



[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2018-1046; Product Identifier 2018-CE-049-AD]

RIN 2120-AA64

Airworthiness Directives; Piper Aircraft, Inc. Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Supplemental notice of proposed rulemaking (SNPRM); reopening of comment period.

SUMMARY: The FAA is revising an earlier proposal for certain Piper Aircraft, Inc. (Piper) Models PA-28-140, PA-28-150, PA-28-151, PA-28-160, PA-28-161, PA-28-180, PA-28-181, PA-28-235, PA-28R-180, PA-28R-200, PA-28R-201, PA-28R-201T, PA-28RT-201, PA-28RT-201T, PA-32-260, and PA-32-300 airplanes. The notice of proposed rulemaking (NPRM) was prompted by a report of a wing separation caused by fatigue cracking in a visually inaccessible area of the lower main wing spar cap. This action revises the NPRM by adding and removing certain models of airplanes in the Applicability, proposing to require the use of service information that was issued since the NPRM, and clarifying some of the proposed actions. The FAA is proposing this airworthiness directive (AD) to address the unsafe condition on these products. Since these actions would impose an additional burden over those proposed in the NPRM, the FAA is reopening the comment period to allow the public the chance to comment on these changes.

DATES: The comment period for the NPRM published in the Federal Register on December 21, 2018 (83 FR 65592), is reopened.

The FAA must receive comments on this SNPRM by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <https://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: 202-493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.
- Hand Delivery: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this SNPRM, Piper Aircraft, Inc., 2926 Piper Drive, Vero Beach, Florida 32960; telephone: (772) 567-4361; Internet: www.piper.com. You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 901 Locust, Kansas City, Missouri 64106. For information on the availability of this material at the FAA, call (816) 329-4148.

Examining the AD Docket

You may examine the AD docket on the Internet at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2018-1046; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this SNPRM, the NPRM, the regulatory evaluation, any comments received, and other information. The street address for Docket Operations is listed above. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Dan McCully, Aerospace Engineer, Atlanta ACO Branch, FAA, 1701 Columbia Avenue, College Park, Georgia 30337; phone: (404) 474-5548; fax: (404) 474-5605; email: william.mccully@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2018-1046; Product Identifier 2018-CE-049-AD” at the beginning of your comments. The FAA specifically invites comments on the overall regulatory, economic, environmental, and energy aspects of this SNPRM. The FAA will consider all comments received by the closing date and may amend this SNPRM because of those comments.

The FAA will post all comments received, without change, to <https://www.regulations.gov>, including any personal information you provide. The FAA will also post a report summarizing each substantive verbal contact received about this SNPRM.

Discussion

The FAA issued an NPRM to amend 14 CFR part 39 by adding an AD that would apply to certain Piper Aircraft, Inc. (Piper) Models PA-28-140, PA-28-150, PA-28-151, PA-28-160, PA-28-161, PA-28-180, PA-28-181, PA-28-235, PA-28R-180, PA-28R-200, PA-28R-201, PA-28R-201T, PA-28RT-201, PA-28RT-201T, PA-32-260, and PA-32-300 airplanes. The NPRM published in the *Federal Register* on December 21, 2018 (83 FR 65592).

The NPRM was prompted by a fatal accident involving wing separation on a Piper Model PA-28R-201 airplane. An investigation revealed a fatigue crack in a visually inaccessible area of the lower main wing spar cap. The NPRM included other model

airplanes with similar wing spar structures as the Model PA-28R-201. Based on airplane usage history, the FAA determined that only those airplanes with higher risk for fatigue cracks (airplanes with a significant history of operation in flight training or other high-load environments) should be subject to the inspection requirements proposed in the NPRM.

Because airplanes used in training and other high-load environments are typically operated for hire and have inspection programs that require 100-hour inspections, the FAA determined the number of 100-hour inspections an airplane has undergone would be the best indicator of the airplane's usage history. Accordingly, the FAA developed a factored service hours formula based on the number of 100-hour inspections completed on the airplane.

The NPRM proposed to require a review of the airplane maintenance records to determine the number of 100-hour inspections and the application of the factored service hours formula to identify when an airplane meets the criteria for the proposed eddy current inspection of the lower main wing spar bolt holes. The NPRM also proposed to require inspecting the lower main wing spar bolt holes for cracks once a main wing spar exceeds the specified factored service hours and replacing any main wing spar when a crack is indicated. The maintenance records review to determine the factored service hours proposed by the NPRM would only apply when an airplane has either accumulated 5,000 or more hours time-in-service (TIS); has had either main wing spar replaced with a serviceable main wing spar (more than zero hours TIS); or has missing and/or incomplete maintenance records.

Actions Since the NPRM was Issued

After a review of the comments received on the NPRM and further analysis, the FAA determined that some additional airplane models are likely to be affected by the unsafe condition and should be included in the applicability, while other models are not

affected and should be removed from the applicability. Consequently, this SNPRM revises the applicability and the estimated cost associated with the proposed AD actions. This SNPRM also clarifies the applicability and some of the proposed actions. In addition, this supplemental NPRM no longer allows replacement of the wing spar with a used part. The FAA determined replacement of the wing spar with a part of unknown operational history would not ensure an acceptable level of safety.

Since the NPRM was issued, Piper issued a service bulletin that contains procedures for the eddy current inspection. This SNPRM proposes to require that service bulletin to do the eddy current inspection instead of the inspection procedure in the appendix to the NPRM.

Since these actions impose an additional burden over that in the NPRM, the FAA is reopening the comment period to allow the public the chance to comment on this change.

Comments

The FAA gave the public the opportunity to comment on the NPRM and received approximately 168 comments. The majority of the commenters were individual maintenance personnel and operators. The remaining commenters included Piper, governmental agencies such as the European Union Aviation Safety Agency (EASA) and the National Transportation Safety Board (NTSB), and organizations such as the Aircraft Owners and Pilots Association (AOPA), the Experimental Aircraft Association (EAA), and the General Aviation Manufacturers Association (GAMA). The following presents the relevant comments received on the NPRM and the FAA's response to each comment.

A. Supportive Comments

Fifteen comments were received in support of the NPRM. Five of these commenters specifically supported the proposed eddy current inspection method. The

NTSB specifically supported the proposed requirement to report inspection results to the FAA.

B. Comments Regarding the FAA's Justification of the Unsafe Condition

Many commenters requested that the FAA provide more information about the root cause and clarify the FAA's unsafe condition determination.

Requests for Information about the Accident Airplane

Mitchell Ross requested information regarding the background of the accident airplane that prompted the NPRM, including its manufacturing and maintenance history. This commenter and Robert Cunningham also questioned the operational history of the accident airplane. Nine other commenters questioned the FAA's determination that an unsafe condition exists based on only one failure in 30 years.

The FAA agrees. All publicly available information about the accident airplane, including the information requested by the commenters, is available in the NTSB docket for accident number ERA18FA120. This information can be viewed at <https://dms.nts.gov/pubdms/search/hitlist.cfm?docketID=62694&CFID=95094&CFTOKEN=b616b3892cb482f1-5B544A63-5056-942C-92C71C2E6BFF1D97>.

Requests for Information about the Root Cause of the Unsafe Condition

David Hedley and Dana Pyle noted that Piper's steel supplier changed in the 1980s. These commenters and Robert Cunningham questioned whether inferior metal could be a factor. Tom McIntosh, Dana Pyle, and Robert Cunningham questioned whether coastal environments contributed to the corrosion and metal fatigue. Steven Rosenfield asked the FAA to confirm whether the fatigue cracking is caused by a design defect or a manufacturing error. Some commenters suggested that the problem is caused by other issues such as inadequate inspection and maintenance practices, and hard landings that go unreported.

The FAA agrees to provide additional information. The NTSB Materials Laboratory conducted hardness testing and electrical conductivity testing of the accident spar and sent spar samples to an independent laboratory for tension testing and chemical analysis. Tests results showed that the spar material conformed to type design (see NTSB report no. 18-061, Materials Laboratory Factual Report). Corrosion was not determined to be a contributing factor. Regarding the concern about inadequate inspections and maintenance practices, the NTSB report did not indicate there was any evidence of inadequate inspection and maintenance practices.

Request to Reference the Piper Model PA-28R-201 Accident

AOPA noted the absence of any specific mention of the April 4, 2018, Piper PA-28R-201 accident (NTSB Accident Number ERA18FA120) in the NPRM. The commenter stated its belief that the accident is a driving force behind the NPRM.

The FAA agrees. The preamble of this SNPRM has been revised to add information related to the accident.

Requests to Wait for NTSB Final Report before Issuing AD Action

Joseph Oh, The University of North Dakota (UND Aerospace), AOPA, Navid Rahimi, Benjamin Morgan, and eight other commenters requested the FAA wait for the conclusion of the NTSB investigation before issuing an AD. These commenters stated or suggested that the proposed AD is premature and that the NTSB's determinations would affect the content or necessity of the proposed AD. Piper stated that the proposed AD would likely interfere with the NTSB's investigation. Some of these commenters specifically referenced the NTSB's investigation of a Piper Model PA-28R-201 Arrow III that experienced an in-flight wing separation on April 4, 2018.

The FAA does not agree. In accordance with 14 CFR 39.5, the FAA issues airworthiness directives when an unsafe condition exists in the product, and the condition is likely to exist or develop in other products of the same type design. While the NTSB

contributes critical information to accident prevention efforts, the FAA's determinations of unsafe conditions are not dependent on the outcome of NTSB investigations. The FAA, Piper, and the NTSB concurred that the subject failure was the result of an undetected fatigue crack in the wing spar. This was supported by the NTSB's release of Preliminary Report ERA18FA120 and a later Investigative Update, which disclosed additional fatigue cracks on another airplane. Although the NTSB's final report (issued after the NPRM published) provides additional details regarding the accident, it does not yield information previously unknown to the FAA that would have altered the content of the NPRM, nor did the NTSB request the FAA delay issuing the NPRM pending its final report. The NTSB reports may be found at <https://www.nts.gov/investigations/pages/era18fa120.aspx>. The FAA did not make changes to this SNPRM based on these comments.

Request to Withdraw the NPRM

Dwight Schrute, Ross Carbiner, Thomas Feminella, AOPA, EAA, GAMA, Piper, and 21 other commenters stated that because the AD was issued as an interim action with a reporting requirement, the AD is inappropriate and does not address a known unsafe condition. Nine of those commenters stated that a special advisory information bulletin (SAIB), service bulletin, or other voluntary action is a more appropriate method of addressing the wing spar fatigue cracking. Four of those commenters opposed the AD generally. Michael Powell did not request to withdraw the NPRM, but suggested the FAA obtain information from DeHaviland Support, because this company has experience with a relevant wing spar fatigue monitoring scheme that has been implemented for the DeHaviland Model Chipmunk airplanes. Three other commenters suggested the FAA gather data from voluntary inspections and salvage parts before issuing an AD.

The FAA does not agree to withdraw the NPRM. The FAA may issue an AD as an interim action for several reasons, including to obtain inspection results to determine the necessity of additional action or final action, while simultaneously requiring inspections to mitigate the unsafe condition. The primary considerations in reaching the decision for an interim AD were: 1) the catastrophic failure mode resulting from this condition, and 2) the inability to detect the subject cracking during a routine inspection. The NTSB accident database shows a relatively small number of Piper Model PA-28 airplane wing failures related to fatigue cracks (three known). However, the only reported cracks were discovered after wing separations, since the cracks developed and grew in a normally concealed structural area. In addition, it can be predicted based on engineering principles of crack propagation that a fatigue crack in this location will grow with each load cycle and eventually result in wing spar failure. Due to the fatality rate associated with the known failures, the risk analysis protocol used by the FAA justifies mandatory corrective action. Both the NPRM and this SNPRM employ methodology to screen out the majority of lower-risk airplanes based on usage history. The FAA did not make changes to this SNPRM based on these comments.

C. Comments Regarding Applicability

Requests to Revise the Airplane Models Listed in the Applicability Section

Piper, EAA, and GAMA stated that the applicability of the proposed AD is too broad and includes models with different structural layouts and loads, or other key aspects that affect spar fatigue. Piper specifically advised the FAA to rely on Piper's analysis and limit the proposed AD to Piper Models PA-28R-180, PA-28R-200, PA-28R-201, PA-28R-201T, PA-28RT-201, PA-28RT-201T, and PA-28-235 airplanes (all serial numbers), and certain serial-numbered Models PA-32-260 and PA-32-300 airplanes. Eight other commenters agreed with the comments submitted by Piper. AOPA and two individual commenters expressed concern that the FAA did not accept Piper's

recommendation on the limited scope of airplanes that may be subject to the unsafe condition. The NTSB supported the inclusion of Models PA-28-235, all PA-28R-series, PA-32-260, and PA-32-300 airplanes in the proposed AD, and requested that the FAA reconsider whether the proposed AD should include all PA-28-series models (other than Model PA-28-235).

Thomas Rae identified Piper model seaplanes and airplanes that, given their similar structure, hours in service, and/or use in flight training, should be added to the Applicability section of the proposed AD. Twelve other commenters requested the FAA clarify the inclusion or exclusion of various specific models. Charles Martinak stated wingspan, maximum gross takeoff weight, and retractable gear architecture should be the main similarity factors for inclusion in the applicability.

The FAA agrees that the models listed in the Applicability of the proposed AD should be revised. The Applicability section was designed to screen out lower-risk airplanes from the inspection requirement by applying only to airplanes with 5,000 or more hours TIS, unless maintenance records are missing and/or incomplete or a wing has been replaced. The subsequent maintenance records review to calculate factored service hours was intended to eliminate an additional large number of remaining airplanes from the AD requirements. Only the airplanes at the highest risk for fatigue cracks would be required to conduct the eddy current inspection.

Piper Aircraft provided the FAA with extensive analyses of similarly structured airplanes, including comparison of factors such as structural geometry, certificated weights, design airspeeds, bending moments, and wing loading parameters including gust loads, maneuvering loads, and landing loads. Although the FAA accepted all of Piper's initial recommended models for effectivity, Piper's recommended effectivity did not include the group of airplanes addressed in Piper Aircraft, Inc. Service Bulletin No. 886, dated June 8, 1988 (Piper SB 886) (Wing Spar Inspection). Piper SB 886 includes the

Model PA-28-181 airplane, which was involved in two wing separation accidents in 1987 and 1993. Both accident airplanes had fatigue cracks in the wing spar as mentioned in the NTSB Final Accident Report ERA18FA120.

Due to the inability to visually inspect the specific area of the structure once the wing has been assembled, cracks may go undetected and unreported for a significant period of time. Consequently, a reported crack at this location is more likely to come from an investigation of a wing spar failure than as the result of a routine inspection or maintenance. The FAA initially expanded on Piper's recommended effectivity to include all airplane models in the Applicability section of Piper SB 886.

Since issuing the NPRM, and partially in response to public comments, the FAA has adopted a more focused risk criteria using load data provided by Piper. This risk approach and the resulting change in applicability adds three airplane models (Models PA-32R-300, PA-32RT-300, and PA-32RT-300T) and removes five airplane models (Models PA-28-140, PA-28-150, PA-28-160, PA-28-161, and PA-28-180) from the Applicability section of this SNPRM, for a net reduction of approximately 8,800 lower-risk aircraft. The FAA developed a more precise methodology for identifying risk. Flight loads of all similar models were compared to those of the PA-28R-201 (accident aircraft) as a baseline. Those aircraft models with calculated wing loads greater than or equal to 95 percent of baseline are considered at-risk and are included in the new effectivity. While the additional parameters included in the new screening method allowed us to remove many lower risk aircraft, it also identified three models that were not captured by the previous, broader, approach. Because this methodology considers only the potential damage to the aircraft and not the actual load history of an individual aircraft, the additional maintenance record reviews are used to determine when the AD becomes applicable to a specific aircraft.

D. Comments Regarding the “Factored Service Hours” Formula

Requests to Clarify and Revise the “Factored Service Hours” Formula

Floris Oldenbroek, Richard Davis, and three other commenters expressed confusion at the formula and requested clarification and guidance; two of these commenters specifically asked about the divisor "17." Many commenters noted various flaws in the proposed methodology for counting 100-hour inspections. Tom Rafferty, Kenneth Minck, Brian Christie, and approximately 19 other commenters stated maintainers often document 100-hour inspections as “annual” inspections or as “annual/100-hour” inspections. EASA, AOPA, and three individual commenters stated that the formula would cause issues with international operators because, unlike the FAA’s regulations, foreign civil aviation authorities do not distinguish between 100-hour and annual inspections. Several other commenters noted that using 100-hour inspections is not an accurate way of determining high stress flight hours. GAMA and five individual commenters noted that the formula does not address operators that are on a progressive inspection program under 14 CFR 91.409(d). Outer Banks Airlines and three individual commenters stated that not all commercial operations, which will be captured by counting 100-hour inspections, are used for flight instruction. These commenters explained that charter flights operated under 14 CFR part 135 are not subject to the harsh training environment of training operations and are instead flown by highly trained pilots on longer flights with fewer landings.

Many of the commenters proposed different methodologies to use in determining the factored service hours. Chris Sobers, Thomas Downey, and three other commenters suggested using total time on the airframe ("TTAF") as a less complex method. Floris Oldenbroek asked whether the total time of the aircraft could be used instead of the factored service hours formula if an airplane has only been utilized as a trainer. Martin Kennett and Lawrence Mangus suggested using the number of landing cycles/severe

landings as a better indication of fatigue damage. Suggestions from other commenters included: omitting 100-hour inspections performed in conjunction with an annual inspection; omitting 100-hour inspections performed voluntarily and not required by § 91.409(b); using a severity factor to indicate primary use in flight training; only including airplanes used by flights schools/excluding airplanes with no history of use in training; and adding a penalty for hard landings and major wing damage.

The FAA agrees to explain the formula based on these comments. The FAA developed the factored service hours formula to determine an approximate factored service life for any airplane, including those with mixed usage history. The formula attributes 100 *factored service hours* for each 100-hour inspection recorded in the airplane maintenance records. For an airplane that has been inspected under § 91.409(b) for its entire lifecycle, the owner/operator may use hours TIS for the factored service hours. The divisor of 17 accounts for the difference in structural life expectancy between "normal" use and "training" use, based on industry studies of crack growth development. Piper adopted a similar formula for use in Piper SB 886 and Piper Service Bulletin SB 978A, dated August 6, 1999 (Piper SB 978A).

This SNPRM includes guidance for determining the quantity "N" in the factored service hours formula based on the various maintenance record entry notations that may be used to indicate compliance with the 100-hour inspection requirements. As proposed in this SNPRM, the airplane maintenance records review must consider any inspection that was done to comply with the 100-hour inspection requirement under § 91.409(b), which pertains to carrying persons for hire and providing flight instruction for hire. Regardless of whether the inspection is logged as an "annual" or "100-hour," if the purpose was to comply with the 100-hour requirement of § 91.409(b), then the inspection must be counted. The purpose of an inspection may be determined by noting the interval between inspections (i.e., less than 10 months and typically from 90 to 110 flight hours

would indicate a Part 91.409(b) inspection). A “100-hour” inspection done concurrently with an annual inspection, not required by § 91.409(b), does not have to be counted. For operators utilizing a “progressive” inspection program, only inspections that complete each 100-hour cycle must be counted as a 100-hour inspection.

The FAA has considered the impact of the proposed formula on international operators and agrees with EASA that civil airworthiness authorities (CAAs) would have to develop a different approach instead of fully adopting the FAA’s AD. The FAA encourages CAAs to use their equivalent inspection requirements to account for differences in terminology relative to annual versus 100-hour inspections and other unique operational requirements. The FAA is available to support any such efforts as requested by a CAA.

The FAA has also considered the alternative methods suggested by the commenters and determined that the formula in this SNPRM is the best method for allowing personal-use airplanes to defer the inspection. Using TTAF or TIS alone would not account for different types of usage history. Other commenters’ proposals, while logical and valid, are not based on regulatory recordkeeping requirements and therefore would create other difficulties for owners and operators. For example, while use and history specifically in flight training, landing cycles, and hard landings are valid indicators, there is no regulatory requirement for U.S. operators to maintain such records, particularly for personal use airplane maintenance records. The FAA considered adding a penalty for any history of major repairs to the wing, but determined it would not be necessary. Any cracks, as well as other damage, would be detected and corrected during the repair to the wing, as the FAA’s maintenance regulations require restoring the wing to its original or properly altered condition before approving it for return to service. In addition, any operator that believes their airplane does not fit the applicability/risk focus of this SNPRM may provide substantiating data and request approval of an alternative

method of compliance (AMOC) to the AD action using the instructions found in paragraph (o) of this AD. The FAA will consider all AMOC requests on a case-by-case basis.

Request for Clarification of When to Calculate Factored Service Hours

Mark Talaga requested clarification on the correct hours to require the eddy current inspection, 5,000 hours TIS or 5,000 factored service hours. Richard Davis asked the FAA to clarify why the records review would be done when the airplane has 5,000 hours TIS and not 6,000 hours TIS.

The FAA agrees to provide additional information on this proposed requirement. The applicability paragraph of the NPRM referenced a table listing the potentially affected models and serial-numbered airplanes. It also provided three criteria to determine if the AD applied to the models listed in the table: 1) the airplane has accumulated 5,000 or more hours TIS; 2) the airplane has had either main wing spar replaced with a serviceable main wing spar (more than zero hours TIS); or 3) the airplane maintenance records are missing and/or incomplete.

The 5,000 hours TIS criteria in paragraph (c), Applicability, is only used to determine if the AD applies to the airplane. If the airplane does not meet any of the three criteria, then the AD does not yet apply to that airplane. Only if and when one of those three conditions exist would the proposed AD require an airplane maintenance records review to determine the factored service hours. Then, only if the resulting calculation determines that the airplane has reached 5,000 *factored service hours* must an eddy current inspection be completed within 100 hours TIS.

The 5,000 factored service hours compliance time is determined by taking the known factored hours at spar failure, and regressing to predict the time of crack initiation. Starting the inspection at 5,000 factored service hours provides a reasonable opportunity to detect a crack before it reaches a dangerous length. Because it is impossible for an

aircraft to accumulate 5,000 factored service hours without having flown 5,000 hours TIS, there is no need to review an airplane's inspection record before 5,000 hours TIS.

Request to Change Quantity of 100-Hour Inspections Used in the Calculation

John Longley requested limiting the 100-hour inspection calculation to the past 5, 7, or at most 10 years rather than since the airplane was new.

The FAA disagrees. The effect of fatigue on a structure is cumulative regardless of when it occurred. The factored service hours formula takes into account airplanes with mixed usage history and provides credit for hours TIS accrued while in "normal" usage. The FAA did not make changes to this SNPRM based on this comment.

Request to Allow the Owner/Operator to Review the Airplane Maintenance Records

Tom McIntosh, Dennis Mulloy, and four other commenters requested that the owner/operator be allowed to review the airplane maintenance records and calculate the factored service hours. These commenters objected to the cost associated with requiring a mechanic to do the airplane maintenance record review, when the owner/operator is capable.

The FAA agrees. The FAA does not consider an airplane maintenance records review to be a maintenance action, and the SNPRM has been clarified to state that the owner/operator (pilot) may conduct the review and calculate the factored service hours to determine if the eddy current inspection proposed by this SNPRM is necessary. The airplane maintenance records review cost estimate has been retained in this SNPRM, since owners may choose to have a mechanic perform the initial review and factored service hours calculation.

E. Comments Regarding Missing Records

Requests for Clarification of Missing Aircraft Maintenance Records

Dennis Mulloy requested clarification of what would constitute missing or incomplete maintenance records. James Layton asked for guidance where logbook entries

may be missing but the airplane has verifiable hours through the original tachometer. Michael Beasley requested clarification for missing logbooks that are reconstructed by the maintenance facility that serviced the airplane.

The FAA agrees to provide clarification. The premise of calculating factored service hours to determine the risk category of an airplane is based on the accuracy and completeness of the airplane maintenance records for the entire history of the airplane. An absence of airplane maintenance records entries over an extended period (as in the case of dormant airplanes) does not constitute missing or incomplete maintenance records if tachometer/Hobbs time continuity shows the airplane did not operate during that time. For purposes of this proposed AD, reconstructed records should be considered the same as missing or incomplete records. Physically missing airplane maintenance records or logbook pages that include unaccounted-for operational hours or records not retained after work is superseded in accordance with 14 CFR 91.417(b)(1), would be considered missing or incomplete maintenance records.

Requests for an Alternative Method for Missing Aircraft Maintenance Records

Michael Graziano, Duke Ball, Stephen Allen, and Olmond Hall requested that for airplanes with missing or incomplete maintenance records, operators be allowed to assume that 100-hour inspections were completed for the purposes of calculating the factored service hours, instead of being automatically required to complete the eddy current inspection. Four other commenters proposed or requested similar methods for attributing unknown hours TIS.

The FAA disagrees. While the FAA does not object in theory with an alternate method of computing factored service hours in the case of missing airplane maintenance records, there are other issues to consider. Missing airplane maintenance records may mask the replacement of a tachometer or Hobbs meter, thus invalidating the total hours TIS. Missing records may hide information on the history of the wing/wing spar on the

airplane. Without airplane maintenance records for the entire airplane's history, an operator cannot determine if the airplane has the original wing(s) or a replacement wing(s). For this reason, the FAA determined that, for purposes of this proposed AD, operators with missing or incomplete records must assume that the wing history is unknown. An owner who can provide other documentation supporting the history of the airplane or wing spar and show an acceptable level of safety may request approval of an AMOC to the AD action with substantiating data using the instructions found in paragraph (o) of this SNPRM. The FAA will review all AMOC requests and may approved the requests on a case-by-case basis. The FAA did not make changes to this SNPRM based on these comments.

F. Comments Regarding Compliance Times

Thurman Bodenheimer, Christian Quitntero, and three other commenters requested that the compliance times and intervals in the NPRM be changed to match the airplane usage groups and intervals contained in Piper SB 886 and Piper SB 978A.

The FAA disagrees. Piper SB 886 and Piper SB 978A classify airplanes used in flight training as "normal usage," which puts compliance for the initial inspection far beyond the initial (critical) inspection time specified in the NPRM. The FAA has found that this compliance time is not sufficient to address the unsafe condition. Additionally, the compliance time charts in Piper SB 886 and Piper SB 978A specify the airplane's usage class based on subjective criteria such as "significant time" flown below 1,000 feet during any part of the airplane's history. There is no regulatory requirement for operators to record or maintain hours TIS by operation at certain altitudes; thus, most operators would have no way of determining this information.

Hillel Glazer proposed a specific tiered approach for compliance with the initial airplane maintenance records review by prioritizing airplanes based on usage history, with the lowest tier requiring the airplane maintenance record review within 100 hours

TIS. Michael Graziano requested changing the compliance time from 30 days to 50 hours TIS or at the next annual inspection, similar the service information provided by Piper.

The FAA disagrees. The usage rate of each airplane after the effective date of the AD will vary, and the use of calendar time ensures all operators review their maintenance records within a specified timeframe. Also, this SNPRM has been revised to allow the owner/operator (pilot) to do the maintenance records review. If the review of the maintenance records and the factored service hours indicate the operator must have an eddy current inspection done on the airplane, the compliance time is within 100 hours TIS after the factored service hours determination.

The FAA did not make changes to this SNPRM based on these comments.

G. Comments Regarding the Proposed Inspection

Requests to Remove Eddy Current Inspection Because of Possible Damage

Daniel Stanley, Thomas Wiedenbeck, Mitchell Ross, Dana Pyle, Don Morris, Piper, and 17 other commenters stated that removal of wing attach bolts for the purpose of conducting the bolt hole inspection would create the potential of maintenance-induced damage to the airplanes that would outweigh any benefits realized from the inspection. Piper advised of reports of damaged spar bolt holes caused by removal of the bolts to perform a voluntary inspection of the fastener holes.

The FAA disagrees. Compliance with AD 87-08-08, Amendment 39-5615 (52 FR 15302, April 28, 1987) (“AD 87-08-08”) and AD 87-08-08R1, Amendment 39-5669 (52 FR 29505, August 10, 1987), which was rescinded on May 22, 1989, resulted in the dye penetrant inspection of approximately 560 airplanes and required removing and reinstalling 18 bolts per wing, or over 20,000 wing attach bolts. No known accidents have been attributed to bolt hole damage resulting from these inspections. While the FAA acknowledges the possibility of damage during any maintenance action, the relatively non-intrusive, wing-in-place inspection method proposed in the NPRM and in this

SNPRM would have minimal impact to affected airplanes. The FAA did not make changes to this SNPRM based on these comments.

Requests to Use a Different Inspection Method

Forrest Benson, Charles Donnelly, James Graham, and twelve other commenters proposed using a different inspection method than an eddy current inspection, such as ultrasound, x-ray, dye/liquid penetrant, or borescope inspections. Some of these commenters proposed using a borescope because it would preclude removal of the bolts. Many commenters expressed concern about the availability of qualified inspectors to do the eddy current inspection and the need to deliver the airplane to a distant facility to have the eddy current inspection done.

The FAA disagrees. Borescope and dye penetrant methods are not generally capable of detecting cracks in the targeted range of .030 to .050 inch. Once a fatigue crack reaches a visibly detectable size, growth can accelerate at a dangerous rate. It is imperative that operators identify any cracks while within the targeted range. Also, because the lower spar cap sits on the spar carry through and its upper flanges are covered by the web doublers, the spar cap is not visually inspectable when installed. The insides of the bolt holes are not visible with a borescope inside the wing carry-through assembly without removing the bolts. While the FAA acknowledges the value of x-ray technology and ultrasound inspections in material identification and thickness determination, those methods are not considered capable of reliably detecting very small fatigue cracks.

Changes made to the proposed AD in response to other comments will increase the availability of inspectors qualified to do the eddy current inspections. The FAA did not make additional changes to this SNPRM as a result of these comments.

Requests to Use a Different Eddy Current Inspection Method and Equipment

Tony Brand submitted an eddy current inspection procedure and requested approval to use this method as an alternative method of compliance. John Longley, Jr. requested that the eddy current inspection not require specific proprietary equipment.

The FAA agrees that alternate eddy current methods may be acceptable. For any owner/operator who wishes to use a different procedure, the FAA will consider requests for approval of an AMOC if sufficient data is submitted to substantiate that it would provide an acceptable level of safety, using the instructions in paragraph (o) of this AD. The FAA will consider all AMOC requests on a case-by-case basis.

Neither the NPRM, nor this SPNRM, propose to require the use of any particular model equipment. The NPRM and Piper Service Bulletin No. 1345, dated March 3, 2020, which this SNPRM proposes to incorporate by reference, contain optional examples of equipment that meet the requirements for conducting the eddy current inspection.

Requests for Clarification of Bolt Hole Inspection

EASA requested clarification on the bolt holes to be inspected. EASA stated that Piper's service bulletins specify inspecting a larger area of the lower spar cap and asked whether inspecting only the two outboard holes, as proposed in the NPRM, is adequate. Blue Skies Flying Services requested clarification on the difference between the proposed inspection procedure in appendix 1 of the NPRM, which refers to only the two lower outboard bolt holes, and the proposed requirement to perform an eddy current inspection in paragraph (h) of the NPRM, which refers to each bolt hole on the lower main wing spar cap.

The FAA agrees to clarify and revise the proposed requirement. The FAA has determined that the requirements in the NPRM to inspect only the two lower outboard bolt holes are adequate. The FAA has not observed a pattern of cracking at other spar hole locations and has not determined the benefit of inspecting additional holes would

outweigh the potential of damage from bolt removal. The FAA has revised the proposed inspection requirements in this SNPRM to specify the two lower outboard bolt holes.

Requests to Expand the Eddy Current Inspection Qualifications

Samuel Tucker, Norman Jones, and Humphrey Penney requested the proposed requirement for NAS 410 Level II or Level III qualifications to perform the eddy current inspection be expanded to include equivalent certifications.

The FAA agrees. The FAA has revised the proposed AD to allow Level II or Level III qualification standards for inspection personnel using any of the inspector criteria approved by the FAA to conduct the eddy current inspection. This proposed change would increase the availability of inspectors qualified to do the eddy current inspections.

Requests to Clarify/Develop Additional Actions

Mark Morris, Tony Brand, Michael Graziano, and Michael Beasley requested information about recurring inspection requirements associated with the NPRM. Forrest Benson asked whether the FAA and Piper could develop a doubler repair instead of requiring replacement of the spar due to parts unavailability. William Johnson noted that the only permanent solution would be to produce a spar strap or reinforcing plate.

The FAA agrees to provide additional information related to follow-on actions that may be associated with this proposed AD. As a proposed interim action, this SNPRM would require a one-time inspection for cracks and a reporting requirement. The FAA will evaluate the results of the reports to determine if mandating terminating or repetitive action is warranted. The FAA and Piper have discussed possible contingent repetitive and terminating actions and determined that a doubler repair is not a practical repair solution at this time.

Requests to Add Aft Wing Attach Fitting Inspection

Steven Ells and Pascal Robitaille expressed concern over the integrity of the aft spar attach point as a contributing factor to the fatigue cracking. These commenters requested including an inspection of the aft wing attach fitting for excessive play as a step in the NPRM and, if movement is detected, then performing the proposed eddy current inspection. John Henry described experiences with the aft spar attach and suggested criteria for a mandatory inspection.

The FAA acknowledges that the integrity of the forward and aft wing spar attach points are relevant to loads imparted into the wing spar, but the FAA disagrees with adding an inspection of the wing spar attach points to this SNPRM. There is insufficient evidence to conclude that the forward or aft wing spar attach points have contributed to the unsafe condition addressed in this SNPRM. The FAA did not change this SNPRM as a result of these comments.

Requests Regarding the Installation of Access Panels

David Sampson and Gerald Brown expressed concern that the NPRM fails to address that holes have to be cut in the wing skin and access panels installed to access the inspection area.

The FAA disagrees. The eddy current inspection proposed by the NPRM does not require installing holes or access panels. The FAA did not make changes to this SNPRM as a result of this comment.

H. Comment Regarding the Reporting Requirement

GAMA requested that the FAA revise the proposed AD to require reporting inspection results to both the FAA and to Piper, the type certificate holder.

The FAA agrees and has revised this SNPRM accordingly.

I. Comments Regarding Credit for Previous Maintenance Actions

Bryan Russell, Mark Maxwell, Art Sebesta, and Charles Martinak asked for credit for airplanes that have previously complied with AD 87-08-08, Piper SB 886, or Piper SB 978A, which specified removal of both wings and dye penetrant inspection of all main spar attach bolts.

The FAA disagrees. Dye penetrant inspection methods are not generally capable of detecting cracks in the targeted range of .030 to .050 inch. Additionally, the FAA is aware of one wing spar failure on an airplane after having undergone the dye penetrant inspection required by AD 87-08-08.

Barry Roberts and Mark Womack requested credit for airplanes with a wing that has been replaced with a serviceable wing (over zero hours TIS) with a documented service history. Daniel Stanley stating that the proposed AD should not be required on airplanes that had a wing replaced 40 years ago with a low time wing. (The commenter did not state whether the documented wing history was available.)

The FAA disagrees. Replacement wings (over zero hours TIS) that do not have a complete documented history raise the same considerations as missing airplane maintenance records. For a documented serviceable wing with less than 5,000 factored service hours, an owner/operator who can provide documentation supporting the history of the airplane or wing spar and show an acceptable level of safety may provide substantiating data and request approval of an AMOC using the instructions found in paragraph (o) of this AD. The FAA will consider all AMOC requests on a case-by-case basis. The FAA did not make changes to this SNPRM based on these comments.

J. Comments Regarding Special Flight Permits

Thomas Feminella requested that the proposed AD allow a one-time ferry flight, because eddy current inspection facilities are scarce, many owners may fly their airplanes somewhere away from their base to get the inspection done, and if the wings fail the

inspection the airplane may be trapped at a location where no major repairs are available. Charles Martinak also expressed concern of being grounded after flying to a distant facility for testing, which may or may not have repair capability.

The FAA disagrees. Once a crack in the wing spar area reaches a detectable size, growth becomes rapid. The FAA does not allow ferry flights with known cracks in primary structures. However, the FAA has changed the inspector requirements, which will increase the number of available inspectors. The FAA did not make additional changes based on these comments.

K. Comments Regarding the Costs of Compliance

AOPA and nine individual commenters stated generally that the estimated costs of the proposed AD are incorrect or too low.

Requests to Update the Cost of the Eddy Current Inspection

Doug Morrow and two other commenters noted that the FAA's estimated labor rate is too low. Thomas Downey, Mitchell Ross, and twenty other commenters stated that the estimated cost of the proposed inspection, particularly the labor rate for an inspector qualified for eddy current, was underestimated. Piper submitted a list of estimated costs to conduct the eddy current inspection and to do any rework; nine other commenters agreed with Piper's costs. EAA, GAMA, Steven Ells, Doug Morrow, Piper, and two other commenters requested the estimated number of work-hours for the inspection be increased.

The FAA agrees to revise the estimated cost of conducting the eddy current inspection. The labor rate of \$85 per hour is provided by the FAA Office of Aviation Policy and Plans for use when estimating the labor costs for complying with AD requirements. However, the FAA acknowledges the higher hourly rate associated with the specialized skills that would be required by the proposed AD. The FAA has increased the cost estimate for the eddy current inspection to \$600 in this SNPRM.

The FAA observed several airplane inspections by private entities and the NTSB investigative team, which included representatives from NTSB, FAA, Piper, and Embry-Riddle. It took from 2 to 4 work-hours, inclusive of gaining access and restoring the airplane, to do the proposed inspections. However, in the NPRM the FAA did not take into account that a portion of the labor requires a second person (bolt removal and reinstallation). The FAA has revised the number of work-hours estimated to do the inspections from 3 to 5 hours.

Requests to Update the Replacement Cost

Thomas Rae, Doug Morrow, AOPA and six other commenters raised concerns about the cost to replace a spar or requested the FAA significantly increase the cost/number of hours to replace a wing spar. Two commenters noted that replacing a spar is not possible because there are no parts available, and three commenters questioned why a replacement spar must be a new spar. Piper recommended the FAA's estimated costs include the cost of replacing the entire wing.

The FAA agrees with the comments concerning the number of labor hours and has increased the number of work-hours estimated for the wing-spar replacement from 32 to 80 hours. The FAA disagrees with adding the cost for wing replacement. The cost estimate in AD rulemaking actions include only the costs associated with complying with the AD. Although the FAA agrees that replacing the wing is an acceptable method of complying with a required spar replacement, that method is optional and not required by the AD. Although the FAA acknowledges the difficulty for some operators due to an unavailability of parts, this does not negate the need to correct the identified unsafe condition. The wing spar is critical for safe flight.

Requests to Include Indirect Costs

Four individual commenters noted that the FAA's cost estimate does not include labor hours sufficient for indirect costs, such as painting, crating and transportation, and the diminished value of the aircraft.

The FAA acknowledges the concerns raised by these commenters. However, the cost analysis in AD rulemaking actions typically includes only the costs of actions actually required by the rule. Cost estimates for ADs do not include indirect costs such as hours necessary for closing actions, costs for transportation to or from facilities for maintenance, or other losses. The FAA did not make changes to this SNPRM based on these comments.

Request to Revise the Cost for the Records Review

AOPA requested the FAA revise the number of hours estimated to review the maintenance records and calculate the number of factored service hours. In support of its request, AOPA noted that the age of affected aircraft may be several decades old, necessitating more than the estimated two hours.

The FAA agrees. Most general aviation airplane maintenance record entries are comprised of periodic inspections, which often include annual maintenance items, thus making such a review fairly straightforward. Flight schools and fleet operators often maintain electronic records, making data retrieval a simple matter. The FAA acknowledges that variations in record keeping styles encountered in older maintenance records may require additional time to review. Additionally, since the initial airplane maintenance records review to determine factored service hours effectivity is not considered a maintenance item, it can be accomplished by the owner/operator (certified pilot). The FAA has revised the number of hours to review the records from two hours to three hours and added language to clarify that an owner/operator may review the airplane maintenance records in this SNPRM.

Request to Increase the Number of Affected Airplanes in the Cost of Compliance Section

Piper requested that the estimated costs be revised to include all affected airplanes worldwide instead of the 19,696 U.S.-registered airplanes identified in the NPRM. Piper further objected to the lack of an estimated fleet cost for the eddy current inspections, and stated 40,856 airplanes should be included in the cost estimate because all airplanes over 10 years of age would be potentially subject to the inspections.

The FAA disagrees. The cost analyses in AD rulemaking actions estimate the cost impact on U.S. operators. The FAA bases its estimate on the number of affected airplanes on the U.S. registry. Including all airplanes worldwide, as the commenter requested, would not result in an estimate relevant to the cost impact of the proposed AD on U.S. operators.

The FAA also disagrees that all 19,696 airplanes would be required to calculate the factored service hours. A small sampling of approximately 200 affected airplanes, aged 15 years and older, indicated that only 34 percent had reached the 5,000 hours TIS that would put them into the applicability of paragraph (c)(1) of the NPRM and require further calculation of the factored service hours. Therefore, the FAA estimates that a large number of the affected airplanes will not have reached 5,000 hours TIS, have missing logbooks, or have undergone a wing replacement and will therefore be able to defer further review of airplane maintenance records. The FAA did not make changes to this SNPRM based on this comment.

L. Comment Regarding Effect of the Proposed AD on Intrastate Aviation in Alaska

Piper requested the FAA correct the statement in the NPRM that the proposed AD would have no effect on intrastate commerce in Alaska. Piper stated that the proposed AD would affect 189 U.S. registered PA-32-260 and PA-32-300 aircraft, which are

widely utilized by many part 135 operators who serve the Alaska communities that rely on aviation as their only mode of transportation.

The FAA agrees and added clarifying language that the AD does affect operators in Alaska; however, it does not have a significant enough effect to make a regulatory distinction.

M. Comments Requesting an Extension of the Comment Period

AOPA, EAA, GAMA, Piper, and seven individual commenters requested the FAA extend the comment period (from 45 days to 90 days) to allow additional time to comment because the NPRM was released preceding a holiday and subsequent government shutdown. Also, these commenters stated that additional time is needed for industry groups and the type certificate holder to evaluate the impact of the NPRM and to develop a solution.

The FAA partially agrees. At the time the FAA issued the NPRM, an extension of the comment period was not necessary. During the partial government shutdown of December 22, 2018, through January 25, 2019, the online AD Docket at www.regulations.gov remained open and accepted public comments on the NPRM. In spite of the proximity to the holidays, over 170 separate submittals to the docket were received. However, since the FAA has revised the proposed AD actions and added airplanes to the Applicability, this SNPRM is reopening the comment period to provide the public an opportunity to comment on these proposed changes.

Related Service Information under 1 CFR part 51

The FAA reviewed Piper Aircraft, Inc. Service Bulletin No. 1345, dated March 27, 2020 (Piper SB No. 1345). This service bulletin contains procedures for doing an eddy current inspection and instructions to report the results of the inspection to Piper and to replace the wing, wing spar, or spar section as necessary. This service information is

reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

Other Related Service Information

The FAA reviewed Piper SB 886 and Piper SB 978A. These service bulletins contain procedures for determining initial and repetitive inspection times based on the aircraft's usage and visually inspecting the wing lower spar caps and the upper wing skin adjacent to the fuselage and forward of each main spar for cracks. The FAA also reviewed Piper Aircraft, Inc. Service Letter No. 997, dated May 14, 1987, which contains procedures for replacing airplane wings.

FAA's Determination

The FAA is proposing this AD because it evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design. Certain changes described above expand the scope of the NPRM. As a result, the FAA has determined that it is necessary to reopen the comment period to provide additional opportunity for the public to comment on this SNPRM.

Proposed Requirements of this SNPRM

This SNPRM would require reviewing the airplane maintenance records to determine the number of 100-hour inspections completed on each installed main wing spar and using the number of 100-hour inspections to calculate the factored service hours for each main wing spar. This SNPRM would also require inspecting the two lower outboard main wing spar bolt holes on each wing for cracks once a main wing spar exceeds the specified factored service hours and replacing any main wing spar when a crack is indicated. This SNPRM would only apply when an airplane has either accumulated 5,000 or more hours TIS; has had either main wing spar replaced with a

serviceable main wing spar (more than zero hours TIS); or has missing and/or incomplete maintenance records.

This SNPRM specifies that the owner/operator (pilot) may do the aircraft maintenance records review and the factored service hours calculation. Reviewing maintenance records is not considered a maintenance action and may be done by a pilot holding at least a private pilot certificate. This action must be recorded in the aircraft maintenance records to show compliance with that specific action required by the AD.

Differences Between this SNPRM and the Service Information

Piper SB 1345 specifies doing the eddy current inspection upon reaching 5,000 hours TIS; however, this SNPRM proposes using the factored service hours to identify the airplanes at the highest risk of developing fatigue cracks. Piper SB No. 1345 also specifies using its feedback form to report the eddy current inspection results, but this SNPRM proposes the use of a different form attached as appendix 1. In addition, this SNPRM requires replacement of the wing spar with a new (zero hours TIS) wing spar if cracks are found; however, Piper SB No. 1345 allows replacement with parts that have been previously installed on an airplane.

Interim Action

The FAA considers this SNPRM interim action. The inspection reports will provide the FAA additional data for determining the number of cracks present in the fleet. After analyzing the data, the FAA may take further rulemaking action.

Costs of Compliance

The FAA estimates that this SNPRM affects 5,440 airplanes on U.S. registry. There are 10,881 airplanes of U.S. registry with a model and serial number shown in table 1 to paragraph (c) of the proposed AD. Based on a sample survey, the FAA estimates that 50 percent of those U.S.-registered airplanes will have reached the qualifying 5,000 hour TIS necessary to do the required logbook review.

The FAA estimates the following costs to comply with this SNPRM:

Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Review airplane maintenance records and calculate factored service hours	3 work-hours X \$85 per hour = \$255	Not applicable	\$255	\$1,387,200

The FAA estimates the following costs to do the eddy current inspection. Because some airplanes are only used non-commercially and will not accumulate the specified factored service hours in the life of the airplane, the FAA has no way of determining the number of airplanes that might need this inspection:

On-condition costs

Action	Labor cost	Parts cost	Cost per product
Gain access to the left-hand (LH) and right-hand (RH) inspection areas	2 work-hours X \$85 per hour = \$170	\$20	\$190
Do eddy current inspections of the LH and RH lower main wing spar	1 work-hour contracted service x \$600 = \$600	N/A	\$600
Restore aircraft	2 work-hours X \$85 per hour = \$170	N/A	\$170
Report inspection results to the FAA and Piper Aircraft, Inc.	1 work-hour X \$85 = \$85	N/A	\$85

The FAA estimates the following costs to do any necessary replacements that would be required based on the results of the proposed inspection. The FAA has no way of determining the number of aircraft that might need this replacement:

On-condition replacement costs

Action	Labor cost	Parts cost	Cost per product
Replace main wing spar	80 work-hours X \$85	\$5,540	\$12,340 per wing

Action	Labor cost	Parts cost	Cost per product
	per hour = \$6,800 per wing spar		spar

Paperwork Reduction Act

A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB Control Number. The OMB Control Number for this information collection is 2120-0056. Public reporting for this collection of information is estimated to be approximately 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, completing and reviewing the collection of information. All responses to this collection of information are mandatory. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to: Information Collection Clearance Officer, Federal Aviation Administration, 10101 Hillwood Parkway, Fort Worth, TX 76177-1524.

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority

because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD 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.

For the reasons discussed above, I certify this proposed regulation:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Will not affect intrastate aviation in Alaska to the extent that it justifies making a regulatory distinction, and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

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

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 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. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

Piper Aircraft, Inc.: Docket No. FAA-2018-1046; Product Identifier 2018-CE-049-AD.

(a) Comments Due Date

The FAA must receive comments by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to Piper Aircraft, Inc. (Piper) airplanes, certificated in any category, with a model and serial number shown in table 1 to paragraph (c) of this AD, and that meet at least one of the criteria in paragraphs (c)(1), (2), or (3) of this AD.

Note 1 to paragraph (c) of this AD: An owner/operator with at least a private pilot certificate may do the aircraft maintenance records review to determine the applicability as specified in paragraph (c) of this AD.

- (1) Has accumulated 5,000 or more hours time-in-service (TIS); or
- (2) Has had either main wing spar replaced with a serviceable main wing spar (more than zero hours TIS); or
- (3) Has missing and/or incomplete maintenance records.

Table 1 to paragraph (c) of this AD

Model	Serial Numbers
PA-28-151	All serial numbers
PA-28-181	All serial numbers
PA-28-235	All serial numbers
PA-28R-180	All serial numbers
PA-28R-200	All serial numbers
PA-28R-201	All serial numbers except 2844029, 2844030, 2844081, 2844125, 2844136, 2844147 through 2844151, 28R-7737078, 28R-7737142, 28R-7837108, 28R-7837125, and 28R-7837257
PA-28R-201T	All serial numbers
PA-28RT-201	All serial numbers
PA-28RT-201T	All serial numbers
PA-32-260	All serial numbers
PA-32-300	All serial numbers
PA-32R-300	All serial numbers
PA-32RT-300	All serial numbers
PA-32RT-300T	All serial numbers

(d) Subject

Joint Aircraft System Component (JASC)/Air Transport Association (ATA) of America Code 57, Wings.

(e) Unsafe Condition

This AD was prompted by a report of a wing separation caused by fatigue cracking in a visually inaccessible area of the main wing lower spar cap. The FAA is issuing this AD to detect and correct fatigue cracks in the lower main wing spar cap bolt

holes. The unsafe condition, if not addressed, could result in the wing separating from the fuselage in flight.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Definitions

(1) “TIS” has the same meaning as the definition of “time in service” in 14 CFR 1.1.

(2) For purposes of this AD, “factored service hours” refers to the calculated quantity of hours using the formula in paragraph (h)(2) of this AD, which accounts for the usage history of the airplane.

(h) Review Airplane Maintenance Records and Calculate Factored Service Hours for Each Main Wing Spar

(1) Within 30 days after the effective date of this AD, review the airplane maintenance records and determine the number of 100-hour inspections completed on the airplane since new and any record of wing spar replacement(s).

(i) For purposes of this review, count any inspection conducted to comply with the 100-hour requirement of 14 CFR 91.409(b) pertaining to carrying persons for hire, such as in-flight training environments, even if the inspection was entered in the maintenance records as an “annual” inspection or as an “annual/100-hour” inspection. If the purpose of an inspection was to comply with § 91.409(b), then it must be counted. To determine the purpose of an inspection, note the repeating intervals between inspections, i.e., less than 10 months between, and typically 90-110 flight hours. An inspection entered as a “100-hour” inspection but done solely for the purpose of meeting the requirement to complete an annual inspection, or those otherwise not required by § 91.409(b), need not be counted. For operators utilizing a progressive inspection program, count the completion of each § 91.409(b) 100-hour interval as one inspection.

(ii) If a main wing spar has been replaced with a new (zero hours TIS) main wing spar, count the number of 100-hour inspections from the time of installation of the new main wing spar.

(iii) If a main wing spar has been replaced with a serviceable main wing spar (more than zero hours TIS) or the airplane maintenance records are missing or incomplete, the wing history cannot be determined. Perform the eddy current inspection as specified in paragraph (i) of this AD.

(iv) The actions required by paragraph (h)(1) of this AD may be performed by the owner/operator (pilot) holding at least a private pilot certificate and must be entered into the aircraft records showing compliance with this AD in accordance with 14 CFR 43.9(a)(1) through (4), and 14 CFR 91.417(a)(2)(v). The record must be maintained as required by 14 CFR 91.417, 121.380, or 135.439.

(2) Before further flight after completing the action in paragraph (h)(1) of this AD, calculate the *factored service hours* for each main wing spar using the formula in figure 1 to paragraph (h)(2) of this AD. Thereafter, after each annual inspection and 100-hour inspection, recalculate/update the *factored service hours* for each main wing spar until the main wing spar has accumulated 5,000 or more *factored service hours*.

$$(N \times 100) + \frac{[T - (N \times 100)]}{17} = \text{Factored Service Hours}$$

N is the number of 100-hour inspections, and T is the total hours TIS of the airplane.

Figure 1 to paragraph (h)(2) of this AD

(3) *An example of determining factored service hours for an airplane with no 100-hour inspections is as follows:* The airplane maintenance records show that the airplane has a total of 12,100 hours TIS, and only annual inspections have been done. None of the annual inspections were done for purposes of compliance with § 91.409(b). Both main wing spars are original factory installed. In this case, N = 0 and T = 12,100. Use those values in the formula as shown in figure 2 to paragraph (h)(3) of this AD.

$$(0 \times 100) + \frac{[12,100 - (0 \times 100)]}{17} = 711 \text{ Factored Service Hours}$$

0 is the number of 100-hour inspections, and 12,100 is the total hours TIS of the airplane.

Figure 2 to paragraph (h)(3) of this AD

(4) *An example of determining factored service hours for an airplane with both 100-hour and annual inspections is as follows:* The airplane was originally flown for personal use, then for training for a period of time, then returned to personal use. The airplane maintenance records show that the airplane has a total of 5,600 hours TIS, and nineteen 100-hour inspections for purposes of compliance with § 91.409(b) have been done. Both main wing spars are original factory installed. In this case, N = 19 and T = 5,600. Use those values in the formula shown in figure 3 to paragraph (h)(4) of this AD. First, calculate commercial use time by multiplying (Nx100). Next, subtract that time from the total time, and divide that quantity by 17. Add the two quantities to determine total factored service hours.

$$(19 \times 100) + \frac{[5,600 - (19 \times 100)]}{17} =$$

$$(1,900) + \frac{[5,600 - (1,900)]}{17} =$$

$$(1,900) + 218 = 2,118 \text{ Factored Service Hours}$$

19 is the number of 100-hour inspections, and 5,600 is the total hours TIS of the airplane.

Figure 3 to paragraph (h)(4) of this AD.

(i) Eddy Current Inspect

Within the compliance time specified in either paragraph (i)(1) or (2) of this AD, as applicable, eddy current inspect the inner surface of the two lower outboard bolt holes on the lower main wing spar cap for cracks using steps 1 through 3 in the Instructions of Piper Aircraft, Inc. Service Bulletin No. 1345, dated March 27, 2020. Although Piper SB No. 1345 specifies NAS 410 Level II or Level III certification to perform the inspection, this AD allows Level II or Level III qualification standards for inspection personnel using any inspector criteria approved by the FAA.

Note 2 to paragraph (i) of this AD: Advisory Circular 65-31B contains FAA-approved Level II and Level III qualification standards criteria for inspection personnel doing nondestructive test (NDT) inspections.

(1) Within 100 hours TIS after complying with paragraph (h) of this AD or within 100 hours TIS after a main wing spar accumulates 5,000 factored service hours, whichever occurs later; or

(2) For airplanes with an unknown number of factored service hours on a main wing spar, within the next 100 hours TIS after the effective date of this AD or within 60 days after the effective date of this AD, whichever occurs later.

(j) Replace the Main Wing Spar

If a crack is found during an inspection required by paragraph (i) of this AD, before further flight, replace the main wing spar with a new (zero hours TIS) main wing spar.

(k) Install New Bolts

Before further flight after completing the actions required by paragraph (i) or (j) of this AD, install new bolts by following step 6 of Piper Aircraft, Inc. Service Bulletin No. 1345, dated March 27, 2020.

(l) Report Inspection Results

Within 30 days after completing an inspection required by paragraph (i) of this AD, using Appendix 1, “Inspection Results Form,” of this AD, report the inspection results to the FAA at the Atlanta ACO Branch and to Piper. Submit the report to the FAA and Piper using the contact information found on the form in appendix 1 of this AD.

(m) Special Flight Permit

A special flight permit may only be issued to operate the airplane to a location where the inspection requirement of paragraph (i) of this AD can be performed. This AD prohibits a special flight permit if the inspection reveals a crack in a main wing spar.

(n) Paperwork Reduction Act Burden Statement

A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB Control Number. The OMB Control Number for this information collection is 2120-0056. Public reporting

for this collection of information is estimated to be approximately 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, completing and reviewing the collection of information. All responses to this collection of information are mandatory. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to: Information Collection Clearance Officer, Federal Aviation Administration, 10101 Hillwood Parkway, Fort Worth, TX 76177-1524.

(o) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Atlanta ACO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (p) of this AD.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(p) Related Information

(1) For more information about this AD, contact Dan McCully, Aerospace Engineer, Atlanta ACO Branch, FAA, 1701 Columbia Avenue, College Park, Georgia 30337; phone: (404) 474-5548; fax: (404) 474-5605; email: william.mccully@faa.gov.

(2) For service information identified in this AD, Piper Aircraft, Inc., 2926 Piper Drive, Vero Beach, Florida 32960; telephone: (772) 567-4361; Internet: www.piper.com. You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 901 Locust, Kansas City, Missouri 64106. For information on the availability of this material at the FAA, call (816) 329-4148.

Appendix 1 to Docket No. FAA-2018-1046

Inspection Results Form

Email completed form to:
9-ASO-ATLCOS-Reporting@faa.gov
and **customer.service@piper.com**

SUBJECT line : Docket No. FAA-2018-1046

Or mail to: Federal Aviation Administration
Atlanta ACO Branch, AIR-7A1
1701 Columbia Avenue
College Park, GA 30337

Include photos if applicable

Aircraft Model No.: PA-	Serial Number:
Aircraft Total Hours Time-In-Service (TIS):	Registration Number:
Factored Flight Hours Left-Hand (LH) Wing: Right-Hand (RH) Wing:	
(If both wings are factory installed original, these numbers should be the same)	
Inspection Results	
LH Wing Spar Fwd Accepted ☐ Rejected ☐	RH Wing Spar Fwd Accepted ☐ Rejected ☐
LH Wing Spar Aft Accepted ☐ Rejected ☐	RH Wing Spar Aft Accepted ☐ Rejected ☐
Inspector Comments (observed damage, condition of hole, etc)	

Inspector Information

Name (print): _____ Signature: _____

Certificate No.: _____ Date: _____

Issued on May 8, 2020.

Gaetano A. Sciortino, Deputy Director for Strategic Initiatives,
Compliance & Airworthiness Division,
Aircraft Certification Service.

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