



*This is information only. Recommendations aren't mandatory.*

## **Introduction**

This Special Airworthiness Information Bulletin (SAIB) is to inform owners and operators of an issue with **Sikorsky Aircraft Corporation S-76A/B/C model helicopters** equipped with LITEF LCR 92/LCR 100 Attitude and Heading Reference System (AHRS) and Honeywell SPZ 7000/SPZ 7600 autopilot systems. In these helicopters when flying coupled to the autopilot, it is possible – under specific, limited circumstances, that immediate pilot intervention will be required to maintain or return the aircraft to coordinated flight. The issue is due to the AHRS yaw rate output to the autopilot being incorrectly limited.

Sikorsky issued Rotorcraft Flight Manual (RFM) updates in 2015 and 2018 to add a warning about this issue. Sikorsky has now released an Alert Service Bulletin (ASB) for the installation of a yaw rate conversion box to fix the issue.

At this time, the airworthiness concern is not an unsafe condition that would warrant airworthiness directive (AD) action under Title 14 of the Code of Federal Regulations (14 CFR) part 39.

## **Background**

This issue affects the following helicopter models,

- S-76A™
- S-76A+™
- S-76A++™
- S-76B™
- S-76C™
- S-76C+™
- S-76C++™

equipped with the following LITEF LCR-92/LCR-100 AHRS:

- LCR-92S (141852-3211)
- LCR-92S (141852-3222)
- LCR-100 AHRS (145130-7100)
- LCR-100 AHRS (145130-7110)

and Honeywell SPZ 7000/SPZ 7600 autopilot systems.

The issue arose when the original yaw rate gyros were replaced by the AHRS units. The yaw rate gyros that the AHRS replaced were capable of outputting yaw rates in excess of 12° per second. During maneuvers requiring yaw rates greater than 6° per second to maintain balanced flight, such as large heading changes at low airspeeds, the autopilot system will continue to drive the yaw pedal forward in the direction of the turn beyond the point where balanced flight is achieved, and continue until reaching full travel or the pilot takes control. This is because the yaw rate feedback value that is received by the autopilot from the AHRS is less than the yaw rate target value that it requires to maintain coordinated flight given the current angle of bank and airspeed. The result is a skidding turn which can result in large excursions in pitch, roll, and airspeed due to the reduced effectiveness of the horizontal and vertical

stabilizers when the aircraft is flown severely out of trim. The following conditions must exist for the issue to arise:

- aircraft is coupled to the autopilot
- the aircraft is flying below 70 KIAS, and
- a heading change is commanded greater or equal to 60 degrees.

This issue is more likely to occur in right turns, gusty winds, and/or turbulence.

In order to correct the issue, yaw rate conversion boxes will be installed, one each, between the AHRS units and autopilot system Flight Control Computers (FCCs). The yaw rate conversion boxes restore the yaw rate feedback signal to the level expected by the FCC.

Sikorsky has published Alert Service Bulletin (ASB) 76-34-12, Revision 00, dated May 20, 2020 for the installation of the yaw rate conversion boxes.

### **Recommendations**

- The FAA recommends that owners and operators of all affected S-76A/B/C model helicopters equipped with LITEF LCR 92/LCR 100 AHRS and Honeywell SPZ 7000/SPZ 7600 Autopilot systems install the yaw rate converter boxes (17076A72M100-01). Refer to Sikorsky ASB 76-34-12, Revision 00, dated May 20, 2020, for further information.
- The FAA requests owners and operators to report any cases related to this issue directly to the FAA contact provided.

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### **For Further Information Contact**

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### **For Related Service Information Contact**

Local Sikorsky Field Representative or Sikorsky's Service Engineering Group at SIKORSKY AIRCRAFT CORPORATION, 124 QUARRY ROAD, TRUMBULL, CT 06611 U.S.A.; phone: 1-800-Winged-S; fax: (817) 762-6715; email: wcs\_cust\_service\_eng.gr-sik@lmco.com. Operators may also log on to the Sikorsky 360 website at <https://www.sikorsky360.com>.