorded during takeoff at maximum EGT, which typically occurs at 0.25–0.30 Mn, using an aircraft automatic data recording system.

Alternative Methods of Compliance

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

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

Special Flight Permits

(t) Special 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) to operate the airplane to a location where the requirements of this AD can be done.

Testing-21 Reports

(u) Within 60 days of test date, report the results of the cool-engine fuel spike stability assessment tests (Testing-21) to the ANE–142 Branch Manager, Engine Certification Office, 12 New England Executive Park, Burlington, MA 01803–5299, or by electronic mail to *9-ane-surge-ad-reporting@faa.gov.* Reporting requirements have been approved by the Office of Management and Budget and assigned OMB control number 2120–0056. Be sure to include the following information:

(1) Engine serial number.

(2) Engine configuration designation per Table 1 of this AD.

(3) Date of the cool-engine fuel spike stability test.

(4) HPC Serial Number, and HPC time and cycles-since-new and since-compressor-overhaul at the time of the test.

(5) Results of the test (Pass or Fail).

Documents That Have Been Incorporated by Reference

(v) The actions must be done in accordance with the following Pratt and Whitney (PW) service bulletin (SB), Internal Engineering Notice (IEN), Temporary Revisions (TR's), Clean, Inspection, and Repair Manual (CIR) repair procedures, engine manual (EM) sections, and Chromalloy Florida Repair Procedure:

Document No.	Pages	Revision	Date
PW SB PW4ENG72–714	1–2	1	Nov. 8, 2001.
	3	Original	June 27, 2000.
	4	1	Nov. 8, 2001.
	5–12	Original	June 27, 2001.
Total pages: 12			
PW SB PW4ENG72–749	All	Original	June 17, 2002.
Total pages: 12			
PW IEN 96KC973D	All	Original	Oct. 12, 2001.
Total pages: 19			
PW TR 71–0018	All	Original	Nov. 14, 2001.
Total pages: 24			
PW TR 71–0026	All	Original	Nov. 14, 2001.
Total pages: 24			
PW TR 71–0035	All	Original	Nov. 14, 2001.
Total pages: 24			
PW CIR 51A357, Section 72–35–68, Inspection/Check-04, Indexes 8–11	All	Original	Sept. 15, 2001.
Total pages: 5			
PW CIR 51A357, Section 72–35–68, Repair 16	All	Original	June 15, 1996.

Document No.	Pages	Revision	Date
Total pages: 1			
PW4000 EM 50A443, 71–00–00, TESTING–21	All	Original	Mar. 15, 2002.
Total pages: 20			
PW4000 EM 50A822, 71–00–00, TESTING–21	All	Original	Mar. 15, 2002.
Total pages: 20			
PW4000 EM 50A605, 71–00–00, TESTING–21	All	Original	Mar. 15, 2002.
Total pages: 20			
Chromalloy Florida Repair Procedure, 00 CFL–039–0			
Summary	1–3	Original	Dec. 27, 2000.
Insp/chk-01	801	Original	Dec. 27, 2000.
Repair-01	901–903	Original	Dec. 27, 2000.
Total pages: 7			
Chromalloy Florida Repair Procedure, 02 CFL–024–0			
Summary	1–5	Original	Sept. 15, 2002.
Inspection	801–802	Original	Sept. 15, 2002.
Repair	901–906	Original	Sept. 15, 2002.
Total pages: 13			

The incorporation by reference of SB PW4ENG72–714, dated November 8, 2001, IEN 96KC973D, dated October 12, 2001, TR 71–0018, TR 71–0026, and TR 71–0035, all dated November 14, 2001, CIR 51A357, section 72–35–68, Inspection/Check-04, Indexes 8–11, dated September 15, 2001, and CIR 51A357, section 72–35–68, Repair 16, dated June 15, 1996 was approved by the Director of the Federal Register as of January 17, 2002 (67 FR 1, January 2, 2002). The incorporation by reference of SB PW4ENG72–749, dated June 17, 2002, EM 50A443, section 71–00–00, Testing-21, EM 50A822, section 71–00–00, Testing-21, EM 50A605, and section 71–00–00, Testing-21, all dated March 15, 2002, Chromalloy Florida Repair Procedure, 00 CFL–039–0, dated December 27, 2000, and Chromalloy Florida Repair Procedure, 02 CFL–024–0, dated September 15, 2002, was approved by the Director of the Federal Register on November 12, 2002, in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Pratt and Whitney document copies may be obtained from Pratt and Whitney, 400 Main St., East Hartford, CT 06108; telephone (860) 565–6600; fax (860) 565–4503. Chromalloy Florida document copies may be obtained from Chromalloy Florida, 630 Anchors St., NW., Walton Beach, FL 32548; telephone (850) 244–7684; fax (850) 244–6322. Copies may be inspected, by appointment, at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA; or at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC.

Effective Date

(w) This amendment becomes effective on November 12, 2002.

Issued in Burlington Massachusetts, on October 11, 2002.

Mark C. Fulmer,

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

[FR Doc. 02–26909 Filed 10–24–02; 8:45 am]

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 2000–NM–392–AD; Amendment 39–12921; AD 2002–21–14]

RIN 2120–AA64

Airworthiness Directives; Boeing Model 757–200, –200CB, and –300 Series Airplanes

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule.

SUMMARY: This amendment adopts a new airworthiness directive (AD), applicable to certain Boeing Model 757–200, –200CB, and –300 series airplanes. This AD requires determining the part numbers of the master control valve on the pressure bottles that activate the off-wing escape slides, and performing corrective action if necessary. This action is necessary to prevent failure of an escape slide to deploy or inflate correctly, which could cause the slide to be unusable during an emergency evacuation and result in consequent injury to passengers or crewmembers. This action is intended to address the identified unsafe condition.

DATES: Effective November 29, 2002. The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of November 29, 2002.

ADDRESSES: The service information referenced in this AD may be obtained from Boeing Commercial Airplane Group, P.O. Box 3707, Seattle, Washington 98124–2207. This information may be examined at the Federal Aviation Administration (FAA), Transport Airplane Directorate, Rules Docket, 1601 Lind Avenue, SW., Renton, Washington; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

FOR FURTHER INFORMATION CONTACT: *Technical Information:* Victor Wicklund, Aerospace Engineer, Airframe Branch, ANM–120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98055–4056; telephone (425) 227–1426; fax (425) 227–1181.

Other Information: Judy Golder, Airworthiness Directive Technical Editor/Writer; telephone (425) 687–4241, fax (425) 227–1232. Questions or comments may also be sent via the Internet using the following address: *judy.golder@faa.gov.* Questions or comments sent via the Internet as attached electronic files must be formatted in Microsoft Word 97 for Windows or ASCII text.

SUPPLEMENTARY INFORMATION: A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an airworthiness directive (AD) that is applicable to certain Boeing Model 757–200, –200CB, and –300 series airplanes was published in the **Federal Register** on February 26, 2002 (67 FR 8741). That action proposed to require determining the part numbers of the master control valve on the pressure bottles that activate the off-wing escape slides, and corrective action, if necessary.

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.

Support for the Proposal

Two commenters concur with the proposed AD. One additional