EMERGENCY AIRWORTHINESS DIRECTIVE

Aircraft Certification Service
Washington, DC

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U.S. Department
of Transportation
Federal Aviation Administration

DATE: August 27, 2008
AD #: 2008-18-52

This Emergency AD supersedes Emergency AD 2008-18-51.

This superseding Emergency Airworthiness Directive (EAD) is prompted by two incidents of impaired directional control. This impaired directional control occurred after the Vertical Stabilizer Control System (VSCS) circuit breakers were pulled in accordance with EAD 2008-18-51. EAD 2008-18-51 was issued on August 20, 2008 and requires several actions related to the VSCS for the MDHI MD900 helicopter and related to the Yaw Stability Augmentation System (YSAS) for the Model 500N and 600N helicopters. EAD 2008-18-51 was prompted by reports that two MD900 helicopters experienced broken VSCS adapter tubes. In one case, the helicopter experienced an uncommanded yaw, resulting in loss of a window and a door. The same part-numbered adapter tube is part of the Model 500N and 600N helicopter's YSAS. Some of the VSCS and YSAS adapter tubes were not manufactured to the required specifications and can fail.

Since the issuance of EAD 2008-18-51, we have discovered that pulling the circuit breaker is causing impaired directional control, which could result in loss of control of the helicopter. Therefore, this EAD supersedes 2008-18-51 and requires turning OFF the VSCS or the YSAS instead of pulling the circuit breakers and installing placards that limit airspeed to 100 KTS or $V_{NE,}$ whichever is less. For the Model MD900 helicopters, limiting flight to VFR, prohibiting use of the autopilot, and making changes to the Emergency Procedures and Airworthiness Limitations sections of the RFM are also required. For all of the helicopter models, replacing the adapter tubes with airworthy adapter tubes that have a date stamp is also required. The adapter tubes must be replaced within 45 days and is terminating action for the requirements of this EAD.

We have reviewed MDHI Service Bulletin (SB) SB500N-040 for the Model 500N helicopters and SB600N-047 for the Model 600N helicopters, dated August 15, 2008, with YSAS adapter tubes installed. We have also reviewed SB900-109R1, dated August 22, 2008, for the Model MD900 helicopter. SB 500N-040 and SB 600N-047 specify de-energizing the YSAS and installing a placard that limits the airspeed. SB 900-109R1 specifies switching OFF the VSCS system instead of pulling the two VSCS circuit breakers and installing cable ties. It also contains notes for switching ON the VSCS in certain emergency conditions and specifies

installing a placard that limits the airspeed. All 3 service bulletins specify removing the placard when the YSAS and VSCS adapter tubes are replaced with airworthy parts.

This unsafe condition is likely to exist or develop on other helicopters of these same type designs. Therefore, this EAD requires the following before further flight:

For Model 500N and 600N helicopters:

- Turn OFF the YSAS switch.

- Install a placard on the instrument panel as close as practicable to the airspeed indicator that states:

"YSAS SYSTEM IS OFF. AIRSPEED LIMIT 100 KIAS or $V_{NE,}$ WHICHEVER IS LESS."

For Model MD900 helicopters:

- Turn OFF both the left and right VSCS switches.

- Install a placard on the instrument panel as close as practicable to the airspeed indicator that states:

"VSCS SYSTEM IS OFF. AIRPSEED LIMIT 100 KIAS or $V_{NE,}$ WHICHEVER IS LESS. ONLY VFR FLIGHT PERMITTED."

- If installed, de-energize the autopilot and install a placard next to the AP Mode Select panel that contains the AP/SAS MSTR switch stating that states:

"AP/SAS DEACTIVATED."

- Make pen and ink changes or place a copy of this EAD in the Emergency Procedures section of the RFM to revise the emergency procedures as follows: "Keep the VSCS turned OFF, however, if you experience an an anti-torque system malfunction, turn the VSCS ON. Turn the VSCS back OFF during final approach for a run-on landing."

- Make pen and ink changes or place a copy of this EAD in the airworthiness limitations section of the RFM to revise the airworthiness limitations as follows: "Use of the autopilot is prohibited."

For all affected helicopters:

- Make pen and ink changes or place a copy of this EAD in the airworthiness limitations section of the RFM to revise the airworthiness limitations as follows: "V_{NE} is limited to 100

- KIAS or less as determined by referring to the airspeed V_{NE} placard already installed on the helicopter."
- Replace each adapter tube with an airworthy adapter tube that has a date stamp of August 15, 2008 or later. This replacement is required within 45 days and is terminating action for the requirements of the AD. After replacing all adapter tubes without a date stamp with an airworthy adapter tube with a date stamp of August 15, 2008 or later, return all affected systems to their original positions.

This rule is issued under 49 U.S.C. Section 44701 pursuant to the authority delegated to me by the Administrator, and is effective immediately upon receipt of this EAD.

2008-18-52 MD HELICOPTERS, INC.: Directorate Identifier 2008-SW-52-AD. Supersedes Emergency AD 2008-18-51, Directorate Identifier 2008-SW-50-AD.

Applicability: Model 500N helicopters, serial numbers (S/N) -001 through -107 with a prefix of "LN," Model 600N helicopters, S/N -003 through -076 with a prefix of "RN," with Yaw Stability Augmentation System (YSAS) adapter tubes, part number (P/N) 500N7218-1, installed; and MD900 helicopters, S/N 900-00008 through 900-00128, with Vertical Stabilizer Control System (VSCS) adapter tubes, P/N 500N7218-1, installed, certificated in any category. Adapter tubes that have a date stamp of August 15, 2008 or later are not included in the applicability of this AD.

Compliance: Before further flight, unless done previously.

To prevent loss of yaw control and subsequent loss of control of the helicopter, do the following:

(a) For Model 500N and 600N helicopters:

(1) Turn the YSAS switch OFF.

Note 1: MDHI maintenance manual CSP-HMI-3, Section 96-00-00, pertains to the subject of this AD.

(2) Install a placard on the instrument panel as close as practicable to the airspeed indicator that states:

"YSAS SYSTEM IS OFF. AIRPSEED LIMIT 100 KIAS or V_{NE}, WHICHEVER IS LESS."

(b) For Model MD900 helicopters:

(1) Turn OFF both the left and right VSCS switches.

Note 2: The MDHI maintenance manual CSP-900RMM-3, Section 96-00-00 and MDHI Service Bulletin No. SB900-109R1, dated August 22, 2008, pertain to the subject of this AD.

(2) If installed, de-energize the Autopilot (AP/SAS) as follows:

(i) Determine if the AP/SAS trim actuators are centered. If the AP/SAS trim actuators are not centered, center them.

(ii) After the AP/SAS trim actuators are centered:

(A) Turn the AP/SAS MSTR switch to the OFF position.

(B) Pull the following AP circuit breakers located on the A601 Essential Bus Circuit Breaker Panel, mounted in the cockpit console and install a plastic cable tie on each circuit breaker to prevent accidental energizing of the circuit:

(1) AP/SAS CMPTR (CB28),

(2) AP/SAS DISC (CB29), and

(3) AP/SAS ACCEL (CB30).

(C) Install a placard next to the AP Mode Select panel that contains the AP/SAS MSTR switch stating "**AP/SAS DEACTIVATED.**"

(3) Install a placard on the instrument panel as close as practicable to the airspeed indicator that states:

"VSCS SYSTEM IS OFF. AIRPSEED LIMIT 100 KIAS or V_{NE}, WHICHEVER IS LESS. ONLY VFR FLIGHT PERMITTED."

Note 3: The Rotorcraft Flight Manual (RFM) Airspeed Limitation Section contains information for operating with the VSCS inoperative.

(c) For MD 900 helicopters:

(1) Make pen and ink changes or place a copy of this AD in the Emergency Procedures section of the RFM to revise the emergency procedures as follows: "Keep the VSCS turned OFF, however, if you experience an anti-torque system malfunction, turn the VSCS ON. Turn the VSCS back OFF during final approach for a run-on landing."

Note 4: The Emergency Procedures section of the RFM contains information for anti-torque failure, complete loss of thrust, and fixed thruster setting.

(2) Make pen and ink changes or place a copy of this AD in the airworthiness limitations section of the RFM to revise the airworthiness limitations as follows: "Use of the autopilot is prohibited."

(d) For all affected helicopters, make pen and ink changes or place a copy of this AD in the airworthiness limitations section of the RFM to revise the airworthiness limitations as follows: "V_{NE} is limited to 100 KIAS or less as determined by referring to the airspeed V_{NE} placard already installed on the helicopter."

(e) For all affected helicopters, within 45 days, replace each adapter tube with an airworthy adapter tube that has a date stamp of August 15, 2008 or later. This replacement is terminating action for the requirements of this AD. Once this replacement has been done:

(1) Remove the placards and the revisions that were made to the RFM;

(2) Return the YSAS or VSCS switches to their normal positions; and

(3) If installed, turn ON the AP/SAS, remove the plastic cables ties from the 3 circuit breakers on the A601 Essential Bus, push in the circuit breaker, and remove the "AP/SAS Deactivated" placard.

(f) To request a different method of compliance or a different compliance time for this AD, follow the procedures in 14 CFR 39.19. Contact the Manager, Los Angeles Aircraft Certification Office, FAA, ATTN: Eric D. Schrieber, Aviation Safety Engineer, Airframe Branch, 3960 Paramount Blvd., Lakewood, California 90712, telephone 562-627-5348, fax 562-627-5210, for information about previously approved alternative methods of compliance.

(g) Copies of the applicable service information may be obtained from MD Helicopters Inc., Attn: Customer Support Division, 4555 E. McDowell Rd., Mail Stop M615, Mesa, Arizona 85215-9734, telephone 1-800-388-3378, fax 480-346-6813, or on the web at www.mdhelicopters.com.

(h) Emergency AD 2008-18-52, issued August 27, 2008, becomes effective upon receipt.

FOR FURTHER INFORMATION CONTACT: Eric D. Schrieber, FAA, Los Angeles Aircraft Certification Office, Aviation Safety Engineer, Airframe Branch, 3960 Paramount Blvd., Lakewood, California 90712, telephone 562-627-5348, fax 562-627-5210.

Issued in Fort Worth, Texas, on August 27, 2008.

Jim Richmond,
Acting Manager, Rotorcraft Directorate,
Aircraft Certification Service.