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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2011-0639; Directorate Identifier 2011-CE-016-AD; Amendment 39-17169; AD 2012-17-06]

RIN 2120-AA64

Airworthiness Directives; Piper Aircraft, Inc. Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are adopting a new airworthiness directive (AD) for certain Piper Aircraft, Inc. Models PA-24, PA-24-250, and PA-24-260 airplanes. This AD was prompted by reports of cracks developing in the stabilator horn assembly. This AD requires replacement of the stabilator horn assembly and/or repetitive inspections of the stabilator horn assembly for corrosion or cracks, as applicable. Corrosion or cracks could lead to failure of the stabilator horn. Consequently, failure of the stabilator horn could lead to a loss of pitch control in flight. We are issuing this AD to correct the unsafe condition on these products.

DATES: This AD is effective October 22, 2012.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in the AD as of October 22, 2012.

ADDRESSES: For service information identified in this AD, contact Piper Aircraft, Inc., 2926 Piper Drive, Vero Beach, Florida 32960; telephone: (772) 567-4361; fax: (772) 978-6573; Internet: http://www.newpiper.com/company/publications.asp. You may review copies of the referenced service information at the FAA, Small Airplane Directorate, 901 Locust St., 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 http://www.regulations.gov; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The address for the Docket Office (phone: 800-647-5527) is Document

Management Facility, U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: Gregory K. Noles, Aerospace Engineer, FAA, Atlanta Aircraft Certification Office, 1701 Columbia Avenue, College Park, Georgia 30337; phone: (404) 474-5551; fax: (404) 474-5606; email: gregory.noles@faa.gov.

SUPPLEMENTARY INFORMATION:

Discussion

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to include an AD that would apply to the specified products. That NPRM published in the Federal Register on June 22, 2011 (76 FR 36395). That NPRM proposed to require replacement of the stabilator horn assembly and/or repetitive inspections of the stabilator horn assembly for corrosion or cracks, as applicable.

Comments

We gave the public the opportunity to participate in developing this AD. The following presents the comments received on the proposal and the FAA's response to each comment.

Support for the Proposed Initial Inspection

Comments from Kristin Amelia Winter, Charles Parker, Carl Schoolcraft, Dave Fitzgerald for the International Comanche Society (ICS), Hans Neubert for the ICS, Brian Kotso, and John F. Murray were supportive of the AD's requirement for an initial inspection.

We did not change this final rule AD action based on these comments.

Request FAA To Withdraw NPRM (76 FR 36395, June 22, 2011) Due to Adequacy of External Inspections

Phil Ciholas requested we reconsider the NPRM (76 FR 36395, June 22, 2011) requirements and noted that even the most severe horn cracking reported (propagated through the part to an exterior surface and was visually detectable without disassembly) had not resulted in complete horn failure or the severity of loss of control postulated in the justification for the AD. The commenter stated that no loss of control incidents or accidents have ever been documented that can be attributed to this failure mode. Given the statistical distribution of cracks reported, the ability of existing external inspections to detect cracks prior to complete failure of the horn, and the lack of any actual complete failures; the commenter felt the internal inspection requiring disassembly is unwarranted on most aircraft, especially recent serial number aircraft, unless there is other evidence of potential issues observed on a particular aircraft. We infer the commenter requested to withdraw the current proposal.

We disagree with the request to withdraw the NPRM (76 FR 36395, June 22, 2011). A cracked stabilator horn coupled with the aircraft flight envelope conditions could create an unsafe scenario even though there has not been an in-flight event. A cracked stabilator horn reduces the aircraft's structural load limits.

We did not change this final rule AD action based on these comments.

Request To Clarify Applicability (Affected Part Numbers (P/Ns) and Configurations)

David Ray Fitzgerald, Robert (no last name given), Patrick D. Donovan, Edward P. Horan, Steven Fischer, Phil Ciholas, Dave Fitzgerald for ICS, Daniel Jacob Katz, Arthur John Beyer, Hans Neubert for the ICS, Brian Kotso, John F. Murray, and Dennis Boykin requested we clarify the

applicability to clearly state the affected horn P/Ns and clarify whether other current and future horns (supplemental type certificates (STC), and so forth) are/will be affected. The commenters noted that the text of the proposed AD did not clearly state the affected part numbers.

Robert (no last name given), Steven Fischer, Daniel Jacob Katz, Hans Neubert for ICS, and John F. Murray also requested we address the configuration of Models PA-24, PA-24-250, and PA-24-260 airplanes using the same horn but installed with thicker torque tubes used on the Models PA-24-400, PA-30, and PA-39 airplanes as the proposed AD did not currently make mention of this configuration. They requested we consider excluding the airplanes configured with the thicker torque tubes from the applicability or including them as terminating action.

Phil Ciholas, Arthur John Beyer, and Dennis Boykin requested we address potential material and process changes during production of the Models PA-24, PA-24-250, and PA-24-260 airplanes, amending the NPRM (76 FR 36395, June 22, 2011) to apply to only those aircraft that have experienced issues.

Dennis Boykin noted that the manufacturing cycle between the original castings (about 1957) and the final production in 1972 of the Model PA-24-260 airplane precluded the requirement to ensure that similar castings, raw materials, and processes were in place, not just a similar design. Dennis Boykin was not aware of any Model PA-24-260 airplane's stabilator horn that has been separated, inspected, and found deficient.

We partially agree with the commenters. We agree with clarifying the affected P/Ns because the issue is specific to the combination of the P/N and models in the original NPRM (76 FR 36395, June 22, 2011). However, we disagree with excluding aircraft with the thicker torque tube installed or making the installation of the thicker torque tube a terminating action. No documentation has been supplied to provide approval for the installation of thicker torque tubes on the Models PA-24, PA-24-250, or PA-24-260 airplanes, and the torque tube is not the only contributing factor to the unsafe condition. The FAA has determined the condition is likely to exist or develop in other products of the same type design. We have insufficient data to show that airplanes modified with the thicker torque tube do not have the unsafe condition.

We also disagree with excluding stabilator horns manufactured later in the production cycle. We have no record of castings, raw materials, and/or processes changing significantly enough to provide justification to exclude those airplanes from this AD action.

If an owner/operator submits substantiating data to support the installation of the thicker torque tube as an alternative method of compliance (AMOC) to this requirement, the FAA will review and consider all AMOC requests we receive provided they follow the procedures in 14 CFR 39.19 and this AD.

We changed the AD's applicability in this final rule AD action to include the horn P/N.

Request To Lower Torque Value for Horn Installation

Lawrence La Beau, Charles Parker, Eric Paul, Tom Veatch, Ivan R. Wilson, Patrick D. Donovan, Ken E. Shaffer, Patric Barry, John Trudel, Carl Schoolcraft, Phil Ciholas, Dave Fitzgerald for the ICS, Andrew Detsch, Hans Neubert for the ICS, Brian Kotso, John F. Murray, and Allan H. Bieck requested that the AD state an appropriate lower shear nut torque value for the bolts common to the stabilator horn and torque tube. Phil Ciholas requested we add horn deformation limits as a way to control the installation torque and related stress corrosion cracking. Charles Parker, Eric Paul, Tom Veatch, Ivan R. Wilson, Patric Barry, John Trudel, Dave Fitzgerald for the ICS, Hans Neubert for the ICS, and Brian Kotso requested we consider an initial inspection and reinstallation with the lower torque value as terminating action for the AD. Eric Paul and John F. Murray requested we lower the torque value of the stop collar bolts. Phil Ciholas requested we consider switching to shear nuts when any work is done on the joint.

The commenters stated over-torque is the root cause of the stress corrosion condition and the procedure does not clearly require a lower torque value. None of the commenters provided justification for the use of stop collar bolts separate from the horn bolts or for the shear nuts.

We agree with adding the installation torque value for the bolts common to the horn and torque tube into the AD procedures because it is a factor in mitigating the unsafe condition. We will also coordinate with the airplane's manufacturer on clarifying the airplane maintenance manual procedures for torque of these bolts. However, we disagree with adding an initial inspection and reinstallation of the torque tube with the lower torque value as terminating action for the AD. Although the torque value is a contributing factor, it is not the only factor (others are balance arm interference fit, basic material susceptibility, and corrosion potential).

No sufficient correlation has been established between the torque value and deformation and subsequent stress corrosion cracking. Consequently, we disagree with adding horn deformation limits as a way to control the installation torque and related stress corrosion cracking.

We disagree with mandating a lower torque value of the stop collar bolts or mandating a switch to shear nuts when any work is done on the joint. The stop collar bolts did not contribute to the unsafe condition, and we cannot mandate actions through an AD that are unnecessary to correct the unsafe condition. There is no current data for approval to change the configuration to shear nuts.

We changed the AD by adding the installation torque value for the bolts common to the horn and torque tube into the AD procedures.

Request To Use Thicker Torque Tube With Horn

Lawrence La Beau, Randy Black, Anonymous, Donald Dummer, Albert Powers, Steven Fischer, Stewart Campbell, Miller Duffield Einsel, Robert, Eric Paul, Tom Veatch, Patric Barry, John Trudel, Edward P. Horan, Carl Schoolcraft, Steven Fischer, Phil Ciholas, Dave Fitzgerald for the ICS, Daniel Jacob Katz, Hans Neubert for the ICS, Lawrence E. Pride, Jim Ritter, Brian Kotso, and John F. Murray noted thicker torque tubes discovered during the ICS' survey targeted inspections at the horn. This survey was beyond the current maintenance program. The commenters cited the thicker torque tube could lessen the potential for stress corrosion cracking due to horn deformation. Robert, Steven Fischer, Daniel Jacob Katz, Hans Neubert for ICS, and John F. Murray requested we address the configuration of Models PA-24, PA-24-250, and PA-24-260 airplanes with the subject horn but installed with thicker torque tubes.

We do not agree with the commenters. We disagree with authorizing the installation of the thicker torque tube. No documentation has been supplied to provide approval for installation of the thicker torque tube configuration on any airplanes affected by this AD.

The FAA will review and consider any AMOC to support the installation of the thicker tube provided it follows the procedures in 14 CFR 39.19 and this AD.

We did not change this final rule AD action based on these comments.

Request To Provide for a Terminating Action to the Repetitive Inspections

Kristin Amelia Winter, Lawrence Zubel, Charles Parker, Randy Black, Donald Dummer, Steven Fischer, Stewart Campbell, Miller Duffield Einsel, Eric Paul, Tom Veatch, Ivan R. Wilson, Patric Barry, Steven Fischer, Phil Ciholas, Dave Fitzgerald for the ICS, Daniel Jacob Katz, Hans Neubert for the ICS, Jim Ritter, Brian Kotso, and John F. Murray requested a terminating action to the repetitive inspections. All the commenters proposed various actions (that is, use of lower installation torque value, installation of a thicker torque tube, installation of replacement horn by way of Australian Civil Aviation Safety Authority (CASA) CASA Supplemental Type Certificate (STC) SVA 532, and terminating action based on additional data collected during the inspections) with varying levels of supporting data.

We disagree because no proposed terminating action eliminates all the contributing factors to the unsafe condition. The individual proposed actions have been addressed in other requested changes to the AD. The inspection or replacement programs will manage the issue to an acceptable level of risk.

We will consider proposals for a terminating action as an AMOC provided the procedures of 14 CFR 39.19 and this AD are followed.

We did not change this final rule AD action based on these comments.

Request To Credit for Previous Compliance

Commenters David Charles Meigs, Randy Black, Steven Fischer, Hans Neubert for the ICS, and Brian Kotso noted that operators have typically been allowed credit for previous compliance in AD actions. All commenters requested provision for credit when compliance to the requirements has already been accomplished.

We agree that credit should be given when compliance to the requirements has already been done. The AD already allows for such credit by stating "unless already done" in paragraph (f) of the AD. As long as the requirements of the AD are followed, credit is available. Any other actions taken would need to be submitted as an AMOC following paragraph (h) of the AD.

We did not change this final rule AD action based on these comments.

Request To Clarify the AD Applicability to Replacement Parts

Commenters David Charles Meigs, Randy Black, Steven Fischer, Hans Neubert for the ICS, Brian Kotso stated that the AD applicability is not clearly defined in terms of both the susceptible horn part number and the affected models. Several commenters request clarification of the AD applicability to replacement parts, particularly the horn in CASA STC SVA 532.

We partially agree with clarification on the applicability because the focus of this AD is the horn P/N as discussed in the previous issue "Request To Clarify Applicability." We disagree with specifically addressing the CASA STC because the STC is still under review for FAA validation and not all design issues have been addressed at this point. Any action relating the STC to the AD will be documented during the FAA review of the CASA STC.

As discussed previously, we changed the AD's applicability to include the horn P/N.

Request To Increase Initial Compliance Time

Patric Barry and Phil Ciholas expressed concerns with the availability of parts and shop capacity. The commenters requested an increase in the initial compliance time.

We disagree with the commenters. The unsafe condition must be addressed in a timely manner. The FAA will consider AMOCs following the procedures in 14 CFR 39.19 and this AD to address any potential parts availability or shop capacity issues.

We did not change this final rule AD action based on these comments.

Request To Change Units of Compliance Times

Commenters Randy Black, Patrick D. Donovan, Carl Schoolcraft, Hans Neubert for the ICS, John F. Murray, and Allan H. Bieck requested changing compliance time criteria. Patrick D. Donovan, Hans Neubert for the ICS, and John F. Murray asked that only calendar time be used for compliance times. Carl Schoolcraft and Allan H. Bieck requested that only TIS be used for compliance times. The commenters noted that stress corrosion cracking (SCC) is a time-related function and not TIS. Carl Schoolcraft noted the calendar time limit to be arbitrary and to have no bearing on the condition of the horn. Allan H. Bieck commented TIS is what puts strain on the horn, not idle calendar time while the aircraft sits in a hangar.

We disagree with eliminating the calendar time compliance. Calendar time is a key factor in SCC. We also disagree with removing the operational time (TIS) requirement as corrosion in the torque tube is a contributing factor, and the established actions for the corrosion currently have both a calendar and TIS requirement. We will retain our compliance time using both calendar time and TIS.

We did not change this final rule AD action based on these comments.

Request To Eliminate the Repetitive Inspection Requirement

Kristin Amelia Winter, Charles Parker, Albert Powers, Ken E. Shaffer, John Trudel, Dave Fitzgerald for the ICS, Phil Ciholas, and Brian Kotso requested eliminating the repetitive inspection requirement. Commenters justify eliminating the repetitive inspections by stating the cracks do not appear to be time or use related, there is low or no history of cracking in the fleet, there have been no catastrophic horns failures in service, and there is potential for terminating action.

We do not agree because SCC is inherently time-related and indirectly driven by operational usage. Not all aircraft will crack, and those that do will not crack at the same time. SCC has several contributing factors that add to the variability. For instance, typical fatigue cracking includes scatter factors on the order of four to determine the appropriate intervals to take action. While high-time aircraft with no cracking is useful data, it does not eliminate the need for action. As for the volume of findings, the quantity compared to the entire fleet size is low. However, when measured against the quantity of valid inspections performed, the find rate is as high as 20 percent.

It is also true that no parts have failed catastrophically in flight and the findings have been during the ICS' survey targeted at the horn. Note that this survey was beyond the current required maintenance program. A cracked horn coupled with the aircraft flight envelope conditions could still create an unsafe scenario even though there has not been an in-flight event. In fact, the service history provides evidence of extensive cracking on both sides of the torque tube bore leading to the potential unsafe condition. As discussed in other responses to commenter requests, no proposed terminating action eliminates all the contributing factors to the unsafe condition. The inspection or replacement programs will manage the issue to an acceptable level of risk.

We did not change this final rule AD action based on these comments.

Request To Change Inspection Intervals

Eric Paul, Ivan R. Wilson, Patrick D. Donovan, Patric Barry, Carl Schoolcraft, Phil Ciholas, Dave Fitzgerald for the ICS, Andrew Detsch, John F. Murray, and Allan H. Bieck requested an increased repetitive interval from 100 hours to 200 hours, 500 hours, 1,000 hours, or 2,000 hours.

Patrick D. Donovan, Patric Barry, and Dave Fitzgerald for the ICS noted that taking half of the average discovery time (stated as 4,000 hours TIS) should be a reasonable approach to establish a repetitive interval. Ivan R. Wilson and Jim Ritter also referenced the long service history of the fleet (approximately 50 years and several thousand hours). Andrew Detsch asserted that the cracks occurred later in the service life or did not grow. Arthur John Beyer provided information that they inspected the component twice near 4,000 TIS at an interval of 4 years and 264 hours with no cracking observed at either inspection. Han Neubert recommended establishing intervals based on a study of 2014-T6 behavior under stress corrosion to define stress and environment thresholds similar to a provided report about stress corrosion susceptibility, Time Exposure Studies on Stress Corrosion Cracking of Aluminum 2014-T6, 2219-T87, 2014-T651, 7075-T651, and Titanium 6Al-4V, dated June 1, 1973 (http://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/19730009798_1973009798.pdf). Charles Parker, Arthur John Beyer, and Jim Ritter requested justification for the current intervals.

We partially agree with adjusting the repetitive interval from 3 years to 5 years because it would align with the rationale for the existing 10-year or 1,000-hour interval and other guidance used to establish the intervals. There is no need to decrease the interval to 200 hours as the AD provides an interval of 500 hours.

We disagree with increasing the repetitive interval beyond 500 hours for several reasons. We must consider many factors to define an appropriate inspection interval.

The first factor, the design safety requirement, does not allow strength degradation below design ultimate value or stiffness degradation for flutter. Advisory Circular (AC) 23-13A, Fatigue, Fail-Safe, and Damage Tolerance Evaluation of Metallic Structure for Normal, Utility, Acrobatic, and Commuter Category Airplanes, dated September 29, 2005, (http://rgl.faa.gov/Regulatory–and–Guidance–Library/rgAdvisoryCircular.nsf/list/AC%2023-13A/$FILE/ac23-13A.pdf) describes how

ensuring no detectable cracks within the operational life of the aircraft through an appropriate inspection interval meets the design requirement. The existing findings of cracks do not meet these requirements. Simply, the aircraft is not certificated to meet airworthiness standards with a known crack.

A "detectable" size for a crack is a value established for the specific inspection method in a specific application. The discovered cracks had far exceeded detectable size before they were found during the targeted inspections. This is due in part to no targeted inspections until discovery of corrosion issues on the attached torque tube several years ago. Following the approach in AC 23-13A, the estimated service history would provide a test life of approximately 4,000 hours, then apply a scatter factor of approximately 4, yielding 1,000 hours. Again, this should be for detectable cracks that do not degrade the strength and stiffness. An additional factor of 2 (providing two inspection opportunities) could be applied to cover that portion, yielding an inspection at 500 hours. Note, this is only an example to show the reasonableness of the proposed interval based on service data. The interval is driven primarily by calendar time using a similar approach.

The second factor is the probabilistic nature of cracking. While some high-time or aged aircraft do not exhibit cracking, we expect this in the distribution and is insufficient rationale to shorten the interval. For example, the data point of a 4-year/264-hour interval is useful, but many more data points would be necessary to support an increased interval.

The third factor is associated with service history and the existing intervals for related issues on the stabilator control system. For the attached torque tube, Piper Aircraft, Inc. Service Bulletin No. 1160, dated December 26, 2005, specifies a 10-year repetitive inspection for corrosion. Also for the tube, Special Airworthiness Information Bulletin CE-04-88, dated September 15, 2004, (http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgSAIB.nsf/0/77fc29bb15c8a85b8625721f0052ecb4/$FILE/CE-04-88.pdf) specifies a 3-year or 500-hour repetitive inspection, and AD 74-13-03 (41 FR 17371, April 26, 1976) requires a 3-year or 500-hour repetitive inspection. These issues are corrosion-related and corrosion is a factor in the SCC of the horn.

The assertion that cracks occurred later or early in service and then did not grow has no supporting data to use in establishing intervals.

The FAA reviewed the report provided by Hans Neubert, Time Exposure Studies on Stress Corrosion Cracking of Aluminum 2014-T6, 2219-T87, 2014-T651, 7075-T651, and Titanium 6Al-4V, dated June 1, 1973, (http://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/19730009798_1973009798.pdf). While additional work could be coordinated if funding is available, we must first manage the known condition. The report already alludes to the fact that aluminum 2014-T6 is particularly susceptible to SCC which invalidates the assumption that aluminum 2014-T6 would have equivalent behavior to other test material. There is no true stress corrosion threshold (similar to a fatigue endurance limit) for aluminum 2014-T6. Additional work would be required to validate the stresses from all contributing factors once any type of threshold was tested.

We changed the repetitive interval for inspected parts in paragraph (g)(1) of the AD from 3 years to 5 years.

Request To Reconsider the Requirement for Repetitive Inspection of the Assembly

Kristin Amelia Winter, Steven Fischer, George Edward White, Patric Barry, Carl Schoolcraft, Dave Fitzgerald for the ICS, Andrew Detsch, Arthur John Beyer, Jim Ritter, and John F. Murray requested we reconsider the requirement for repetitive, intrusive inspection of the assembly. The commenters were concerned that repetitive disassembly and re-assembly of the structure could introduce new risks from wear, assembly errors, etc.

We disagree with the commenters. While we agree that there are potential risks with the repeated inspection, the current issue is a higher risk and we must address the known unsafe condition. The need for a repetitive inspection has been addressed elsewhere in this final rule AD action. Installation

of the new parts would minimize the stated risk of repeated disassembly and reassembly and achieve the maximum interval of 10 years or 1,000 hours.

We did not change this final rule AD action based on these comments.

Request To Allow Alternative Inspection Methods

George Edward White, Patrick D. Donovan, Patric Barry, Phil Ciholas, and Dave Fitzgerald for the ICS requested allowance for alternative, less intrusive, inspection methods such as X-ray, magnetic particle inspection, or bolt torque and measured torque tube deformation. The commenters reasoned that the alternative inspection methods could avoid disassembly and reassembly.

We do not agree with this request because:

- X-ray does not provide a sufficiently high probability (reliability) of detection for cracks at sizes needed to control the unsafe condition.
- Magnetic particle inspection is for magnetic materials and would not be appropriate for the aluminum horn.
- While the bolt torque value or torque tube deformation could be a partial indicator, it is not a full measure of all the contributing factors. The viability of such a method would also be affected by manufacturing variability (machining, drawing tolerances, and so forth) making it difficult to build an appropriate model to ensure an adequate inspection method.

We did not change this final rule AD action based on these comments.

Request To Clarify What the AD Requires

Dave Fitzgerald for the ICS requested we clarify the statement in the summary of the NPRM (76 FR 36395, June 22, 2011) of what parts are being replaced.

We agree with the commenter that it is important to clearly state what parts are required in the AD action.

We changed the summary of the final rule to require replacement of the stabilator horn assembly and/or repetitive inspection of the stabilator horn assembly, as applicable.

Request To Allow Re-Use of Inspected Horns

Ivan R. Wilson, Patrick D. Donovan, Carl Schoolcraft, Andrew Detsch, and John F. Murray requested a change in compliance time to allow inspected parts to have the same inspection interval as new replacement parts. Carl Schoolcraft also requested the option of installing serviceable parts in lieu of new parts.

We agree with allowing used parts as replacement parts provided they have been inspected before installation and found free of cracks (serviceable) and they continue the repetitive inspection option in this AD. However, we disagree with allowing the same interval on used inspected replacement parts as on new replacement parts because a single penetrant inspection method does not provide the same confidence level for a crack-free part as a new part does. Such an inspection could not reliably detect sufficiently small cracks; therefore, an approach similar to damage tolerance requiring multiple inspections is warranted.

We added language to:

- Clarify compliance and procedures for the replacement of the stabilator horn assembly with a serviceable stabilator horn assembly, provided it is inspected before installation and found free of cracks or corrosion and continues with the repetitive inspections required for a used part; and
- Clarify the initial inspection for owner/operators who may have already installed a used serviceable stabilator horn assembly on their airplane.

Request To Validate and/or Revise the Cost Estimate

Randy Black and Arthur John Beyer requested we validate and/or revise the cost estimate. One commenter ordered parts including a new horn, new torque tube, new bearings, and new hardware estimated at $1,500 for only the parts cost. Another commenter noted the cost on U.S. operators does not include subsequent inspections.

We do not agree with this request because the parts cost only includes those parts required by the AD actions (the horn assembly). Optional parts, such as the tube, are not mandated and not required in the associated cost. Repetitive inspections are not included in AD cost estimates as it cannot be determined which option an owner/operator may choose, or the number of times the action(s) may be executed on an individual aircraft.

We did not change this final rule AD action based on these comments.

Request To Have Manufacturer Show Ability To Meet Parts Demand

Commenters Bob Rosansky, Patrick D. Donovan, Patric Barry, John Trudel, and Phil Ciholas are associated with this request. Some commenters requested that the airplane manufacturer demonstrate the ability to meet the parts demand before the AD is issued. One commenter requested time to create a parts supply for the replacement horn from the Australian CASA STC SVA 532. Several commenters estimated that it might require one year or more for the manufacturer to provide the required parts and are concerned that the manufacturer's parts ordering system will be unable to meet the demand. The request for the CASA-approved horn is to alleviate the AD actions.

We do not agree because the manufacturer has told the FAA they can support the parts requirements for this AD. This AD is necessary to address an unsafe condition. If parts availability becomes a problem, the FAA will consider AMOC requests and determine whether they provide an acceptable level of safety when they are submitted following the procedures in 14 CFR 39.19 and this AD. The AD initial compliance time should provide sufficient time to create a parts supply.

The AD is not addressing the CASA-approved horn since the horn is not FAA-approved at this time.

We did not change this final rule AD action based on these comments.

Request To Change Compliance Time Because Quality Issues Might Occur

Patrick D. Donovan, Patric Barry, and John Trudel requested changes to the compliance time based on possible quality issues in manufacturing or delivering required parts. The commenters referenced instances where the manufacturer supplied parts that did not meet/specifications or delivered the wrong part numbers.

We do not agree because if non-conforming parts or the wrong parts are distributed by the manufacturer, then the problem will be addressed through the current regulations, including potential AD action. The FAA cannot address this problem unless it occurs and is appropriately reported.

We did not change this final rule AD action based on these comments.

Request To Have Manufacturer Provide Parts Kit

Randy Black suggested the manufacturer combine the replacement horn into a kit with the torque tube and noted that a combined kit would provide a convenience to owners/operators.

We disagree because the additional parts beyond the horn assembly are not required by this AD because they are not necessary to address the unsafe condition.

We did not change this final rule AD action based on these comments.

Request To Have FAA Directly Notify Owners/Operators of the NPRM (76 FR 36395, June 22, 2011)

Dennis Boykin stated the FAA failed to send the NPRM (76 FR 36395, June 22, 2011) to him. The commenter stated he was not notified of the NPRM by the FAA, but by the type club. We conclude that the commenter requested direct notification of the NPRM.

We disagree with the request. The FAA does not mail NPRMs. Effective March 1, 2010, the FAA stopped mailing paper copies of ADs. We have continued to fax and/or use the US Postal Service to mail Emergency ADs. To continue receiving ADs at no cost, please subscribe to our GovDelivery email service by visiting the Regulatory and Guidance Library home page (http://rgl.faa.gov). For those desiring paper copies, we will continue to provide the AD Biweekly, which is a paid subscription of all ADs issued in the Federal Register over the previous 2-week period. The AD Biweekly is printed and mailed by the Government Printing Office (GPO). Contact the GPO directly at phone: (202) 512-1806 to subscribe.

We did not change this final rule AD action based on these comments.

Request To Include Reporting Requirement and Analysis of Data To Refine AD

Kristin Amelia Winter, George Edward White, Patrick D. Donovan, Arthur John Beyer, Hans Neubert for the ICS, and Dennis Boykin requested adding a reporting requirement with subsequent use of the data to evaluate (or eliminate) the inspection intervals and to evaluate potential terminating actions. Two of the commenters requested the reporting be provided to both the FAA and ICS. One commenter also requested a provision for rescinding the AD or extending the inspection intervals based on the number of non-findings, especially if a new part is installed. Finally, one commenter proposed to exclude the Model PA-24-260 and evaluate it at a later date.

The commenters noted that the initial inspection cycle would provide three years of time to collect and evaluate the data which would allow the FAA and interested parties an opportunity to formulate a more narrowly targeted AD that would better balance the cost with the hoped for improvement in airworthiness and hence safety. Lastly, it would provide the data necessary to design and obtain approval of an AMOC or STC that effectively addresses this unsafe condition and terminates any final recurring AD.

We disagree with adding a reporting requirement. Based on the Paperwork Reduction Act, a reporting requirement must meet the following conditions:

- Help develop a corrective action;
- Determine the scope of the problem and how adequate the Design Approval Holder's corrective actions are; and
- Avoid unsafe consequences if we do not collect the information.

To eliminate the repetitive inspections and develop a terminating action depends on a combination of factors. The following three factors would require a re-design to eliminate the repetitive inspections: Balance arm interference fit, basic material properties, and use of a thicker torque tube previously discussed. Lowering the installation torque value was addressed earlier. Reduction of corrosion potential is currently addressed via repetitive inspections as discussed below. As all major contributing factors are not eliminated, reporting would not provide sufficient information to eliminate the inspections or directly provide terminating action.

Any individual or group is free to work independently to coordinate data collection supporting a potential concept as an AMOC or design change (STC).

We also disagree with evaluating the Model PA-24-260 airplane only in the future because that model meets the regulatory requirement where the unsafe condition is likely to exist or develop in other products of the same type design.

We did not change this final rule AD action based on these comments.

Request To Have FAA Determine Status of Type Certificate Holder

Patric Barry and John Trudel expressed concern that the manufacturer 's engineering/design work on the corrective action and parts supply issues are evidence of abandonment of the responsibilities of a type certificate holder. We conclude the commenters requested the FAA determine the status of the type certificate holder.

We disagree with this request. The manufacturer met its obligation as a type certificate holder by working with the FAA and industry to generate a corrective action program addressing the unsafe condition.

Based on these comments, we made no change to the AD action.

Request To Require Inspection of the Torque Tube Assembly/Control Horn

Hans Neubert for the ICS commented that the reason that the torque tube assembly/control horn has not been previously inspected for cracks is due to the fact there is no prior manufacturer requirement to inspect. We infer the commenter requested the FAA require inspection of the torque tube assembly/control horn.

We agree with the commenter. There was not a known need for inspection of the assembly. With discovery of the unsafe condition, a program is now being put into place.

Based on these comments, we made no change to the AD action.

Request To Make Piper Aircraft, Inc. Service Bulletin No. 1189, dated April 29, 2010, Only Advisory for the AD

Hans Neubert for the ICS recommended that this service information be considered as advisory only to the corrective action. The commenter stated that the preliminary and final versions of the service information were based on an industry magazine article and were without substantiating data, field service history, or engineering evaluation.

We disagree because the FAA independently evaluated all available data. We incorporated the intent of this service information into the AD, with the exception of adjustments to the applicability and compliance time.

We did not change this final rule AD action based on these comments.

Request To Incorporate Corrosion Preventive Measures in the AD

George Edward White recommended incorporation of corrosion preventive measures into the AD. The commenter noted known corrosion issues on the adjacent torque tube.

We disagree because corrosion preventive measures are already covered by the following documents and are not necessary to address the unsafe condition identified in this AD:

- Piper Aircraft, Inc. Service Bulletin No. 1160, dated December 26, 2005, at http://www.piper.com/Company/Publications/SB%201160%20Stab%20Torque%20Tube%20Assy%20Insp.pdf;
- Special Airworthiness Information Bulletin CE-04-88, dated September 15, 2004, at http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgSAIB.nsf/0/77fc29bb15c8a85b8625721f0052ecb4/$FILE/CE-04-88.pdf;
- AD 74-13-03, Amendment 39-2588 (41 FR 17371, April 26, 1976), at http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgAD.nsf/0/5CBFDEAB5E2AC41586256E1200498F02?OpenDocument&Highlight=74-13-03;
- AC 43.13-1B, Acceptable Methods, Techniques, and Practices–Aircraft Inspection and Repair, at http://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/99861; and

- AC 43-4A, Corrosion Control for Aircraft, at http://rgl.faa.gov/Regulatory–and–Guidance–Library/rgAdvisoryCircular.nsf/list/AC%2043-4A/$FILE/AC%2043-4a%20.pdf.

Based on these comments, we made no change to the AD action.

Request To Require Inspection of the Tail of the Aircraft

Patric Barry stated that periodically opening up the tail of the aircraft for inspection may be beneficial, suggesting that routine servicing of the entire area should be included in this AD. Dave Fitzgerald for the ICS stated that opening up the tail area for service of the trim drum, torque tube bearings, and associated areas is beneficial as part of normal maintenance, but is not part of this AD since the AD addresses the horn and torque tube and not associated components.

We agree that maintenance of the trim drum, torque tube bearings, and associated areas is important but disagree with including it in this AD action. These components are not directly related to the unsafe condition so are not part of this AD.

We did not change this final rule AD action based on these comments.

Conclusion

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting the AD with the changes described previously and minor editorial changes. We have determined that these changes:

- Are consistent with the intent that was proposed in the NPRM (76 FR 36395, June 22, 2011) for correcting the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM (76 FR 36395, June 22, 2011)

We also determined that these changes will not increase the economic burden on any operator or increase the scope of the AD.

Costs of Compliance

We estimate that this AD affects 3,100 airplanes of U.S registry.

We estimate the following costs to comply with this AD:

Estimated Costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Stabilator horn assembly inspection	12 work-hours × $85 per hour = $1,020	Not applicable	$1,020	$3,162,000

We estimate the following costs to do any necessary replacements that would be required based on the results of the proposed inspection. We have no way of determining the number of airplanes that might need this replacement:

On-condition Costs

Action	Labor cost	Parts cost	Cost per product
Stabilator horn assembly replacement	12 work-hours × $85 per hour = $1,020	$572	$1,592

According to the manufacturer, some of the costs of this AD may be covered under warranty, thereby reducing the cost impact on affected individuals. We do not control warranty coverage for affected individuals. As a result, we have included all costs in our cost estimate.

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.

We are 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

This AD will not have federalism implications under Executive Order 13132. This AD will 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 that this AD:

(1) Is not a "significant regulatory action" under Executive Order 12866,

(2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),

(3) Will not affect intrastate aviation in, and

(4) 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.

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 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):

2012-17-06 Piper Aircraft, Inc.: Amendment 39-17169; Docket No. FAA-2011-0639; Directorate Identifier 2011-CE-016-AD.

(a) Effective Date

This AD is effective October 22, 2012.

(b) Affected ADs

None.

(c) Applicability

This AD applies to the following Piper Aircraft, Inc. airplanes, certificated in any category:

(1) Model PA-24, serial numbers (S/Ns) 24-1 through 24-3687, with horn part number (P/N) 20397-00 (assembly P/N 20399) installed;

(2) Model PA-24-250, S/Ns 24-1 and 24-103 through 24-3687, with horn P/N 20397-00 (assembly P/N 20399) installed; and

(3) Model PA-24-260, S/Ns 24-3642 and 24-4000 through 24-5034, with horn P/N 20397-00 (assembly P/N 20399) installed.

(d) Subject

Joint Aircraft System Component (JASC)/Air Transport Association (ATA) of America Code 27: Flight Controls.

(e) Unsafe Condition

This AD was prompted by reports of cracks developing in the stabilator horn assembly. We are issuing this AD to detect and correct corrosion or cracks in the stabilator horn assembly. Corrosion or cracks could lead to failure of the stabilator horn. Consequently, failure of the stabilator horn could lead to a loss of pitch control in flight.

(f) Compliance

Comply with this AD following Piper Aircraft, Inc. Service Bulletin No. 1189, dated April 29, 2010, within the compliance times specified in this AD, unless already done (does not eliminate the repetitive actions of this AD).

(g) Inspection/Replacement

(1) When a new stabilator horn assembly has been installed (during production or replacement) and the stabilator horn assembly reaches a total of 1,000 hours time-in-service (TIS) or 10 years after installation, or within the next 100 hours TIS after October 22, 2012 (the effective date of this AD), whichever occurs later, do one of the following actions:

(i) Initially inspect the stabilator horn assembly for corrosion or cracks. Repetitively thereafter inspect at intervals not to exceed 500 hours TIS or 5 years, whichever occurs first.

(ii) Replace the stabilator horn assembly with a new stabilator horn assembly. When the new stabilator horn assembly reaches a total of 1,000 hours TIS after replacement or within 10 years after replacement, whichever occurs first, you must do one of the actions in paragraph (g)(1) of this AD.

(iii) Replace the stabilator horn assembly with a used serviceable stabilator horn assembly that has been inspected before installation and found free of cracks or corrosion. Repetitively thereafter inspect at intervals not to exceed 500 hours TIS or 5 years, whichever occurs first.

(2) When a used serviceable stabilator horn assembly that has been inspected before installation and found free of cracks or corrosion has been installed and the stabilator horn assembly reaches a total of 500 hours TIS or 5 years after installation, or within the next 100 hours TIS after October 22, 2012 (the effective date of this AD), whichever occurs later, do one of the following actions:

(i) Initially inspect the stabilator horn assembly for corrosion or cracks. Repetitively thereafter inspect at intervals not to exceed 500 hours TIS or 5 years, whichever occurs first.

(ii) Replace the stabilator horn assembly with a new stabilator horn assembly. When the new stabilator horn assembly reaches a total of 1,000 hours TIS after replacement or within 10 years after replacement, whichever occurs first, you must do one of the actions in paragraph (g)(1) of this AD.

(iii) Replace the stabilator horn assembly with a used serviceable stabilator horn assembly that has been inspected before installation and found free of cracks or corrosion. Repetitively thereafter inspect at intervals not to exceed 500 hours TIS or 5 years, whichever occurs first.

(3) If you do not know the total hours TIS on the stabilator horn assembly, within the next 100 hours TIS after October 22, 2012 (the effective date of this AD) do one of the actions required in paragraph (g)(1)(i), (g)(1)(ii), (g)(1)(iii), (g)(2)(i), (g)(2)(ii), or (g)(2)(iii) of this AD.

(4) If any corrosion or cracks are found during any of the inspections required in paragraph (g)(1)(i), (g)(1)(iii), (g)(2)(i), or (g)(2)(iii) of this AD, before further flight, you must replace the stabilator horn assembly as specified in paragraph (g)(1)(ii), (g)(1)(iii). (g)(2)(ii), or (g)(2)(iii) of this AD, as applicable.

(5) For the bolts common to the torque tube and stabilator horn, install the nuts using a torque of 120-145 in.-lbs. for the actions required by paragraphs (g)(1), (g)(2), or (g)(3) of this AD.

Note 1 to paragraph (g) of this AD: The stated torque value of 120-145 in.-lbs. includes friction drag from the nut's locking element, which is assumed to be 60 in.-lbs. The installation torque can be adjusted according to the actual, measured friction drag. For example, if the friction-drag torque is measured to be 40 in.-lbs. (20 in.-lbs. less than the assumed value of 60 in.-lbs.), then the installation torque will be adjusted to be 100-125 in.-lbs. of torque.

(6) You may at any time replace the stabilator horn assembly with a new stabilator horn assembly, provided no corrosion or cracks were found during an inspection that would require replacement before further flight. When the new stabilator horn assembly reaches a total of 1,000 hours TIS after replacement or within 10 years after replacement, whichever occurs first, you must do one of the actions in paragraph (g)(1) of this AD.

Note 2 to paragraph (g) of this AD: Piper Aircraft, Inc. Service Bulletin No. 1160, dated December 26, 2005; Special Airworthiness Information Bulletin CE-04-88, dated September 15, 2004, at http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgSAIB.nsf/0/77fc29bb15c8a85b8625721f0052ecb4/$FILE/CE-04-88.pdf; and AD 74-13-03, Amendment 39-2588 (41 FR 17371, April 26, 1976), are related to this AD action. For the attached torque tube, you may consider combining that inspection with the requirements of this AD.

(h) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Atlanta Aircraft Certification Office (ACO), 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 ACO, send it to the attention of the person identified in the Related Information section 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.

(i) Related Information

For more information about this AD, contact Gregory K. Noles, Aerospace Engineer, FAA, Atlanta ACO, 1701 Columbia Avenue, College Park, Georgia 30337; phone: (404) 474-5551; fax: (404) 474-5606; email: gregory.noles@faa.gov.

(j) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Piper Aircraft, Inc. Service Bulletin No. 1189, dated April 29, 2010.

(ii) Reserved.

(3) For Piper Aircraft, Inc. service information identified in this AD, contact Piper Aircraft, Inc., 2926 Piper Drive, Vero Beach, Florida 32960; telephone: (772) 567-4361; fax: (772) 978-6573; Internet: http://www.piper.com/company/publications.asp.

(4) You may view this service information at the FAA, Small Airplane Directorate, 901 Locust St., Kansas City, Missouri 64106. For information on the availability of this material at the FAA, call (816) 329-4148.

(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call (202) 741-6030, or go to: http://www.archives.gov/federal-register/cfr/ibr-locations.html.

Issued in Kansas City, Missouri, on August 20, 2012.
John Colomy,
Acting Manager, Small Airplane Directorate,
Aircraft Certification Service.