



U.S. Department
of Transportation
**Federal Aviation
Administration**

SAFO

Safety Alert for Operators

SAFO 08015
DATE: 6/20/08

Flight Standards Service
Washington, DC

http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo

A SAFO contains important safety information and may include recommended action. SAFO content should be especially valuable to air carriers in meeting their statutory duty to provide service with the highest possible degree of safety in the public interest. Besides the specific action recommended in a SAFO, an alternative action may be as effective in addressing the safety issue named in the SAFO.

Subject: Preflight check of helicopter hydraulic systems to include validation of control movement smoothness and identification of adverse flight control “stick-jump”

Purpose: This SAFO supersedes SAFO 08005 and reemphasizes the importance for operators to ensure their pilots are conducting preflight system checks that specifically includes review of the helicopter’s hydraulic system to validate control movement smoothness and reveal any adverse flight control “stick-jump.” This SAFO supplements SAFO 06021 issued December 6, 2006.

Background: After participating in the investigation of an accident in which a Sikorsky S-76C+ helicopter experienced an upset and subsequent crash into the Baltic Sea, the National Transportation Safety Board (NTSB) issued Safety Recommendation A-05-35, which recommends that the FAA directs principal operations inspectors of all Sikorsky S-76 helicopter operators to reemphasize the importance of and requirement for a preflight check of control movement smoothness and flight control “stick-jump” at every engine start.

The NTSB noted that, ground testing and subsequent teardown of the failed actuator in this accident revealed that the piston head seals had worn differently and exhibited different leakage characteristics, resulting in different hydraulic pressures between systems 1 and 2. When the dual hydraulic systems are not balanced, the actuator may experience a loss of control. The Sikorsky S-76 flight manual contains an operational check to identify unbalanced hydraulic pressure at engine start. The S-76 flight manual contains two preflight checks to be performed at every engine start. The first check requires pilots to check for overall smooth function of the flight controls. (Post accident testing characterized the accident helicopter’s forward actuator to be “notchy.”) The second check requires pilots to switch off one hydraulic system and then the other, watching for a change (referred to as “stick-jump”) in position of the flight controls. Such a jump would indicate a difference in hydraulic pressure between the systems and repair would be required before further flight. The accident helicopter’s FDR data showed that the stick-jump test had been performed in that aircraft only three times during the previous 14 engine starts. The Board notes that the stick-jump test was not performed at the engine start prior to the accident, and believes that if it had been performed that the problem that caused the accident might have been revealed prior to flight.

Discussion: This SAFO is being issued to reemphasize the importance of helicopter preflight inspections. This includes functional tests of the aircraft hydraulic systems, in accordance with the Rotorcraft Flight Manual (RFM) or published and approved guidance. This will help ensure a complete preflight check of the hydraulic system and is essential to the safety of flight.

Recommended Action: All directors of operations and chief pilots of part 135 helicopter operators and part 142 training centers should ensure that all air carrier training programs include pilot training and checking of aircraft hydraulic systems during initial and recurrent training. All pilots of aircraft equipped with a hydraulic system should test the function of the hydraulic system, to include control movement smoothness and checking for any adverse flight control “stick jump,” in accordance with the RFM/Published and approved guidance, as part of an accepted aircraft checklist.

Contact: Questions concerning this SAFO should be directed to the Part 135 Air Carrier Operations Branch, AFS-250, at 202-267-8166.