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## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 39

[Docket No. FAA-2016-9291; Directorate Identifier 2016-SW-004-AD; Amendment 39-18840; AD 2017-07-02]

RIN 2120-AA64

#### Airworthiness Directives; Sikorsky Aircraft Corporation Helicopters

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

**ACTION:** Final rule; request for comments.

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**SUMMARY:** We are adopting a new airworthiness directive (AD) for Sikorsky Aircraft Corporation (Sikorsky) Model 269D and Model 269D Configuration A helicopters. This AD requires reducing the life limit of and inspecting certain drive shafts. This AD is prompted by four incidents involving failure of a drive shaft. The actions specified by this AD are intended to prevent the unsafe condition on these products.

**DATES:** This AD becomes effective April 11, 2017.

We must receive comments on this AD by May 26, 2017.

**ADDRESSES:** You may send comments by any of the following methods:

- Federal eRulemaking Docket: Go to <http://www.regulations.gov>. Follow the online instructions for sending your comments electronically.
- Fax: 202-493-2251.
- Mail: Send comments to the U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590-0001.
- Hand Delivery: Deliver to the "Mail" address between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

#### Examining the AD Docket

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2016-9291; or in person at the Docket Operations Office between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD,

the economic evaluation, any comments received, and other information. The street address for the Docket Operations Office (telephone 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

For service information identified in this final rule, contact Sikorsky Aircraft Corporation, Customer Service Engineering, 124 Quarry Road, Trumbull, CT 06611; telephone 1-800-Winged-S or 203-416-4299; email: wcs\_cust\_service\_eng.gr-sik@lmco.com. You may review the referenced service information at the FAA, Office of the Regional Counsel, Southwest Region, 10101 Hillwood Pkwy., Room 6N-321, Fort Worth, TX 76177.

**FOR FURTHER INFORMATION CONTACT:** Michael Schwetz, Aviation Safety Engineer, Boston Aircraft Certification Office, Engine & Propeller Directorate, FAA, 1200 District Avenue, Burlington, Massachusetts 01803; telephone (781) 238-7761; email michael.schwetz@faa.gov.

## **SUPPLEMENTARY INFORMATION:**

### **Comments Invited**

This AD is a final rule that involves requirements affecting flight safety, and we did not provide you with notice and an opportunity to provide your comments prior to it becoming effective. However, we invite you to participate in this rulemaking by submitting written comments, data, or views. We also invite comments relating to the economic, environmental, energy, or federalism impacts that resulted from adopting this AD. The most helpful comments reference a specific portion of the AD, explain the reason for any recommended change, and include supporting data. To ensure the docket does not contain duplicate comments, commenters should send only one copy of written comments, or if comments are filed electronically, commenters should submit them only one time. We will file in the docket all comments that we receive, as well as a report summarizing each substantive public contact with FAA personnel concerning this rulemaking during the comment period. We will consider all the comments we receive and may conduct additional rulemaking based on those comments.

### **Discussion**

We are adopting a new AD for Sikorsky Model 269D and Model 269D Configuration A helicopters with KAflex drive shaft (engine side) part number (P/N) SKCP2738-7 and KAflex drive shaft (pulley side) P/N SKCP2738-8 installed. This AD is prompted by four incidents involving failure of the engine side drive shaft. Three incidents experienced loss of rotor drive resulting in forced landings. The fourth incident resulted in vibration during flight prompting an immediate landing. A fractured engine side drive shaft was evident in each incident. Investigations revealed compression of the rubber engine mounts may lead to loss of alignment between the lower pulley shaft and the engine output shaft, resulting in fracture of the engine side drive shaft. Additionally, it has been discovered that increased cyclic torsional loading was inaccurately applied in previous fatigue analysis, making it necessary to reduce the life limit.

Accordingly, this AD requires reducing the life limit of the engine side drive shaft and pulley side drive shaft to 6,000 hours time-in-service (TIS) for Model 269D helicopters and 1,200 hours TIS for Model 269D Configuration A helicopters. If the drive shaft is interchanged or has ever been interchanged between the two model configurations, this AD requires using the lower life limit of 1,200 hours TIS. This AD also requires performing several inspections of the drive shaft within 25 hours TIS and, depending on the results of these inspections, replacing both the engine side and pulley side drive shafts.

The actions specified by this AD are intended to prevent failure of the drive shaft, loss of rotor drive, and subsequent loss of control of the helicopter. Additional inspections at longer intervals may

also be necessary. We plan to publish a notice of proposed rulemaking to give the public an opportunity to comment on those long-term requirements.

## Record of Ex Parte Communication

In preparation of AD actions such as notices of proposed rulemaking and immediately adopted final rules, it is the practice of the FAA to obtain technical information and information on the operational and economic impact from design approval holders and aircraft operators. We discussed certain aspects of this AD by email and telephone with Sikorsky. A copy of each email contact and a discussion of each telephone contact can be found in the rulemaking docket. For information on locating the docket, see “Examining the AD Docket.”

## FAA's Determination

We are issuing this AD because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type designs.

## Related Service Information

We reviewed Appendix B to Sikorsky S-330 Model 269D Helicopter Basic Handbook of Maintenance Instructions No. CSP-D-2, dated February 2, 1993, and revised October 15, 2014; and Appendix B to Sikorsky S-333 Model 269D Config. “A” Helicopter Basic Handbook of Maintenance Instructions No. CSP-D-9, dated July 20, 2001, and revised October 15, 2014. This service information specifies repetitive inspection procedures, overhaul and retirement schedules, and weight and balance procedures. The Airworthiness Limitations section, which is included in this service information, contains the life limits for drive shaft assembly P/Ns SKCP2738-5 and SKCP2738-7.

We also reviewed Sikorsky 269D Helicopter Alert Service Bulletin DB-052, Basic Issue, dated January 16, 2014, which distributes the service life reduction information and implements a new 1,200-hour overhaul inspection for drive shaft assembly P/Ns SKCP2738-3, SKCP2738-5, and SKCP2738-7.

## AD Requirements

This AD requires, before further flight:

- Removing from service any engine side drive shaft P/N SKCP2738-7 and pulley side drive shaft P/N SKCP2738-5 that has reached or exceeded its new life limit as follows:
  - 6,000 hours TIS for Model 269D helicopters;
  - 1,200 hours TIS for Model 269D Configuration A helicopters; and
  - 1,200 hours TIS if the parts have ever been interchanged between the two model configurations.

This AD also requires, within 25 hours TIS:

- Inspecting the KAflex drive shaft alignment.
- Inspecting the engine side and pulley side drive shafts for a crack, any corrosion or pitting, a nick, a dent, and a scratch.
- Inspecting each bolted joint (joint) for movement.
- Inspecting each joint for fretting corrosion and each frame and mount bolt torque stripe for movement.
- Inspecting each joint for fretting, for a crack around both the bolt head and washer side, and around the nut and washer side, and each inside and outside corner radii and radii edges on both sides of each frame for a crack.

If the drive shaft fails any of the above inspections, this AD requires replacing both the engine side and pulley side drive shafts before further flight.

Lastly, this AD requires within 25 hours TIS and thereafter at intervals not to exceed 25 hours TIS:

- Inspecting the lower pulley to engine alignment, and if there is any interference with the rotation of the belt drive alignment tool, adjusting the engine elevation alignment before further flight.

This AD also specifies installing KAflex engine side coupling assembly P/N SKCP2738-9 and KAflex pulley side coupling assembly P/N SKCP2738-101 as an optional terminating action for the requirements of this AD.

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

The Sikorsky service information specifies a drive shaft assembly service life of 3,000 hours TIS with a 1,200 hour overhaul inspection for Model 269D Configuration A helicopters, while this AD specifies a service life of 1,200 hours TIS.

This AD specifies several inspections with a compliance time of 25 hours TIS that are currently recurring inspections at 100-hour or 400-hour intervals in Sikorsky's service information.

The Sikorsky service information specifies different inspection procedures if there is spline engagement interference or resistance while inspecting the drive shaft alignment. This AD specifies replacing both the engine side and pulley side drive shafts if there is any spline engagement interference or resistance.

The Sikorsky service information specifies inspecting the working fastener condition without any specific succeeding action regarding the inspection. This AD specifies replacing both the engine side and pulley side drive shafts if there is any joint movement.

The Sikorsky service information specifies returning the drive shaft assembly to Sikorsky if there is fretting dust or red metallic residue at a joint. This AD specifies replacing both the engine side and pulley side drive shafts if there is any fretting corrosion.

### **Interim Action**

We consider this AD interim action. If final action is later identified, we might consider further rulemaking then.

### **Costs of Compliance**

We estimate that this AD affects 18 helicopters of U.S. Registry. We estimate that operators may incur the following costs to comply with this AD. Labor costs are estimated at \$85 per work-hour. Removing the engine side and pulley side drive shafts that have reached the new life limit will take about 4 work-hours for a cost of \$340 per helicopter. Inspecting the drive shaft alignment will take about 1 work-hour for a cost of \$85 per helicopter and \$1,530 for the U.S. fleet. Inspecting the drive shafts for damage will take about 1 work-hour for an estimated cost of \$85 per helicopter and \$1,530 for the U.S. fleet. Inspecting the joints will take about 1 work-hour for an estimated cost of \$85 per helicopter and \$1,530 for the U.S. fleet. Replacing the engine side and pulley side drive shafts, if required, will take about 8 work-hours and parts will cost about \$20,000, for an estimated cost of \$20,680 per helicopter. Inspecting the lower pulley to engine alignment will take about 0.5 work-hour for an estimated cost of \$43 per helicopter and \$774 for the U.S. fleet per inspection cycle. Adjusting the engine elevation alignment will take about 0.5 work-hour for an estimated cost of \$43 per helicopter.

## FAA's Justification and Determination of the Effective Date

Providing an opportunity for public comments prior to adopting these AD requirements would delay implementing the safety actions needed to correct this known unsafe condition. Therefore, we find that the risk to the flying public justifies waiving notice and comment prior to the adoption of this rule because some of the required corrective actions must be completed before further flight.

Since an unsafe condition exists that requires the immediate adoption of this AD, we determined that notice and opportunity for public comment before issuing this AD are impracticable and contrary to the public interest and that good cause exists for making this amendment effective in less than 30 days.

## 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

We 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, 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 Alaska to the extent that it justifies making a regulatory distinction; 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.

We prepared an economic evaluation of the estimated costs to comply with this AD and placed it in the AD docket.

## 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):

**SUPERSEDED**



**2017-07-02 Sikorsky Aircraft Corporation (Sikorsky):** Amendment 39-18840; Docket No. FAA-2016-9291; Directorate Identifier 2016-SW-004-AD.

**(a) Applicability**

This AD applies to Sikorsky Model 269D and Model 269D Configuration A helicopters with a KAflex engine side drive shaft part number (P/N) SKCP2738-7 and KAflex pulley side drive shaft P/N SKCP2738-5 installed, certificated in any category.

**(b) Unsafe Condition**

This AD defines the unsafe condition as failure of a drive shaft. This condition could result in loss of rotor drive and subsequent loss of control of the helicopter.

**(c) Effective Date**

This AD becomes effective April 11, 2017.

**(d) Compliance**

You are responsible for performing each action required by this AD within the specified compliance time unless it has already been accomplished prior to that time.

**(e) Required Actions**

(1) Before further flight:

(i) For Model 269D helicopters, remove from service any KAflex engine side drive shaft P/N SKCP2738-7 and any KAflex pulley side drive shaft P/N SKCP2738-5 that has 6,000 or more hours time-in-service (TIS). Thereafter, remove from service any KAflex engine side drive shaft P/N SKCP2738-7 and any KAflex pulley side drive shaft P/N SKCP2738-5 before accumulating 6,000 hours TIS.

(ii) For Model 269D Configuration A helicopters, remove from service any KAflex engine side drive shaft P/N SKCP2738-7 and any KAflex pulley side drive shaft P/N SKCP2738-5 that has 1,200 or more hours TIS. Thereafter, remove from service any KAflex engine side drive shaft P/N SKCP2738-7 and any KAflex pulley side drive shaft P/N SKCP2738-5 before accumulating 1,200 hours TIS.

(iii) If interchanged between Model 269D and Model 269D Configuration A helicopters, remove from service any KAflex engine side drive shaft P/N SKCP2738-7 and any KAflex pulley side drive shaft P/N SKCP2738-5 that has 1,200 or more hours TIS. Thereafter, if interchanged between Model 269D and Model 269D Configuration A helicopters, remove from service any KAflex engine side drive shaft P/N SKCP2738-7 and any KAflex pulley side drive shaft P/N SKCP2738-5 before accumulating 1,200 hours TIS.

(2) Within 25 hours TIS:

(i) Remove the drive shaft to adapter bolt and inspect the drive shaft alignment. Engage and disengage the splines a minimum of 3 times by sliding the engine power output shaft in and out of the

engine. Inspect the alignment at each 90° interval by rotating the lower pulley with the power shaft disengaged. Determine whether the adapter slides on and off the drive shaft splines without spline engagement interference or resistance along the entire length of movement. If there is any spline engagement interference or resistance, before further flight, replace both the engine side and pulley side drive shafts.

(ii) Inspect each drive shaft for a crack, any corrosion or pitting, a nick, a dent, and a scratch. If there is a crack, any corrosion or pitting, a nick, a dent, or a scratch that exceeds allowable limits, before further flight, replace both the engine side and pulley side drive shafts.

(iii) Remove the engine side drive shaft and pulley side drive shaft and perform the following:

(A) Inspect each flex frame (frame) bolted joint (joint) for movement by hand. If there is any movement, before further flight, replace both the engine side and pulley side drive shafts.

(B) Visually inspect each joint for fretting corrosion (which might be indicated by metallic particles) and each frame and mount bolt torque stripe for movement. If there is any fretting corrosion or torque stripe movement, before further flight, replace both the engine side and pulley side drive shafts.

(C) Using a 10x or higher power magnifying glass, visually inspect each joint for fretting and for a crack around the bolt head and washer side, and around the nut and washer side. Also inspect both sides of each frame for a crack on the inside and outside corner radii and radii edge (four). If there is any fretting, a crack at any point over the full circumference (360°) of the bolt head and washer side or the nut and washer side, or a crack in any of the corner radii edges, before further flight, replace both the engine side and pulley side drive shafts.

(iv) Using a belt drive alignment tool 269T3303-007, inspect the lower pulley to engine alignment by engaging the tool on the drive shaft and inserting in the lower pulley bore. Rotate the tool 360° around the drive shaft and inspect for interference. If there is any interference with the rotation of the tool, before further flight, adjust the engine elevation alignment to eliminate the interference.

(3) Thereafter, at intervals not to exceed 25 hours TIS, repeat the actions specified in paragraph (e)(2)(iv) of this AD.

(4) As an optional terminating action to the repetitive inspections in this AD, you may install KAflex engine side drive shaft P/N SKCP2738-9 and KAflex pulley side drive shaft P/N SKCP2738-101.

#### **(f) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, Boston Aircraft Certification Office, FAA, may approve AMOCs for this AD. Send your proposal to: Michael Schwetz, Aviation Safety Engineer, Boston Aircraft Certification Office, Engine & Propeller Directorate, FAA, 1200 District Avenue, Burlington, Massachusetts 01803; telephone (781) 238-7761; email michael.schwetz@faa.gov.

(2) For operations conducted under a 14 CFR part 119 operating certificate or under 14 CFR part 91, subpart K, we suggest that you notify your principal inspector, or lacking a principal inspector, the manager of the local flight standards district office or certificate holding district office before operating any aircraft complying with this AD through an AMOC.

#### **(g) Additional Information**

Sikorsky 269D Helicopter Alert Service Bulletin DB-052, Basic Issue, dated January 16, 2014; Appendix B of Sikorsky S-330 Model 269D Helicopter Basic Handbook of Maintenance Instructions, No. CSP-D-2, dated February 1, 1993, and revised October 15, 2014; and Appendix B of Sikorsky S-330 Model 269D Config. "A" Helicopter Basic Handbook of Maintenance Instructions, No. CSP-D-9, dated July 20, 2001, and revised October 15, 2014; which are not incorporated by reference, contain additional information about the subject of this AD. For service information identified in this AD, contact Sikorsky Aircraft Corporation, Customer Service Engineering, 124 Quarry Road,

Trumbull, CT 06611; telephone 1-800-Winged-S or 203-416-4299; email: wcs\_cust\_service\_eng.gr-sik@lmco.com. You may review this service information at the FAA, Office of the Regional Counsel, Southwest Region, 10101 Hillwood Pkwy, Room 6N-321, Fort Worth, TX 76177.

**(h) Subject**

Joint Aircraft Service Component (JASC) Code: 6310, Engine/Transmission Coupling.

Issued in Fort Worth, Texas, on March 20, 2017.

Scott A. Horn,  
Acting Manager, Rotorcraft Directorate,  
Aircraft Certification Service.

**SUPERSEDED**