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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2019-0759; Product Identifier 2018-SW-075-AD; Amendment 39-21661; AD 2021-15-14]**

**RIN 2120-AA64**

#### **Airworthiness Directives; Various Restricted Category Helicopters**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

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**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for various restricted category helicopters, originally manufactured by Bell Textron Inc. (Bell). This AD was prompted by multiple events involving failure of the tail boom attach structure including the bolts. This AD requires revising the existing Rotorcraft Flight Manual (RFM) for your helicopter to incorporate pre-flight checks; removing paint and sealant, and cleaning; repetitive inspections of structural components that attach the tail boom to the fuselage; and depending on the outcome of the inspections, repairing or replacing components, or re-bonding the structure. The FAA is issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective August 30, 2021.

**ADDRESSES:** For service information identified in this final rule, contact: U.S. Army Materiel Command Logistics Data Analysis Center (USAMC LDAC), ATTN: Equipment Publication Control Officers (EPCOs), Building 3305, Redeye Road, Redstone Arsenal, AL 35898-7466; phone (256) 955-7716 or 1-866-211-3367; email [usarmy.redstone.ldac.mbx.logetm@mail.mil](mailto:usarmy.redstone.ldac.mbx.logetm@mail.mil); or at <https://enterprise.armyerp.army.mil>.

You may also contact the following, as applicable:

JJASPP Engineering Services, LLC, 511 Harmon Terrace, Arlington, TX 76010; phone: (817) 465-4495; website: [www.jjaspp.com](http://www.jjaspp.com).

Northwest Rotorcraft, LLC, 1000 85th Ave. SE, Olympia, WA 98501; phone: (360) 754-7200; website: [www.nwhelicopters.com](http://www.nwhelicopters.com).

Overseas Aircraft Support, Inc., P.O. Box 898, Lakeside, AZ 85929; phone (928) 368-6965; fax (928) 368-6962.

Richards Heavylift Helo, Inc., 1181 Osprey Nest Point, Orange Park, FL 32073.

Rotorcraft Development Corporation, P.O. Box 430, Corvallis, MT 59828; phone: (207) 329-2518; email: [administration@rotorcraftdevelopment.com](mailto:administration@rotorcraftdevelopment.com).

Southwest Florida Aviation International, Inc., 28000-A9 Airport Road, Bldg. 101, Punta Gorda, FL 33982-9587.

Tamarack Helicopters Inc, 2849 McIntyre Rd, Stevensville, MT 59870; phone: (406) 777-0144; website: [www.tamarackhelicopters.com](http://www.tamarackhelicopters.com).

WSH, LLC, 3255 S. Bodenbug LP, Palmer, AK 99645.

You may view the related service information at the FAA, Office of the Regional Counsel, Southwest Region, 10101 Hillwood Pkwy., Room 6N-321, Fort Worth, TX 76177. For information on the availability of this material at the FAA, call (817) 222-5110.

## **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-2019-0759; 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 AD, any comments received, and other information. The street address for Docket Operations is 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:** Richard R. Thomas, Aerospace Engineer, Denver ACO Branch, Compliance & Airworthiness Division, FAA, 26805 East 68th Ave., Room 214, Denver, CO 80249; phone: (303) 342-1080; fax: (303) 342-1088; email: [9-Denver-Aircraft-Cert@faa.gov](mailto:9-Denver-Aircraft-Cert@faa.gov).

## **SUPPLEMENTARY INFORMATION:**

### **Discussion of the NPRM**

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to Model EH-1H, EH-1X, HH-1H, HH-1N, UH-1D, UH-1M, UH-1N, and UH-1V helicopters operating under experimental airworthiness certificates; and restricted category type certificated Model HH-1K, TH-1F, TH-1L, UH-1A, UH-1B without Supplemental Type Certificate (STC) No. SR00026DE installed, UH-1E, UH-1F, UH-1H, UH-1L, and UH-1P helicopters.

The NPRM listed the type certificate holders for these restricted category models as Arrow Falcon Exporters Inc.; AST, Inc.; Bell; California Department of Forestry; Global Helicopter Technology, Inc.; Hagglund Helicopters, LLC; International Helicopters, Inc.; JJASPP Engineering Services, LLC; JTBAM, Inc.; Northwest Rotorcraft, LLC; Red Tail Flying Services, LLC; Richards Heavylift Helo, Inc.; Robinson Air Crane, Inc.; Rotorcraft Development Corporation; San Joaquin Helicopters; Smith Helicopters; Southwest Florida Aviation International, Inc.; Tamarack Helicopters, Inc., and West Coast Fabrications.

The NPRM published in the Federal Register on October 31, 2019 (84 FR 58341). The NPRM was prompted by a series of events involving failure of the tail boom attach structure on several restricted category military surplus helicopters.

In the NPRM, the FAA proposed to require revising the existing RFM for your helicopter to incorporate pre-flight checks; removing paint and sealant, and cleaning structural components that attach the tail boom to the fuselage; repetitive inspections of the cleaned structural components; repairing scratches, nicks, gouges, tears, and corrosion within allowable limits; replacing structural components with non-repairable damage, cracks, buckling, or distortion; removing loose, missing, or smoking rivets from service; re-bonding structures with dis-bonds; and removing loose bolts and self-locking nuts from service and replacing them with new bolts and new self-locking nuts. The FAA is

issuing this AD to prevent separation of the tail boom from the helicopter, and subsequent loss of control of the helicopter.

## **Background of the NPRM**

In September 2013, a tail boom separated from a UH-1B helicopter engaged in logging operations, resulting in a fatal accident. The FAA notes that the National Transportation Safety Board (NTSB) Final Report for that accident identified the probable cause as fatigue failure of the upper two tail boom attach points, which resulted in the tail boom separating from the fuselage during logging operations.<sup>1</sup> The NTSB noted that poor maintenance throughout the helicopter's operational life contributed to the accident. In addition to this accident, the FAA is aware of two forced landings due to tail boom attach structure failures: One in May 2014 on a UH-1H helicopter engaged in construction operations, and one in August 2018 on a UH-1F helicopter engaged in firefighting operations. Each of the three events involved a failure of the upper left-hand (LH) tail boom attach fitting. The upper LH tail boom attach point is the most heavily loaded of the four tail boom attach points.

## **Additional Background Information**

The FAA issued Special Airworthiness Information Bulletin (SAIB) SW-18-29 (SAIB SW-18-29) on October 1, 2018 to alert owners and operators of restricted category Bell Model HH-1K, UH-1A, UH-1B, UH-1E, UH-1F, UH-1H, UH-1L, UH-1P, TH-1F, and TH-1L helicopters to failure of the tail boom attach structure. SAIB SW-18-29 recommends adhering to the helicopter's Instructions for Continued Airworthiness, which includes a repetitive 100 hour time-in-service (TIS) inspection of the tail boom attach structure on both sides of the four attach points and recommends keeping the fittings on both sides of all four attach points, the cap angles running forward from the fuselage side fitting, and the longerons running aft from the tail boom side fitting, clean and free of paint and any non-faying sealant; and inspecting for cracks in the attach structure with a borescope.

The FAA revised SAIB SW-18-29 to SAIB SW-18-29R1, dated February 19, 2019 (SAIB SW-18-29R1), to alert all owners and operators to clarified paint and sealant removal procedures and simplify the wording of recommendations to provide clarity.

## **Actions Since the NPRM Was Issued**

Since the FAA issued the NPRM, the FAA determined it is necessary to add notes in the applicability to clarify that Southwest Florida Aviation International, Inc. Model SW204 and SW204HP helicopters are Model UH-1B helicopters, and Model SW205 helicopters are Model UH-1H helicopters. These notes have been added to clarify the Model SW204, SW204HP, and SW205 designations used by Southwest Florida Aviation International, Inc.

The FAA also made edits to clarify that an owner/operator (pilot) may perform the required checks and must enter compliance with the applicable paragraph of the AD into the helicopter maintenance records in accordance with 14 CFR 43.9(a)(1) through (4) and 91.417(a)(2)(v). A pilot may perform these checks because they involve only visual checks and can be performed equally well by a pilot or a mechanic. These checks are an exception to the FAA's standard maintenance regulations.

Also, the FAA has learned of military design improvements of the UH-1H over previous variants, and further analysis of these design improvements prompted extending the inspection

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<sup>1</sup> The NTSB Aviation Accident Final Report for NTSB accident number WPR13FA411 is available on the NTSB's website at <https://data.nts.gov/carol-repge/api/Aviation/ReportMain/GenerateNewestReport/88058/pdf>, accessed July 1, 2021.

intervals for the UH-1H and SW205 helicopters when compared to Model HH-1K, TH-1F, TH-1L, UH-1A, UH-1B without STC No. SR00026DE installed, UH-1E, UH-1F, UH-1L, and UH-1P helicopters.

Additionally, since the NPRM was issued, the type certificate held by San Joaquin Helicopters is now held by WSH, LLC, and the type certificate held by JTBAM INC., is now held by Overseas Aircraft Support, Inc. This final rule reflects these changes and updates the contact information to that of the new type certificate holders.

Since the NPRM was published, the FAA has also removed all helicopter models operating under experimental airworthiness certificates from this final rule. The FAA has chosen to minimize regulations on experimental aircraft that do not have an FAA type certificate because of the level of the safety risk on the individual helicopter.

Further, since the NPRM was published, the FAA has removed the wording, “39-inch extended landing gear installed per STC SR01742NY” from Figure (1) of this AD and from the required actions paragraph, because other STCs may also extend the gear. The FAA also revised the required actions paragraph to state “retorque” instead of “retighten” regarding any replaced bolt, and revised the phrase “existing maintenance manual” to instead read “existing maintenance instructions.” The FAA updated “attach” and “attachment” wording throughout the final rule as applicable.

The ADDRESSES paragraph has been revised to add contact information for Army Publishing Directorate and to remove contact information for AST, Inc., and Robinson Air Crane Inc.

Finally, as mentioned in the NPRM, the FAA still plans to conduct additional rulemaking to address Model UH-1B helicopters with STC No. SR00026DE installed.

## **Discussion of Final Airworthiness Directive Comments**

After the NPRM was published, the FAA received comments from four commenters. The following presents the comments received on the NPRM and the FAA's response to the comments.

### **Support for the NPRM**

Aircraft Structural Repair, Inc., supported the NPRM.

### **Comments Requesting More Information**

An individual commenter requested the FAA provide a list of active short fuselage models and expressed concern about availability of replacement parts.

The FAA estimates the U.S fleet of short fuselage models at 75 helicopters based on data provided by Bell and a review of FAA aircraft registration records. Specific short fuselage models included in this estimate are HH-1K, SW204, SW204HP, TH-1F, TH-1L, UH-1A, UH-1B without STC No. SR00026DE installed, UH-1E, UH-1F, UH-1L, and UH-1P helicopters. It is possible spare parts may not be readily available to replace parts that fail the inspection requirements of this AD; however, the FAA cannot base its AD action on whether spare parts are readily available or available at all. While every effort is made to avoid grounding aircraft, the FAA must address the unsafe condition.

An individual commenter requested the FAA provide information on whether a similar AD is being considered for Bell Model 204B helicopters.

The FAA is reviewing data to determine if this unsafe condition exists on additional helicopter models and may consider additional rulemaking if necessary.

One commenter asked if the forced landings cited in SAIB SW-18-29R1 involved UH-1H helicopters and if these helicopters had the following STCs installed: SR01196LA, SR00929SE, SR01470SE, or SR02051LA. The commenter stated these STCs add extra horsepower and tail rotor authority. The commenter requested information on whether a combination of these STCs allow the

tail rotor control authority to exceed the structural limitations of the tail boom attach fittings in response to sharp tail rotor control inputs.

One of the helicopters forced to land as described in SAIB SW-18-29R1 was a UH-1H helicopter. Another helicopter was a UH-1F, which is a variant of the UH-1B. The UH-1H had all four of the mentioned STCs installed at the time of the forced landing. The data reviewed by the FAA indicates the cause of the failure mode is fatigue. These STCs alone or in combination may increase tail boom loads but those load increases would only marginally increase the rate at which the tail boom attach structure fatigues. The inspection intervals mandated in this AD take into account this marginal increase in the rate of fatigue. The FAA is not aware of any data that the occasional increased loads associated with these STCs would lead directly to an exceedance of structural margins in the absence of fatigue.

### **Request for the FAA To Change the Applicability of the AD**

An individual commenter requested the FAA remove Model HH-1N and UH-1N helicopters from the applicability paragraph of this AD stating these models have “a completely different tail boom longeron and attach fitting.”

The FAA agrees these models have a different tail boom attach structure than the other models listed in the applicability. These models have been removed from this AD.

Northwest Helicopters requested the FAA change the applicability to remove all Model UH-1 series helicopters operating under experimental exhibition (EE) airworthiness certificates and requested the FAA limit the applicability to those models operating under restricted category “repetitive heavy lift operations” or those having more than 20 cycles per hour. Northwest Helicopters states it is unaware of any tail boom attach point failure on any EE Model UH-1H helicopters.

The FAA agrees with the request to remove helicopters with an experimental category airworthiness certificate from the applicability. All helicopters with an experimental category airworthiness certificate have been removed from the applicability of this AD. The FAA has chosen to minimize regulations on experimental aircraft that do not have an FAA type certificate. Nonetheless, the FAA recommends that operators of Model UH-1 series helicopters that are listed in the applicability and do not have a type certificate comply with this AD. The FAA disagrees with limiting the applicability to those models operating under restricted category “repetitive heavy lift operations” or those having more than 20 cycles per hour. The FAA is not aware of any data indicating that tail boom attachment failures only occur on helicopters engaging in repetitive heavy lift operations or those having more than 20 cycles per hour.

### **Request for the FAA To Change the Related Service Information Section of the AD**

One commenter requested the FAA add Bell Information Letter, GEN-18-138, Revision A, dated August 9, 2018 (GEN-18-138), to this AD when discussing replacement of tail boom attaching bolts. The commenter explained GEN-18-138 notifies owners and operators that Bell recently superseded self-locking nuts part number (P/N) MS21042.

The FAA partially agrees. The FAA agrees that Bell superseded the original series of self-locking nuts on Model HH-1K, SW204, SW204HP, TH-1F, TH-1L, UH-1A, UH-1B without STC No. SR00026DE installed, UH-1E, UH-1F, UH-1L, and UH-1P helicopters according to information provided by Bell to the FAA. Self-locking nut P/N NAS9926-7L supersedes the original self-locking nut P/N NAS679A7 for the upper LH attach point and self-locking nut P/N NAS679A7 supersedes the original self-locking nut P/N NAS679A6 for the other three attach points. The required actions section of this AD has been revised to require the installation of self-locking nut P/N NAS9926-7L or P/N NAS9926-6L whenever an attach bolt is replaced. The FAA disagrees that GEN-18-138 addresses the self-locking nuts on helicopter models affected by this AD. The original self-locking

nuts mentioned in GEN-18-138 do not include the original self-locking nuts on the helicopter models affected by this AD.

### **Request for the FAA To Change the Requirement To Use a Borescope for Inspection**

One commenter requested that the FAA limit the requirement to use a borescope for inspection to certain helicopters models with baggage compartments.

The FAA disagrees. The FAA inspected a Model UH-1H helicopter without a baggage compartment and determined that while all of the fuselage side attach structure is visible and within arm's reach, the tail boom side attach structure is not. Furthermore, due to the equipment in the fuselage side oil cooler bay and the confined space in the tail boom, accessing the tail boom side structure is difficult. Also, the upper right hand tail boom side attach structure is located behind a tail rotor pitch control rod. These factors make it difficult to perform a thorough inspection with only a mirror and magnification.

### **Request for the FAA to Change the Compliance Time**

Northwest Helicopters requested the FAA adjust the inspection intervals to correlate with existing AD inspection intervals to simplify the maintenance program for restricted category helicopters other than “repetitive heavy lift” Model UH-1 series helicopters. Northwest Helicopters stated a current AD requires inspection of the main rotor blades for cracks before further flight and every 14 days or 25 hours TIS, whichever occurs first. Northwest Helicopters stated that adopting the same intervals would allow both ADs to be completed at the same time to provide convenience.

The FAA disagrees with the request to change the compliance time for inspections required by this final rule to be consistent with the compliance times for inspections required by AD 2018-02-07, Amendment 39-19160 (83 FR 2361, January 17, 2018) (AD 2018-02-07). AD 2018-02-07 requires an initial inspection within 25 hours TIS or 2 weeks, whichever occurs first. Thereafter, AD 2018-02-07 requires repetitive inspections within 25 hours TIS or 2 weeks, whichever occurs first. This final rule requires an initial inspection within 25 hours TIS, without a calendar time requirement. Thereafter, this final rule requires repetitive inspections for certain helicopters within 25 hours TIS. Owners or operators may choose to perform the inspections required by this AD at 2 week intervals provided the inspections occur within the 25 hours TIS required by this AD.

### **Request for the FAA To Approve an Alternative Method of Compliance (AMOC) to the NPRM**

One individual stated an intent to submit several UH-1H modifications as an AMOC explaining the modifications are less likely to fail than the original structure.

The FAA agrees that the public may submit AMOC requests to the FAA in accordance with 14 CFR 39.19.

One individual requested that the FAA consider the installation of a modified upper LH fitting tail boom attach fitting on various model helicopters per U.S. Army “Modification Work Order (MWO 55-1520-211-40/1)” as an AMOC, stating the modified attach fitting is less likely to fail than the original fitting and no reported failures were noted for tail booms modified per MWO 55-1520211-40/1. A second individual questioned whether MWO 55-1520-211-40/1 would be considered as an AMOC.

The FAA disagrees that an upper LH fitting modified in accordance with MWO 55-1520-211-40/1 addresses this unsafe condition. The FAA reviewed Letter Report, Product Improvement Test of UH-1B Tail Boom Fitting, RDT&E Project No. None, USATECOM Project No. 4-5-0101-04, dated June 29, 1966, which contains an evaluation of MWO 55-1520-211-40/1. The FAA determined that the average total cycles accumulated on UH-1B helicopters affected by this AD substantially exceeds the Army evaluation test cycles. Therefore, the FAA concluded MWO 55-1520-211-40/1 does not adequately address the unsafe condition.

## **Request for the FAA To Withdraw the NPRM**

An individual commenter requested the FAA withdraw the NPRM. The commenter explained that issuing this AD would add an unnecessary burden to operators with a negligible increase in safety and the AD is unnecessary based on the series of accidents and incidents discussed in the NPRM. The commenter stated helicopters that are operated within their operating limits and properly maintained are unlikely to experience an inflight failure before cracks are detected because of existing inspection guidance. The commenter also stated that in the two accidents cited by the FAA, the helicopter was operated in an area not conducive to proper maintenance and was engaged in logging operations, which the commenter asserts are known for exceeding the helicopter's torque and weight limitations.

The FAA disagrees with the request to withdraw the NPRM. The FAA has concluded the existing maintenance instructions lack sufficient detail to minimize the risk of an in-flight failure of the tail boom attach structure. Further, the FAA finds the need to mandate inspections through issuance of an AD to correct the unsafe condition identified in this final rule.

## **Conclusion**

The FAA reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this final rule with the changes described previously. These changes are consistent with the intent of the proposals in the NPRM. The FAA also determined that these changes will neither increase the economic burden on any operator nor increase the scope of this AD.

## **Related Service Information**

The FAA reviewed portions of the following related service information:

- Headquarters, Department of the Army, Aviation Unit and Intermediate Maintenance Instructions Model UH-1H/V/EH-1H/X Helicopters, Technical Manual TM 55-1520-210-23-1, Change 42, dated April 14, 2003. This service information contains tail boom hoisting/handling instructions; hard landing, tail rotor blade strike, and sudden stoppage due to compressor stall tail boom inspection requirements; tail boom removal and installation instructions including attach bolt installation and tightening instructions, tail boom attach fitting inspection instructions, tail boom and fuselage attach fitting bolt hole wear limits, allowable tail boom attach fitting damage and corrosion repair instructions; loose attach fitting fastener inspection and replacement instructions; tail boom attach fitting replacement instructions; classification of damage as negligible, repairable or requiring replacement for tail boom structure including rivets, fasteners, tail boom attach fittings, stringers, and longerons; tail boom structural material specifications; allowable area for damage repair of tail boom attach fittings; longeron damage limits and repair criteria; and stringer repair instructions.
- Headquarters, Department of the Army, Aviation Unit Maintenance and Aviation Intermediate Maintenance Manual for General Aircraft Maintenance (Sheet Metal Shop Practices) Volume 10, Technical Manual TM 1-1500-204-23-10, Change 3, dated August 20, 2004. This service information contains general information pertaining to the repair of aircraft structures, structural metals, forming of replacement structure, rivets and riveting techniques, airframe sheet metal repair, and sandwich construction repair.
- Headquarters, Department of the Army, Rotorcraft Development Corporation, UH-1B Aircraft Preventive Maintenance Services, Technical Manual TM 55-1520-219-PMS, Change 7, dated August 9, 1976. This service information contains requirements to inspect the tail

boom attach bolts for security and the fittings for cracks daily and every 25, 50, 75, and 100 flight hours; and to inspect the tail boom interior structure and longerons for damage, cracks, and corrosion every 100 flight hours.

- Headquarters, Department of the Army, UH-1B DS and GS Maintenance Manual, Technical Manual TM 55-1520-219-34, Change 9, dated June 5, 1972. This service information contains instructions to remove and install the tail boom; attach bolt exposed thread limits; attach bolt tightening instructions with instructions for manufacturing a special torque wrench extension; allowable tail boom attach fitting hole diameters; damage classifications for tail boom skin, stringers and longerons as negligible, repairable by patching, repairable by insertion, or damage necessitating replacement; and instructions for field manufacture of P/N 204-030-800-443, Tail Boom Assembly Cover.
- Headquarters, Department of the Army, UH-1H/V and EH-1H/X Aircraft Phased Maintenance Checklist, Technical Manual TM 55-1520-210-PM, Change 22, dated May 8, 2002. This service information contains phased inspection requirements for the tail boom interior and fuselage heater compartment to check for damage, cracks, and corrosion.
- Headquarters, Department of the Army, UH-1H/V and EH-1H/X Aircraft Preventative Maintenance Daily Inspection Checklist, Technical Manual TM 55-1520-210-PMD, Change 11, dated April 11, 2003. This service information contains preventative daily maintenance instructions to be accomplished prior to the first flight of the day to inspect for loose or missing rivets, the tail boom attachment bolts for security, and tail boom attachment fittings and longerons up to 12 inches from the fittings for cracks.
- U.S. Army Aviation and Missile Command Depot Maintenance Work Requirement DMWR 55-1560-222, All H-1 Series Tailboom Structural Assemblies, Change 6, dated June 18, 2002. This service information contains descriptions of the tail boom structure and guidance explaining tail boom attach fitting structural loads; tail boom differences between helicopter models; required depot level modifications; tail boom structure isometric figures identifying the structural components; instructions to inspect the tail boom longerons for dents, cracks, holes, tears, corrosion, and distortion; longeron repair limits and repair instructions; instructions to inspect attach fittings for cracks and hole elongation; attach fitting repair limits and repair instructions; tail boom attach fitting deburr before bonding to longeron instructions; and a requirement to dye penetrant inspect the tail boom attach fittings.

For additional information about related service information, please see the published NPRM.

### **Differences Between This AD and the Service Information**

This AD requires the pre-flight tail boom attachment check be performed with a flashlight and the initial and recurring inspections be performed with a bright light and borescope. The service information does not specify any items to assist with the required checks or inspections. This AD requires pushing on the tail boom while performing certain inspections. The service information does not. On the fuselage side, this AD requires paying particular attention to the fitting sections near the rivets closest to the attach bolt, and the cap angle rivets next to the fittings. On the tail boom side, this AD requires paying particular attention to the fitting sections near the rivets closest to the attach bolt. The service information does not single out these fitting sections. This AD requires removing any cracked components from service, while the service information allows stop drilling of certain cracks. This AD requires removing any loose attach bolts and their self-locking nuts from service and replacing them with new bolts and new self-locking nuts. The service information does not require replacement of any loose attach bolts.



## **Costs of Compliance**

The FAA estimates that this AD affects 359 helicopters of U.S. registry. The FAA estimates that operators may incur the following costs in order to comply with this AD. Labor costs are estimated at \$85 per work-hour.

Revising the existing RFM for your helicopter takes about 0.5 work-hour, for an estimated cost of \$43 per helicopter and \$15,437 for the U.S. fleet. The pre-flight check before each flight takes about 0.25 work-hour, for an estimated cost of \$21 per helicopter per check and \$7,539 for the U.S. fleet per check. The pre-flight check before first flight of the day takes about 0.5 work-hour, for an estimated cost of \$43 per helicopter per check and \$15,437 for the U.S. fleet per check.

Removing excess paint and sealant, and cleaning all eight tail boom attach fittings takes about 5 work-hours and has a nominal materials cost, for an estimated cost of \$425 per helicopter per instance and \$152,575 for the U.S. fleet per instance.

Inspecting all four tail boom attach points for scratches, nicks, gouges, tears, corrosion, cracks, bond separation, loose, missing, and smoking rivets, buckling, distortion, attach bolt exposed threads, and attach bolt movement takes about 4 work-hours, for an estimated cost of \$340 per helicopter per inspection and \$122,060 for the U.S. fleet per inspection.

Inspecting only the upper LH tail boom attach point for scratches, nicks, gouges, tears, corrosion, cracks, bond separation, loose, missing, and smoking rivets, buckling, distortion, attach bolt exposed threads, and attach bolt movement takes about 0.5 work-hour, for an estimated cost of \$43 per helicopter per inspection.

The FAA cannot estimate the costs to do any allowable repair based on the results of the inspections and the FAA has no way of determining the number of helicopters that might need repair.

The FAA estimates the following costs to do any necessary replacements based on the results of the inspections. The FAA has no way of determining the number of helicopters that might need these replacements.

- Replacing a tail boom attach fitting takes about 33 work-hours and parts cost about \$1,500 for an estimated cost of \$4,305.
- Replacing a tail boom attach fitting, longeron, and doubler (longeron bond assembly) takes about 42 work-hours and parts cost about \$7,000 (rebuilt) or \$21,270 (new) for an estimated cost of \$10,570 (rebuilt) or \$24,840 (new parts).
- Replacing a fuselage attach fitting takes about 45 work-hours and parts cost about \$1,838 for an estimated cost of \$5,663.
- Replacing a fuselage cap angle takes about 42 work-hours and parts cost about \$1,827 for an estimated cost of \$5,397.
- Replacing an attach bolt and self-locking nut takes about 1 work-hour and parts cost about \$313 for an estimated cost of \$398.

## **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 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) Will not affect intrastate aviation in Alaska, 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.

## **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:



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**2021-15-14 Various Restricted Category Helicopters:** Amendment 39-21661; Docket No. FAA-2019-0759; Product Identifier 2018-SW-075-AD.

**(a) Effective Date**

This airworthiness directive (AD) is effective August 30, 2021.

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to various restricted category helicopters originally manufactured by Bell Textron Inc., (Bell) certificated in any category, including but not limited to:

- (1) Rotorcraft Development Corporation Model HH-1K helicopters;
- (2) Robinson Air Crane Inc.; Rotorcraft Development Corporation; and Tamarack Helicopters, Inc., Model TH-1F helicopters;
- (3) Bell; Overseas Aircraft Support, Inc. (type certificate previously held by JTBA, Inc.); and Rotorcraft Development Corporation Model TH-1L helicopters;
- (4) Richards Heavylift Helo, Inc., Model UH-1A helicopters;
- (5) International Helicopters, Inc.; Overseas Aircraft Support, Inc.; Red Tail Flying Services, LLC; Richards Heavylift Helo, Inc.; Rotorcraft Development Corporation; Southwest Florida Aviation International, Inc.; and WSH, LLC (type certificate previously held by San Joaquin Helicopters), Model UH-1B helicopters without Supplemental Type Certificate (STC) No. SR00026DE installed;

Note 1 to paragraph (c)(5): Helicopters with an SW204 or SW204HP designation are Southwest Florida Aviation International, Inc., Model UH-1B helicopters.

- (6) Bell; Overseas Aircraft Support, Inc.; Rotorcraft Development Corporation; Smith Helicopters; and West Coast Fabrications Model UH-1E helicopters;

- (7) AST, Inc.; California Department of Forestry; Robinson Air Crane, Inc.; Rotorcraft Development Corporation; and Tamarack Helicopters, Inc., Model UH-1F helicopters;

- (8) Arrow Falcon Exporters Inc.; Global Helicopter Technology, Inc.; Hagglund Helicopters, LLC; JJASPP Engineering Services, LLC; Northwest Rotorcraft, LLC; Overseas Aircraft Support, Inc.; Richards Heavylift Helo, Inc.; Rotorcraft Development Corporation; Southwest Florida Aviation International, Inc.; and Tamarack Helicopters, Inc., Model UH-1H helicopters;

Note 2 to paragraph (c)(8): Helicopters with an SW205 designation are Southwest Florida Aviation International, Inc., Model UH-1H helicopters.

- (9) Bell; Overseas Aircraft Support, Inc.; and Rotorcraft Development Corporation Model UH-1L helicopters; and

- (10) Robinson Air Crane, Inc.; and Rotorcraft Development Corporation Model UH-1P helicopters.

**(d) Subject**

Joint Aircraft System Component (JASC): 5302, Rotorcraft Tail Boom.

**(e) Unsafe Condition**

This AD was prompted by multiple events involving failure of the tail boom attach structure, including the bolts. The FAA is issuing this AD to address fatigue cracking of tail boom attach fittings, cap angles, longerons, and bolts. The unsafe condition, if not addressed, could result in separation of the tail boom from the helicopter and subsequent loss of control of the helicopter.

**(f) Compliance**

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

**(g) Required Actions**

(1) Before further flight, revise the limitations section of the existing Rotorcraft Flight Manual (RFM) for your helicopter by adding the information in Figure 1 to paragraph (g)(1) of this AD or by inserting a copy of this AD. The action required by this paragraph and the checks required by Figure 1 to paragraph (g)(1) of this AD may be done 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 by following 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.

### PRE-FLIGHT TAIL BOOM ATTACHMENT CHECK

(1) Before each flight, use two hands to push on the tail boom at the third vertical rivet line aft of the trailing edge of the elevator to check for looseness of the tail boom. Gradually apply and relieve pressure using body weight a minimum of three times in each of the following directions: inboard pushing from the left; inboard pushing from the right; and upward pushing from the bottom. If there is any looseness, further flight is prohibited until looseness is repaired and the helicopter is approved for return to service.

Note 1 to paragraph (1) of this check: This check is not required if the tail boom cannot be reached from ground level.

(2) Before the first flight of each day: with the oil cooler/baggage compartment door on the right hand side of the helicopter open to gain access to the interior of the tail boom, and with an additional person applying and relieving pressure as detailed in paragraph (1) and using a flashlight, first, check for upper left hand attach bolt movement by observing the torque stripe if present and attempting to rotate the bolt by hand, and second, check the upper left hand tail boom attach structure for any loose and missing rivets, and any cracks in the following areas: on the fuselage side, check the fitting and the cap angle running forward from the fitting for any cracks, paying particular attention to the fitting section near the rivets closest to the attach bolt and the cap angle rivets next to the fitting; and on the tail boom side, check the fitting and the longeron running aft from the fitting for any cracks, paying particular attention to the fitting section near the rivets closest to the attach bolt. If the attach bolt torque stripe is no longer aligned or the bolt rotates by hand, further flight is prohibited until the attach bolt and self-locking nut are removed from service, replaced with a new bolt and new self-locking nut, and the helicopter is approved for return to service. If there are any loose or missing rivets, or cracks, further flight is prohibited until loose and missing rivets, and cracked components are removed from service and the helicopter is approved for return to service.

Note 2 to paragraph (2) of this check: It is not required to push on the tail boom if it cannot be reached from ground level while checking for attach bolt movement, loose and missing rivets, and cracks.

Figure 1 to Paragraph (g)(1)

(2) Within 25 hours time-in-service (TIS):

(i) Open the oil cooler/baggage compartment door on the right hand side of the helicopter to gain access to the interior of the tail boom.

(ii) Remove paint and stray sealant and clean the eight attach fittings (four on the tail boom side and four on the fuselage side). Remove paint and stray sealant and clean the four cap angles, forward of the fuselage fittings, for at least 12 inches from the end of the fittings. Remove paint and stray

sealant and clean the four longerons, aft of the tail boom fittings, for at least 12 inches from the end of the fittings. It is only necessary to remove the topcoat. Primer may be left in place and edge and fillet sealant may be left in place. If any primer or edge or fillet sealant is removed, before further flight, reapply the removed primer and sealant.

Note 3 to paragraph (g)(2)(ii): On some models, the baggage compartment floor and net must be removed to gain access to the lower fuselage attach fittings and cap angles.

(iii) With an additional person pushing on the tail boom at the third vertical rivet line aft of the trailing edge of the elevator with both hands and gradually applying and relieving pressure using body weight a minimum of three times in each of the following directions: Inboard pushing from the left; inboard pushing from the right; and upward pushing from the bottom; and using a bright light and borescope, inspect each of the four tail boom attach structures for cracks, bond separation, and loose rivets. On the fuselage side, inspect the fittings and the cap angles running forward from the fittings, paying particular attention to the fitting sections near the rivets closest to the attach bolts and the cap angle rivets next to the fittings. On the tail boom side, inspect the fittings and the longerons running aft from the fittings, paying particular attention to the fitting sections near the rivets closest to the attach bolts. Without pushing on the tail boom, and using a bright light and borescope, inspect each of the four tail boom attach structures for scratches, nicks, gouges, tears, corrosion, buckling, and distortion, and for loose, missing, and smoking rivets. If there are any scratches, nicks, gouges, tears, or corrosion within allowable limits, before further flight, repair the affected components. If there are any scratches, nicks, gouges, tears, or corrosion that exceed allowable limits, or any cracks, buckling or distortion, or loose, missing, or smoking rivets, before further flight, remove the affected components from service. If there is any bond separation, before further flight, re-bond the affected components.

Note 4 to paragraph (g)(2)(iii): It is not required to push on the tail boom if it cannot be reached from ground level while inspecting for cracks, bond separation, and loose rivets.

(iv) Inspect each of the four tail boom attach bolts for exposed threads. If there is less than one full thread or more than three threads exposed, before further flight, remove the bolt and self-locking nut from service and replace with a new bolt and new self-locking nut. Self-locking nuts on Model HH-1K, SW204, SW204HP, TH-1F, TH-1L, UH-1A, UH-1B without STC No. SR00026DE installed, and Model UH-1E, UH-1F, UH-1L, and UH-1P helicopters must be replaced with self-locking nut part number (P/N) NAS9926-7L at the upper left-hand (LH) attach point and self-locking nut P/N NAS9926-6L at the other three attach points.

(v) Inspect each of the four tail boom attach bolts for movement by either applying the required installation torque in the tightening direction only, or by inspecting for torque stripe misalignment if present and attempting to rotate the bolt by hand. If a bolt is under-torqued, a torque stripe is misaligned, or a bolt moves, before further flight, remove the bolt and self-locking nut from service and replace with a new bolt and new self-locking nut. Self-locking nuts on Model HH-1K, SW204, SW204HP, TH-1F, TH-1L, UH-1A, UH-1B without STC No. SR00026DE installed, UH-1E, UH-1F, UH-1L, and UH-1P helicopters must be replaced with self-locking nut P/N NAS9926-7L at the upper LH attach point and self-locking nut P/N NAS9926-6L at the other three attach points.

(vi) After the first flight following any bolt replacement as required by paragraph (g)(iv) or (v) of this AD, retorque any replaced bolt by applying torque in accordance with the existing maintenance instructions for your helicopter in the tightening direction only and then apply a torque stripe on the bolt head.

(3) For Model HH-1K, TH-1F, TH-1L, UH-1A, UH-1B without STC No. SR00026DE installed, UH-1E, UH-1F, UH-1L, and UH-1P helicopters and Southwest Florida Aviation International, Inc. Model SW204 and SW204HP helicopters, at intervals not to exceed 25 hours TIS, perform the actions required by paragraphs (g)(2)(i) through (vi) of this AD, except you are only required to perform the actions on the upper LH tail boom attach structure including the bolt.

(4) For Model HH-1K, TH-1F, TH-1L, UH-1A, UH-1B without STC No. SR00026DE installed, UH-1E, UH-1F, UH-1L, and UH-1P helicopters and Southwest Florida Aviation International, Inc.

Model SW204 and SW204HP helicopters, at intervals not to exceed 100 hours TIS, perform the actions required by paragraphs (g)(2)(i) through (vi) of this AD at all four tail boom attach points.

(5) For Model UH-1H helicopters and Southwest Florida Aviation International, Inc. Model SW205 helicopters, at intervals not to exceed 150 hours TIS, perform the actions required by paragraphs (g)(2)(i) through (vi) of this AD on all four tail boom attach points.

**(h) Special Flight Permit**

Special flight permits are prohibited.

**(i) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, Denver 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 (j) 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.

**(j) Related Information**

For more information about this AD, contact Richard R. Thomas, Aerospace Engineer, Denver ACO Branch, Compliance & Airworthiness Division, FAA, 26805 East 68th Ave., Room 214, Denver, CO 80249; phone: (303) 342-1080; fax: (303) 342-1088; email: 9-Denver-Aircraft-Cert@faa.gov.

Issued on July 18, 2021.

Ross Landes,

Deputy Director for Regulatory Operations, Compliance & Airworthiness Division, Aircraft Certification Service.

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