DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39 [63 FR 69177 NO. 241 12/16/98]

Docket No. 96-SW-29-AD; Amendment 39-10943; AD 98-26-02

Airworthiness Directives; Sikorsky Aircraft Corporation Model S-61A, D, E, L, N, NM, R, and V Helicopters

AGENCY: Federal Aviation Administration, DOT

ACTION: Final rule

SUMMARY: This amendment adopts a new airworthiness directive (AD), applicable to Sikorsky Aircraft Corporation Model S-61A, D, E, L, N, NM, R, and V helicopters, that requires a non-destructive inspection (NDI) for cracks in the main rotor shaft (shaft), and requires removal of any shaft with a crack and replacement with an airworthy shaft. This AD also requires appropriate marking of shafts and log book entries by the operator to determine the shaft retirement life, and establishes a new retirement life for the shaft. This amendment is prompted by four reports of cracks occurring in helicopters that were utilized in repetitive external lift (REL) operations. The actions specified by this AD are intended to detect a fatigue crack in the shaft that could result in shaft structural failure, loss of power to the main rotor, and subsequent loss of control of the helicopter.

DATES: Effective January 20, 1999.
The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of January 20, 1999.

ADDRESSES: The service information referenced in this AD may be obtained from Sikorsky Aircraft Corporation, Attn: Manager, Commercial Tech Support, 6900 Main Street, P.O. Box 9729, Stratford, CT 06497-9129. This information may be examined at the FAA, Office of the Regional Counsel, Southwest Region, 2601 Meacham Blvd., Room 663, Fort Worth, Texas 76137; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

FOR FURTHER INFORMATION CONTACT: Wayne Gaulzetti, Aerospace Engineer, ANE-150, 12 New England Executive Park, Burlington, MA 01803, telephone (781) 238-7156, fax (781) 238-7199.

SUPPLEMENTARY INFORMATION: A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an airworthiness directive (AD) that is applicable to Sikorsky Aircraft Corporation Model S-61A, D, E, L, N, NM, R, and V helicopters was published in the **Federal Register** on September 18, 1997 (62 FR 48961). That action proposed to require a NDI of the shaft, part number (P/N) S6135-20640-001, S6135-20640-002, or S6137-23040-001, used in REL operations within the next 1,000 hours time-in-service (TIS). The NDI must be performed in accordance with the Overhaul Manual. That action also proposed to establish retirement lives for certain shafts utilized in REL operations. For shafts installed on helicopters utilized in REL operations that have not been modified in accordance

with Sikorsky Customer Service Notice (CSN) 6135-10, dated March 18, 1987, and Sikorsky Alert Service Bulletin (ASB) No. 61B35-53, dated December 2, 1981, the retirement life would be 1,500 hours TIS. For shafts installed on helicopters utilized in REL operations that have been modified in accordance with Sikorsky CSN 6135-10, dated March 18, 1987, and Sikorsky ASB No. 61B35-53, dated December 2, 1981, the retirement life would be 2,000 hours TIS.

Interested persons have been afforded an opportunity to participate in the making of this amendment. Due consideration has been given to the comments received.

Several commenters state that the cost of a replacement shaft, which is $44,753, should be stated in the AD to indicate the severity of the cost impact this AD will have on owners and operators. The FAA concurs and will include the cost of the shaft in the AD.

One commenter states that issuance of the AD is unnecessary because, over a period of 38 years, there have been only two occurrences of shaft cracks. The FAA does not concur. There have been a total of four reported instances of cracked shaft flanges. All four shafts were used in REL operations. Subsequent tests conducted by the manufacturer confirmed the failure due to REL cycles and the need for the life limitation.

The same commenter states that the AD should be applicable to Model CH-3C, CH-3E, HH-3C, and HH-3E helicopters. The FAA concurs since these restricted category helicopters are equipped with the same main gearbox and shaft. These models will be the subject of future rulemaking action.

Two commenters state that the proposed retirement life should be increased from 2,000 hours TIS to 2,500 hours TIS. The change is requested so that the shaft retirement time will be in line with existing gearbox overhaul requirements. The FAA partially concurs. This change will allow the shaft replacement to be conducted concurrently with any recommended gearbox overhaul actions. Based on a further evaluation of the dowel pin cracking and the fretting cracking, the FAA has determined that the retirement life can safely be increased from the proposed 2,000 hours TIS to 2,200 hours TIS. This will allow operators to get two overhaul cycles of 1,100 hours TIS for each shaft used in REL operations. Therefore, the retirement life is extended from 2,000 hours TIS to 2,200 hours TIS for shafts that have been modified in accordance with the Sikorsky service information described previously. This change also will allow operators to avoid excessive disassembly and re-assembly of the gearbox for overhauls and shaft removal based on an approved 1,100 hours TIS gearbox overhaul cycle.

After careful review of the available data, including the comments noted above, the FAA has determined that air safety and the public interest require the adoption of the rule with the changes described previously. The FAA has determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

The FAA estimates that 30 helicopters of U.S. registry that are involved in REL operations will be affected by this AD, that it will take approximately 2.2 work hours per helicopter to accomplish the required actions during the next scheduled overhaul, and that the average labor rate is $60 per work hour. Required parts will cost approximately $50 for the inspection and $44,753 for each shaft. Based on these figures, the total cost impact of the AD on U.S. operators is estimated to be $1,348,050, assuming all 30 shafts are replaced.

The regulations adopted herein will not have substantial direct effects 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. Therefore, in accordance with Executive Order 12612, it is determined that this final rule does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

For the reasons discussed above, I certify that this action (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); 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. A final evaluation has been prepared for this action and it is contained in the Rules Docket. A copy of it may be obtained from the Rules Docket at the location provided under the caption "ADDRESSES."

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

Adoption of the Amendment
Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (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. Section 39.13 is amended by adding a new airworthiness directive to read as follows:

AIRWORTHINESS DIRECTIVE

Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
Federal Aviation Administration

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Federal Aviation Regulations, Part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference FAR Subpart 39.3).

98-26-02 SIKORSKY AIRCRAFT CORPORATION: Amendment 39-10943. Docket No. 96-SW-29-AD.

Applicability: Model S-61A, D, E, L, N, NM, R, and V helicopters, with main rotor shaft (shaft), part number (P/N) S6135-20640-001, S6135-20640-002, or S6137-23040-001, installed, certificated in any category.

NOTE 1: This AD applies to each helicopter identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For helicopters that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must use the authority provided in paragraph (e) to request approval from the FAA. This approval may address either no action, if the current configuration eliminates the unsafe condition, or different actions necessary to address the unsafe condition described in this AD. Such a request should include an assessment of the effect of the changed configuration on the unsafe condition addressed by this AD. In no case does the presence of any modification, alteration, or repair remove any helicopter from the applicability of this AD.

Compliance: Required as indicated, unless accomplished previously.

To detect a fatigue crack in the shaft that could result in shaft structural failure, loss of power to the main rotor, and subsequent loss of control of the helicopter, accomplish the following:

(a) Within the next 30 calendar days or 240 hours time-in-service (TIS) after the effective date of this AD, whichever occurs first, determine if the shaft has been used in repetitive external lift (REL) operations. REL operation is defined as operation during which the average number of external lifts equals or exceeds six per flight hour for any 250 hour TIS period during the main gearbox overhaul interval. An external lift is defined as a flight cycle in which an external load is picked up, the helicopter is repositioned (through flight or hover), and the helicopter hovers and releases the load and departs or lands and departs. Record the total number of hours TIS during which external lifts have been conducted, as well as the number of external lifts conducted during each hour, on the component log card or equivalent record. If the number of external lifts cannot be determined, assume 6 external lifts were conducted during each hour TIS in which external lifts were conducted. If the hours TIS of external lift operations cannot be determined, assume REL operations were conducted.

(b) For shafts used in REL operations, within the next 1,100 hours TIS after the effective date of this AD, conduct a non-destructive inspection (NDI) for cracks in the shaft in accordance with the Overhaul Manual. If a crack is discovered in a shaft, remove the shaft and replace it with an airworthy shaft. Mark the removed airworthy shafts and the replacement shafts in accordance with the Accomplishment Instructions in paragraphs 2E and 2F of Sikorsky Aircraft Corporation Alert Service Bulletin (ASB) No. 61B35-68, dated July 19, 1996. Once a shaft has been designated and marked as an REL shaft, it is life-limited accordingly for the remainder of that shaft's airworthy service life.

(c) Retire all shafts that have been used in REL operations as follows:

(1) Shafts that have been modified in accordance with Sikorsky Customer Service Notice 6135-10, dated March 18, 1987, and Sikorsky ASB No. 61B35-53, dated December 2, 1981 (modified REL shafts), must be removed from service on or before attaining 2,200 hours TIS.

(2) Shafts that have not been modified in accordance with Sikorsky Customer Service Notice 6135-10, dated March 18, 1987, and Sikorsky ASB No. 61B35-53, dated December 2, 1981 (unmodified REL shafts), must be removed from service on or before attaining 1,500 hours TIS.

(d) This AD revises the Limitations section of the maintenance manual by establishing new retirement lives of 1,500 hours TIS for unmodified REL shafts and 2,200 hours TIS for modified REL shafts.

(e) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, Boston Aircraft Certification Office. Operators shall submit their requests through an FAA Principal Maintenance Inspector, who may concur or comment and then send it to the Manager, Boston Aircraft Certification Office.

NOTE 2: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Boston Aircraft Certification Office.

(f) Special flight permits may be issued in accordance with sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the helicopter to a location where the requirements of this AD can be accomplished.

(g) The marking of the shaft shall be done in accordance with Sikorsky Aircraft Corporation Alert Service Bulletin No. 61B35-68, dated July 19, 1996. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from Sikorsky Aircraft Corporation, Attn: Manager, Commercial Tech Support, 6900 Main Street, P.O. Box 9729, Stratford, CT 06497-9129. Copies may be inspected at the FAA, Office of the Regional Counsel, Southwest Region, 2601 Meacham Blvd., Room 663, Fort Worth, Texas; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

(h) This amendment becomes effective on January 20, 1999.