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RE: Docket No. FAA-2023-1893
Project Identifier: AD-2023-00389-A
Comments

Dear Mr. Zuklic:

The undersigned each have a personal or professional interest in the rulemaking; each represents owners and operators, is an owner/operator, or is experienced in the design, production, and/or maintenance of the aircraft under scrutiny; or fit into all three categories.

As parties directly impacted parties by the Federal Aviation Administration's (FAA) proposed action, the undersigned requests the notice of proposed rulemaking be withdrawn in its entirety.

After reviewing the comments and data submitted, if the agency can establish an unsafe condition that may exist in products with specific type design(s), it must issue a supplemental notice of proposed rulemaking (SNPRM) to provide the information that creates the reasonable basis between the facts and the proposed corrective action. At a minimum the data required to be in the docket by the agency's own order[1] must be included:

a. Record of technical decision-making (i.e., the version of the AD action that is published in the Federal Register or emergency AD).

b. FAA reports, summaries or lists of facts, data, or reports that support the AD action.

c. ADs or other similar documents issued by an international civil aviation authority.

d. Regulatory Evaluation Form.

e. Records of each ex parte contact or series of contacts.

f. Comments received on the proposed rulemaking (if any).

[1] Airworthiness Directives Manual (IR-M 8040.1C) at page 63.

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g. Records of approval of IBR documents.

In addition, the agency must include the data or report on its independent analysis of the alleged unsafe condition. The docket does not contain the FAA's Airworthiness Concern Sheet (ACS), or any pertinent information from the responses that purportedly included five "broken rudder incidents". A restatement of the National Transportation Safety Board's (NTSB) recommendation is insufficient to conclude an unsafe condition exists. The FAA must include the information required to support its proposed actions, e.g., the data, reports, and analysis used to extrapolate two incidents (not accidents) into a mandatory action for aircraft of multiple type designs.[2] The analysis needs to consider less onerous methods of addressing the alleged unsafe condition along with an independent determination that the corrective action will be sufficient.

To establish that the current proposal does not rise to the level required to issue a final rule, each element of the NPRM is addressed below. The agency's information is depicted in *italics*, the industry comments are in **bold**.

SUMMARY:

The FAA proposes to adopt a new airworthiness directive (AD) for certain FS 2001 Corp, FS 2002 Corporation, FS 2003 Corporation, Piper, and Piper Aircraft, Inc. (Piper) airplanes. This proposed AD was prompted by reports of broken rudders.

Both sentences are incorrect and the second one is inflammatory. The incident aircraft were only produced by "Piper, and Piper Aircraft, Inc.". While the type certificates (TCs) were later sold to FS 2001, FS 2002 and 2003; those entities never produced any aircraft of the type designs being considered. Further, the entities do not have production certificates (PCs).

There are two NTSB reports of broken rudder posts, both above the upper hinge. The information obtained because of the Airworthiness Concern Sheet (ACS) is problematic as discussed later in these comments.

There is no evidence or reports of broken rudders. The results between a broken post and a failure of the rudder assembly are significantly different. The rudder

[2] Airworthiness directives must include a nexus to the type design, not the aircraft type, see, 14 CFR section 21.31 (https://www.ecfr.gov/current/title-14/section-21.31) versus the definition of type (https://www.ecfr.gov/current/title-14/part-1/section-1.1#p-1.1(Type)) in section 1.1.

assembly's operation was significantly reduced, but it did not fail. The broken posts did not result in an accident;[3] rather, the reports were of incidents.[4]

This proposed AD would require replacing any rudder equipped with a rudder post made from a certain carbon steel with a rudder equipped with a rudder post made from a certain low-alloy steel.

This statement is inaccurate and misleading. Both materials meet the certification standards for the aircraft involved; both have similar "soft" steel characteristics. Although 4130N is an alloy steel it is a technically acceptable substitute for carbon steel 1025. As a simple Google search will reveal: "Both normalized SAE-AISI 4130 and SAE-AISI 1025 steel are iron alloys. They have a very high 98% of their average alloy composition in common." With hundreds of thousands of hours flown by the extensive fleet set forth in the multiple type designs, it is clear both metals are sufficient to meet the requirements of the basic aircraft design.

Further, the NTSB report indicates that the FAA inspector assigned to the incident investigation believed the post was made of 4130N (see, report on N3188M) and may have been flawed in manufacturing. Thus, both materials are sufficient to meet the certification basis unless they have been impacted by corrosion, changes in design, or other conditions that amend the certification elements or requirements.

It is more accurate to state: "FAA is proposing to replace rudder posts made of 1025 steel with 4130N steel".

The FAA is proposing this AD to address the unsafe condition on these products.

This statement is an inaccurate description of the agency's authority. The AD can only address conditions "likely to exist or develop in other products of the same type design" (emphasis added). That conclusion cannot be supported by the evidence in either the NTSB reports or the agency's rulemaking docket.

A search of both the NTSB and Service Difficulty Report (SDR) databases reveals no evidence of the supposed unsafe condition existing in any product, let alone similar type designs, other than the two aircraft referenced in the NTSB reports.

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[3] *See*, 49 CFR section 830.2 definition of accident: "means an occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked, and in which any person suffers death or serious injury, or in which the aircraft receives substantial damage. For purposes of this part, the definition of "aircraft accident" includes "unmanned aircraft accident," as defined herein." There is no evidence of "substantial" damage in the two cited instances nor over 85 years of operation among the 50,000 aircraft built.

[4] *See*, 49 CFR section 830.2 definition of incident: "means an occurrence other than an accident, associated with the operation of an aircraft, which affects or could affect the safety of operations."

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The TC for the NTSB incident aircraft held by FS Corporation 2002/2003, respectively, and their type designs were models -12 and -14, i.e., "long wing". Both had unique and multiple changes to the original type design[5] incorporated through Supplemental Type Certificates (STCs) and field approvals. Nothing in the docket pertains to other type designs[6], i.e., the Cessna built general fleet.

There are no SDRs or NTSB incident or accident reports on any of the other type designs proposed to be impacted by this mandated action. There is no evidence that either the operational or maintenance history of the aircraft used to support the determination that an unsafe condition exists in an entire fleet was investigated or addressed. On the other hand, there is evidence that those aircraft had unique type designs and even that neither met an approved type design.

There are no SDRs whatsoever on the failures of rudder posts. The alleged mechanical failure can only tangentially be due to metal fatigue; there are other factors involved and evidenced in the NTSB reports. The most obvious is that the subject aircraft had cumulative modifications that impacted the dynamic forces on the rudder assembly. Most importantly, the major modification installations lacked the ventral fins and other stabilization systems required for seaplane operations.

Of the three additional rudders considered because of the ACS reports, two were pulled from the trash and as stated in the NTSB report, it had no knowledge of their operational or maintenance history. Without discernible *technical* evaluation, those articles cannot be used to create a reasonable nexus to the unsafe condition determination.

Of the final rudder from the ACS reports, evidence obtained by the NTSB shows it was removed from service during inspection. It also has no operational or maintenance accident to evaluate.

There is no evidence that FAA made an independent evaluation of any of the rudders, rudder posts, incidents, reports, or incident aircraft. Further, there is no evidence that any less invasive or costly alternatives were considered.

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[5] According to 14 CFR section 21.31, the type design is specific to the product under scrutiny, and is reflected on the type certificate data sheet (TCDS). It does not include all modification after the initial certificate of airworthiness is issued. It is merely the information necessary to establish compliance with the applicable airworthiness standards, and it enables a design approval holder to obtain a production approval or authorization. There is no evidence that aircraft configured to the original type design requirements have an unsafe condition.

[6] The agency must provide a reasonable nexus among the type designs to meet the plain language of 14 CFR section 39.5(b).

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Confidential Business Information

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this NPRM contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this NPRM, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as "PROPIN." The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this NPRM. Submissions containing CBI should be sent to Joseph Zuklic, Aviation Safety Engineer, FAA, 2200 South 216th Street, Des Moines, WA 98198. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

Background

The FAA received reports of two non-fatal accidents involving airplanes designed and built by Piper that were caused by broken rudder posts that structurally failed above the upper hinge in flight.

Again, the agency is playing fast and loose with its language. The aircraft were "built by Piper", under its production authority, but the TC holders are now the FS 2002 and FS 2003 Corporations.

Both accidents occurred in Anchorage, Alaska. The first accident occurred on June 8, 2020, and involved an FS 2003 Model PA–12 airplane and the second accident occurred on July 23, 2021, and involved an FS 2002 Model PA–14 airplane. Both airplanes sustained substantial damage when the rudder structurally failed.

The choice of words is inaccurate, misleading, and inflammatory.

First, the rudder <u>posts</u> may have failed, but the rudders did not.

Second while effects on control surfaces must be reported to the NTSB as incidents, the reports did not rise to the level of accidents.[7]

Third, there is evidence the referenced aircraft both were missing required stability equipment. The stability equipment was required by the STC and was designed to reduce stress on the rudder assembly. Thus, both aircraft were in an unairworthy condition; if so, neither met an approved design. Therefore, the design was sufficient, but the aircraft may have been unairworthy due to failure to comply with

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[7] *See*, 49 CFR section 830.5(a)(1).

part 43 or its airworthiness certificate. In either event, an AD is not the proper avenue to address the condition.

The installation of an STC on an aircraft modifies the original type design of that aircraft. STC installations are accomplished through major alterations, which is when the change the *type design* of the specific N-numbered aircraft takes place. Multiple alterations must be evaluated for cumulative impact.[8] The modification status of the two aircraft upon which the AD is based provides evidence that there are multiple contributing factors to the failure of the rudder posts: larger engines, longer, flatter (borer) propeller, added beacons, Alaskan weather and operations, configuration at the time of failure, e.g., on floats, any other unairworthy conditions such as missing components or misaligned or improper STC installations.

Regulations must be rationally based; to conclude that all aircraft of the same type design are impacted based upon available facts has no rational basis. The configurations of the referenced aircraft are unique and cannot be used to establish an unsafe condition in thousands of other aircraft that are not of the same type design.

A spinning propellor will create a spiraling shockwave pattern that can beat upon the sides of the rudder, i.e., create vibration. Two Alaskan-flown aircraft with at least three extensive modifications that increase sideways impact forces on the tail, change vibrational impact and vibrational response in unknown manners cannot be extrapolated to a compliant "type design". Each additional major modification, i.e., installation of an STC can change forces on the rudder.

Additionally, the introduction of maintenance error by mandating replacement must be considered. As the agency is aware, maintenance errors can introduce material and manufacturing defects, shipping damage, human error, fitting errors, configuration, and adjustment errors.

The National Transportation Safety Board (NTSB) published the report Structural Failure of Piper Part Number 40622 Rudder Posts Made of 1025 Carbon Steel, NTSB/AIR–22/02, dated January 10, 2022, which provides information regarding the NTSB's investigations of these two accidents.

The report established the results are problematic. An incorrect testing methodology was applied to an extremely small sample. The sample was damaged during the original and repeated tests. The original lost its curvature, a complex

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[8] *See*, presentation (https://www.faasafety.gov/files/notices/2019/Mar/Frankenplane_Topic_2nd_Qtr.pdf) by the National FAA Safety Team entitled "Frankenplane! Beware the Hidden Dangers of Layering STCs, March 2019.

curvature was created instead of the cylindrical shape. It is a well-known engineering principle that curved surfaces have a direct impact on strength. Thus, the hardness test includes an adjustment for curvature strength. Given the fact that the surface curvature changed during the first erroneous test, the accuracy and therefore, useability of the repeat test is questionable.

The NTSB accident investigation report included a recommendation (Safety Recommendation No. A–22–3) to the FAA to issue an airworthiness directive addressing this unsafe condition. The NTSB report can be found on ntsb.gov.

There is no independent determination that the recommendation is viable under 14 CFR part 39.

The NTSB examined the rudders involved in these accidents and determined that the rudder posts fractured above the upper hinge and the top portion of the rudder folded over the upper tail brace wires. The NTSB also determined that the rudder posts were made from 1025 carbon steel and fractured due to fatigue.

The NTSB determination is problematic. There is evidence in the report that at least one person believed the material was 4130N. To condemn all 1025 posts without further analysis of the type designs involved cannot be justified by the information in the docket.

Prior to this proposed rulemaking action the FAA issued an Airworthiness Concern Sheet, dated September 4, 2020, that requested information from the aviation community regarding in-flight failure of the rudder just above the upper hinge on all Piper and FS2003 Corp (type certificate previously held by Piper) Model J–5A, J–5B, J–5C, J–5D, AE–1, HE–1, PA–12, PA–12S, PA–14, PA–16, PA–18, L–21, PA–20, and PA–22 airplanes. The responses revealed that there were five additional broken rudder incidents dating as far back as 1979.

This is incorrect and misleading in two obvious ways.

First, the issuance of this ACS is problematic; the agency provides no information on whether the document was received by impacted parties. An ACS document can only be found by its complete title. The agency has direct access to the "aviation community" through its aircraft registry, type clubs and organizations, trade associations, manufacturers, and a multitude of recognizable avenues; none were used.

Second, there is no information about the "five additional broken rudder". The NTSB report has no technical data on them, neither does the docket. None have a clear chain of custody, so information is anecdotal. The cause(s) of the failures are unknown, operational and maintenance history is unknown, aircraft configuration

(type design) is unknown. The failures may have occurred during ground handling, after the rudder was removed, or for any number of other causes. Most importantly there is no information about the condition of the rudder post. If the rudders were removed from service as the result of inspections it indicates current inspections will remove discrepant parts from the system. Subjective information does not create a reasonable nexus between the condition and the proposed regulation.

Prior to 1974, all rudders installed on Piper model airplanes were equipped with rudder posts manufactured from 1025 carbon steel and starting in 1974, the rudder posts were manufactured from 4130N low-alloy steel (Chromoly). Most parts manufacturer approval rudders are equipped with rudder posts made from 4130N low-alloy steel.

The NTSB determined that the broken rudder incidents resulted from the combination of fatigue loading and corrosion affecting the rudder assemblies made from 1025 carbon steel.

There is no indication that FAA performed any independent analysis. The preamble relies exclusively on the NTSB report and recommendations. Relying on two aircraft with different type designs to justify affecting an entire fleet with no proof of similar issues does not support the regulation. There must be a clear and evidence-based rationale for concluding an unsafe condition exists in any other type design.

This condition, if not addressed, could result in a broken rudder and consequent reduced ability of the flightcrew to maintain the safe flight and landing of the airplane.

As previously pointed out, the referenced aircraft were not of the same type design, both incidents (no damage beyond the rudder and no injury to any occupants of the aircraft) occurred on uniquely configured aircraft. Both aircraft had major modifications accomplished in accordance with STCs, and one had a "field approval" for a higher horsepower engine. Both aircraft were missing the ventral fin required for float operations.

FAA's Determination

The FAA is issuing this NPRM after determining that the unsafe condition described previously is likely to exist or develop on other products of the same type design.

FAA has not identified products of the same type design. It has provided no objective criteria that creates a reasonable nexus between the condition and the finding of an unsafe condition within an entire fleet of aircraft under numerous TCDS.

Proposed AD Requirements in This NPRM

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This proposed AD would require replacing any rudder equipped with a rudder post made from 1025 carbon steel with a rudder equipped with a rudder post made from 4130N low-alloy steel.

There is no indication that the material is the problem; nor has FAA considered a less costly approach to identifying and correcting the alleged unsafe condition. The posts and rudders incorporated in the type design comply with the aircraft certification basis—aircraft of the original type design have no evidence of failure of either the post or the rudder.

FAA could provide an inspection technique to identify the type designs that have changed the configuration to determine the load at the top of the rudder and whether permanent deformation occurred to the rudder tube. Non-destructive testing inspections like a dye penetrant test could be applied to the rudder tube within a certain distance from the upper hinge. Potential repair options could be the installation of an internal sleeve to the existing rudder in accordance with the procedures outlined in AC43.13-1B Chapter 4. None of these options nor evidence of an unsafe condition is in the docket—the only justification is simply the NTSB recommendation.

Since the NTSB report indicates that the FAA aviation safety inspector team suspected a "metallurgical defect" "present at manufacture" and "suspected [the post] to be a Univair part" (and thus 4130), mandating replacement is unjustified and unreasonable.

Costs of Compliance

The FAA estimates that this AD, if adopted as proposed, would affect 30,992 airplanes of U.S. registry.

The FAA estimates the following costs to comply with this proposed AD:

Estimated Cost

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Replace rudder	8 work hours x $85 per hour = $680	$2,320	$3,000	$92,976,000

This AD would affect over fifteen percent (15%) of the US-registered fleet, primarily owners are small businesses and by individuals; the least able to bear the cost of an unnecessary AD.

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The labor costs for general aviation are no longer $85/hour (and have not been for years). The average shop rate is now $120/hour. When adjusted for inflation, supply, and demand on the cost of the parts proposed to be replaced and the cumulative cost is well north of $100,000,000.

The estimate of 8 hours is also incorrect. The minimum actions are removal of the existing rudder, purchase of a new rudder frame, coverage with fabric, taping, and applying the chemical coatings. The amount of time to perform the steps properly is closer to 14 hours. The "true" cost also includes the shipping charge for the new rudder frame, which can exceed $500.

Given that the proposed AD allows for up to 5 years for completion, an inflation rate of 5% per year should be applied to the cost of materials and labor. It also did not include delay due to the availability of the expertise required to accomplish the proposed mandated action; the steps are no longer taught by approved maintenance technician training schools.

Since the agency failed to put any of its documents in the docket, there is no indication if the FAA queried or obtained information on replacement part availability. The requirement would be to supply 30,000 rudder frames in a timely manner.

Using the information supplied above, the cost of compliance assuming an even distribution of the 30,000 rudders over a 5-year span would be as follows:

Year	Labor cost	Parts cost	Cost on U.S. operators
1	12 hours @ $120 = $1440	$2,320	$22,560,000
2	12 hours @ $126 = $1512	$2436	$23,688,000
3	12 hours @ $132 = $1584	$2557	$24,846,000
4	12 hours @ $139 = $1632	$2685	$25,902,000
5	12 hours @ $146 = $1752	$2819	$27,426,000
		Total compliance cost	$124,422,000

Authority for This Rulemaking

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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) Would not affect intrastate aviation in Alaska, and

The certification belies the fact that a significant number of the aircraft identified in the applicability statement are operated in Alaska and are used to transport essential supplies to remote villages, tourists and supplies to fishing and hunting camps and are used by state law enforcement.

(3) Would not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

Many of the identified aircraft are utilized in small businesses for flight training, aerial advertising, towing for both commercial and club glider operations, fish spotting operations, wildlife control operations, scientific research, search and rescue, non-urgent medical transport, disaster recovery, and for many other small business and charitable operations. The docket contains no data supporting this statement. Or other evidence of consideration of small business and private-public impacts. A simple query to the FAA's aircraft registry reveals many of these aircraft are owned by individuals or small businesses.

Since the agency failed to provide any documentation supporting the rulemaking in the docket it is impossible to provide substantive comment on its conclusion.

List of Subjects in 14 CFR Part 39 – Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety

The Proposed Amendment

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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: S 2001 Corp, FS 2002 Corporation, FS 2003 Corporation, Piper, and Piper Aircraft, Inc.:

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(a) Comments Due Date

The FAA must receive comments on this airworthiness directive (AD) by November 20, 2023.

(b) Affected ADs

None.

(c) Applicability

This AD applies to all airplane models specified in Table 1 to paragraph (c) of this AD, certificated in any category, that are not equipped with a rudder having a rudder post made from 4130N low-alloy steel.

Note 1 to paragraph (c): Most parts manufacturer approval (PMA) rudders are equipped with a rudder post made from 4130N low-alloy steel. This can be verified by reviewing the individual PMA.

Note 2 to paragraph (c): Piper Service Bulletin 1379, dated December 2, 2022, contains information related to this AD.

Table 1 to Paragraph (c)—Applicable Airplane Models

Type certificate holder	*Airplane model*
FS 2001 Corp	*J5A (Army L–4F), J5A–80, J5B (Army L–4G), J5C, AE–1, HE–1.*
FS 2002 Corporation	*PA–14.*
FS 2003 Corporation	*PA–12, PA–12S.*

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Type certificate holder	*Airplane model*
Piper Aircraft, Inc	*J3C–40, J3C–50, J3C–50S, J3C–65, J3C–65S, PA–11, PA–11S.*
Piper Aircraft, Inc	*J3F–50, J3F–50S, J3F–60, J3F–60S, (Army L–4D) J3F–65, J3F–65S.*
Piper Aircraft, Inc	*J3L, J3L–S, J3L–65 (ARMY L–4C), J3L–65S. Piper Aircraft, Inc J4, J4A, J4A–S.*
Piper Aircraft, Inc	*J4E (ARMY L–4E).*
Piper	*J4F.*
Piper Aircraft, Inc	*PA–15.*
Piper Aircraft, Inc	*PA–16, PA–16S.*
Piper Aircraft, Inc	*PA–17.*
Piper Aircraft, Inc	*PA–18, PA–18S, PA–18 "105" (Special), PA–18S "105" (Special), PA–18A, PA–18 "125" (Army L–21A), PA–18S "125", PA–18AS "125", PA–18 "135" (Army L–21B), PA–18A "135", PA–18S "135", PA–18AS "135", PA–18 "150", PA–18A "150", PA–18S "150", PA–18AS "150", PA–19 (Army L–18C), PA–19S.*
Piper Aircraft, Inc	*PA–18A (Restricted), PA–18A "135" (Restricted), PA–18A "150" (Restricted).*
Piper Aircraft, Inc	*PA–20, PA–20S, PA–20 "115", PA–20S "115", PA–20 "135", PA–20S "135".*
Piper Aircraft, Inc	*PA–22, PA–22–108, PA–22–135, PA–22S–135, PA–22–150, PA–22S–150, PA–22–160, PA–22S–160.*

This applicability listing exceeds the type designs of the two aircraft being used to justify the conclusion that an unsafe condition exists.

Several of the models identified have rudders with different part numbers than those on incident aircraft.

The list covers myriad type designs: aircraft with engines from 40 HP to 180, gross weights from 1025 to 2000 pounds. Aircraft with Vne as low as 115 MPH and as high as 170. It includes aircraft with different rudder part numbers but omits aircraft with the same part number rudder.

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There are at least fourteen different TCs and thus type designs represented with long and short fuselages which directly impact the loads applied to the rudder.

As repeated with emphasis a number of times, the 2 examples are of uniquely configured aircraft with long-fusalages. The aircraft were in an unairworthy configuration for float operations. The configurations would result in additional stress on the post that failed.

All listed aircraft, with the exception of the PA-18-150, ceased production prior to the introduction of rudders with 4130 tubes. For the aircraft to be similar type design as directed by § 39.5 the aircraft would need to be based upon the same or similar drawings and specifications, e.g., Vne, gross weight, tail volume, horsepower, prop diameter, landing gear, and so on.

The docket contains no information that indicates there is a rationale basis for the rulemaking. There is no nexus between the supposed unsafe condition and the type designs referenced in any other documents than those specifically related to the two incident aircraft.

(d) Subject: Joint Aircraft System Component (JASC) Code 5540, Rudder Structure.

(e) Unsafe Condition: This AD was prompted by reports of broken rudders. The FAA is issuing this AD to address fatigue loading and corrosion of rudder posts made from 1025 carbon steel which, if not addressed, could result in a broken rudder and consequent reduced ability of the flightcrew to maintain the safe flight and landing of the airplane.

The reports were of two broken rudder posts; no rudders broke. The fracture photos and the initial report on N3188M that state that the FAA safety inspectors performing the NTSB investigation found a metallurgical defect that would have been present at manufacture, and they also suspected the broken post being a non-PAH part.

(f) Compliance: Comply with this AD within the compliance times specified, unless already done.

(g) Required Actions

(1) At the applicable compliance time for the category type for your airplane specified in Table 2 to paragraph (g) of this AD, replace the rudder with a rudder that is equipped with a rudder post made from 4130N low-alloy steel.

Table 2 to Paragraph (g)—Compliance Times

Airplane model	Category type	Compliance time

J–3, J3C–40, J3C–50, J3C–50S, J3C–65, J3C–65S, J3F–50, J3F–50S, J3F–60, J3F–60S, J3F–65 (Army L–4D), J3F–65S, J3L, J3L–S, J3L–65 (ARMY L–4C), J3L–65S.	Category I Airplanes: Airplanes having both a rudder post mounted beacon light and a 150 or greater horsepower (HP) engine installed	Within 2 years after the effective date of this AD.
PA–11, PA–11S. PA–15. PA–16, PA–16S.	Category II Airplanes: Airplanes having either a rudder post mounted beacon light or a 150 or greater HP engine installed	Within 3 years after the effective date of this AD.
PA–17. PA–18, PA–18S, PA–18 "105" (Special), PA–18S "105" (Special), PA–18A, PA–18 "125" (Army L–21A), PA–18S "125", PA–18AS "125", PA–18 "135" (Army L–21B), PA–18A "135", PA–18S "135", PA–18AS "135", PA–18 "150", PA–18A "150", PA–18S "150", PA–18AS "150", PA–18A (Restricted), PA–18A "135" (Restricted), PA–18A "150" (Restricted).	Category III Airplanes: All other airplanes not in Category I or Category II that do not have a rudder post mounted beacon light and have an engine less than 150 HP installed	Within 5 years after the effective date of this AD.
PA–19, PA–19 (Army L–18C), PA–19S.		
PA–20, PA–20S, PA–20 "115", PA–20S "115", PA–20 "135", PA–20S "135".		
PA–22, PA–22–108, PA–22–135, PA–22S–135, PA–22–150, PA–22S–150, PA–22–160, PA–22S–160.		
J–5, J5A (Army L–4F), J5A–80, J5B (Army L–4G), J5C, AE–1, HE–1.		
PA–12, PA–12S.		
PA–14		

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If the agency is determined to issue a final rule after reviewing the comments, it must do so with an inspection of the aircraft records to determine the original type design and any modifications to that design incorporated by using STCs or field approvals.

If the configuration has not been shown to comply with the applicable certification basis for the original or any changes in design, inspections for degradation of the rudder post *may* be necessary; or a terminating action can ensure the extra stress introduced to the rudder and its post are addressed.

(2) As of the effective date of this AD, do not install any rudder that is equipped with a rudder post made from 1025 carbon steel on any airplane.

This statement would prohibit the installation of a rudder made from 1025 that has no indication of corrosion or other defect thereby causing the aircraft owner unnecessary cost by scrapping an otherwise airworthy component.

The requirement ignores the 85 year safety record of 1025 steel and belies the fact that the 4130N steel post may have been manufactured improperly. It also ignores the introduction of maintenance error when the unsafe condition has been improperly explained, no evidence that similar type designs contain any or the same supposed flaws is in the docket.

A SNPRM can make provisions for appropriate inspections and for the repair of 1025 rudders by inserting a 4130 internal sleeve into the affected portion of the rudder in accordance with AC43.13-1B Chapter 4 for aircraft of the same type design as the incident aircraft, but not for the entire fleet.

In conclusion, FAA has failed to provide any evidence of its independent determination that an unsafe condition exists in any aircraft except for the two in the incident reports.

The agency also failed to—

(1) Place the information specified in FAA-IR-M-8040.1C on page 63 in the docket.
(2) Properly identify products of the "same" type design—
(a) Instead, the proposal would add the requirement to certify the fatigue resistance of the rudder post to the original type certification basis without any testing or analytical data to establish that replacing *the rudder* would remove the unsafe condition.
(b) The incident aircraft were in unairworthy configurations, the NTSB data establishes compliance and inspection issues, not an unsafe condition in an entire fleet.

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(3) Investigate alternative methods that would be more cost effective to eliminate the alleged unsafe condition.
(4) Analyze the type design of the incident aircraft, both of which included STCs and field approvals. FAA Form 337 records indicate that the installer never considered the interaction of the multiple changes in design.
(5) Properly utilize the Airworthiness Concern Process by notifying registered owners and operators of the fleets of aircraft with similar type designs.
(6) Provide any alternatives to the replacement mandate, such inspection method for making an airworthiness determination on existing rudder posts.
(7) Provide evidence that the manufacturer can provide the replacement articles in a timely manner.
(8) Fairly assess the economic impact of this proposed AD in general.
(9) Properly assess the economic impact on intrastate activities in Alaska.
(10) Properly assess the economic impact on small entities.

In short significant deficiencies require the NPRM be withdrawn; however, if an SNPRM is the only method by which FAA can work with the industry that step must correct the initial proposal.

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