

# EMERGENCY AIRWORTHINESS DIRECTIVE



Aircraft Certification Service  
Washington, DC

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

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**DATE: February 20, 2005**

**AD #: AD 2005-05-51**

Send to all owners and operators of The Cessna Aircraft Company (Cessna) Models 402C and 414A airplanes. This AD applies to all Models 402C and 414A airplanes that do not have a spar strap modification incorporated on each wing spar following Cessna Service Bulletin MEB02-5, dated June 24, 2002, and Cessna Service Kit SK402-47, dated June 24, 2002.

## Discussion

**What events have caused this AD?** The FAA has received reports of and is analyzing data from cracks found in the wings of two Cessna Model 402C airplanes.

On the first airplane, early information indicates the airplane had severe cracking on its left wing in the vicinity of the front spar and outboard engine beam. The lower spar cap had completely failed at about Wing Station (WS) 114. The airplane also had cracks in the lower wing skin and the web splice doubler. Also found were two popped rivets: one between the heat shield and the wing skin and another between the factory installed web splice doublers and web. The airplane had 20,355 total hours time-in-service (TIS).

During the airplane's most recent flights before the cracking was found, the pilot noticed progressive deterioration in roll trim. The flights required the pilot to use aileron trim for level flight to keep the wings level. The airplane landed safely and inspection revealed the cracks.

On the second airplane, fatigue cracks were found at about WS 114 in the lower spar cap of another Model 402C airplane that had over 20,000 total hours TIS.

Fatigue analysis shows that similar fatigue cracks could also develop in the wings of the Model 414A airplanes.

## **Is there any current regulatory action to address this area of the Cessna 402C airplanes?**

Airworthiness Directive (AD) 2000-23-01, Amendment 39-11971 (65 FR 70645), currently requires repetitive visual inspections of the forward, aft, and auxiliary wing spars for cracks on Cessna Model 402C airplanes. These inspections are at intervals not to exceed 110 hours TIS.

Logbook records indicate that both airplanes with cracked spars were in compliance with AD 2000-23-01.

**What is FAA's determination?** The FAA's analysis so far shows the inspections of AD 2000-23-01 should be done more frequently and particular attention paid to the following areas:

### Just Outboard of the Engine Beam

- The lower spar cap at WS 114.
- The three rivets on both the inboard and outboard sides of WS 114 (total of six rivets) in the lower spar cap as viewed from the access hole.
- The spar web at WS 112.5.

### Just Inboard of the Inboard Engine Beam

- The lower spar cap between WS 80 and WS 89.
- The two attach bolts just inboard of the WS 89.18 rib.

Therefore, FAA has decided to issue an AD to detect and correct cracking in the wing spars of the affected airplanes before the cracks grow to failure. Such a wing failure could result in the wing separating from the airplane with consequent loss of control of the airplane.

In addition, we are working with Cessna to develop more extensive solutions to this cracking problem. The FAA anticipates issuing future airworthiness directives (ADs) to address this issue. These ADS may include, but are not necessarily limited to, more intensive inspection procedures and already developed FAA-approved spar strap modifications.

**What does this AD require?** This AD supersedes AD 2000-23-01 to require the visual inspections of the forward, aft, and auxiliary wings spars for cracks more frequently on type design Model 402C airplanes. It adds inspection requirements for the Model 414A airplanes.

The AD does not affect those airplanes that incorporate a spar strap modification on each wing following Cessna Service Bulletin MEB02-5, dated June 24, 2002, and Cessna Service Kit SK402-47, dated June 24, 2002.

Provisions are included in this emergency AD to position the airplane to a home base, hangar, maintenance facility, etc.

### **Presentation of the Actual AD**

This rule is issued under 49 U.S.C. Section 44701 (formerly section 601 of the Federal Aviation Act of 1958), pursuant to the authority delegated to me by the Administrator, and is effective immediately upon receipt of this action.

**2005-05-51 THE CESSNA AIRCRAFT COMPANY: Directorate Identifier  
2005-CE-06-AD.**

### **When Does This AD Become Effective?**

- (a) This emergency AD becomes effective upon receipt.

### **Are Any Other ADs Affected By This Action?**

- (b) This AD supersedes AD 2000-23-01, Amendment 39-11971 (65 FR 70645).

## What Airplanes Are Affected by This AD?

(c) This AD affects Model 402C and 414A airplanes, all serial numbers, that:

(1) are certificated in any category; and

(2) do not incorporate a spar strap modification on each wing spar following Cessna Service Bulletin MEB02-5, dated June 24, 2002, and Cessna Service Kit SK402-47, dated June 24, 2002.

## What is the Unsafe Condition Presented in This AD?

(d) This AD is the result of extensive cracks found in the wing spars of two of the affected airplanes. We are issuing this AD to detect and correct cracking in the wing spars before the cracks grow to failure. Such wing failure could result in the wing separating from the airplane with consequent loss of control of the airplane

## What Must I do to Address This Problem?

(e) Inspections: Perform both an external and internal inspection of the forward, aft, and auxiliary wing spars for cracks at the times below that are applicable (pay particular attention to the areas specified in paragraph (f) of this AD). Do these inspections following the ACCOMPLISHMENT INSTRUCTIONS section of Cessna Service Bulletin MEB99-3, dated May 6, 1999 (Model 402C); or Cessna Service Bulletin MEB00-7, dated June 24, 2002 (Model 414A):

Affected Airplanes	Initial Inspection	Repetitive Interval
(1) For all Model 402C airplanes with fewer than 15,000 hours total time-in-service (TIS).	Upon accumulating 10,000 hours TIS on the airplane or at the next inspection that would have been required by AD 2000-23-01, whichever occurs later.	Thereafter at intervals not to exceed 110 hours until accumulating 15,000 hours TIS.
(2) For all Model 414A airplanes, serial numbers 414A0001 through 414A0047 and 414A0049 through 414A0200.	Upon accumulating 8,500 hours TIS on the airplane or prior to further flight after receipt of this AD, whichever occurs later. To return/position the airplane to a home base, hangar, maintenance facility, etc., you may operate the airplane up to 3 hours TIS provided the flight(s) occur(s) no later than 30 days after receipt of this emergency AD. Only the PILOT AND ANY ADDITIONAL FLIGHT CREW MEMBER REQUIRED FOR SAFE OPERATION is allowed for this flight; and FLIGHT INTO KNOWN OR FORECAST MODERATE OR SEVERE TURBULENCE IS PROHIBITED.	Thereafter at intervals not to exceed 15 hours TIS.

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<p>(3) For the following airplanes that have 15,000 hours or more TIS or upon accumulating 15,000 hours TIS:</p> <p>(i) All Model 402C airplanes.</p> <p>(ii) Model 414A airplanes, serial numbers 414A0201 through 414A1212.</p>	<p>Prior to further flight after receipt of this AD. To return/position the airplane to a home base, hangar, maintenance facility, etc., you may operate the airplane up to 3 hours TIS provided the flight(s) occur(s) no later than 30 days after receipt of this emergency AD. Only the PILOT AND ANY ADDITIONAL FLIGHT CREW MEMBER REQUIRED FOR SAFE OPERATION is allowed for this flight; and FLIGHT INTO KNOWN OR FORECAST MODERATE OR SEVERE TURBULENCE IS PROHIBITED.</p>	<p>Thereafter at intervals not to exceed 15 hours TIS.</p>
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(f) Specific Inspection Areas of Emphasis: When doing the inspections, pay particular attention to the following areas:

(1) Just Outboard of the Engine Beam

- (i) The lower spar cap at Wing Station (WS) 114.
- (ii) The three rivets on both the inboard and outboard sides of WS 114 (total of six rivets) in the lower spar cap as viewed from the access hole.
- (iii) The spar web at WS 112.5.

(2) Just Inboard of the Inboard Engine Beam

- (i) The lower spar cap between WS 80 and WS 89.
- (ii) The two attach bolts just inboard of the WS 89.18 rib.

(g) Cracks found: If you find any crack on any forward, aft, or auxiliary wing spar; or in surrounding structure such as spar webs or skins during any inspection required by this AD, prior to further flight do the following:

- (1) Obtain an FAA-approved repair scheme from the Cessna Aircraft Company, P.O. Box 7706, Wichita, Kansas 67277; telephone: (316) 941-7550, facsimile: (316) 942-9008; and
- (2) Incorporate this repair scheme.

(h) Reporting Requirement: As soon as possible, but no later than 24 hours after any inspection required by this AD:

- (1) Submit a report of inspection findings to the Manager, Wichita Aircraft Certification Office (ACO), by fax: (316) 946-4107.
  - (i) Include a report for “cracks found” or “no cracks found” on the initial inspection; and
  - (ii) Include a report only for “cracks found” on the repetitive inspections.

(2) The report must include your name and a contact phone number, the results of the findings, a description of any cracking found, the airplane serial number, and the total number of hours TIS on the airplane. The “Lower Wing Spars and Skin Inspection Report” included as page 6 of Cessna Service Bulletin MEB99-3, dated May 6, 1999, may be utilized for this reporting requirement.

**May I Request an Alternative Method of Compliance?**

(i) You may request a different method of compliance or a different compliance time for this AD by following the procedures in 14 CFR 39.19. Unless FAA authorizes otherwise, send your request to your principal inspector. The principal inspector may add comments and will send your request to the Manager, Wichita Aircraft Certification Office, FAA. For information on any already approved alternative methods of compliance or for further information about this AD, contact Paul Nguyen, Aerospace Engineer, FAA, Wichita Aircraft Certification Office, 1801 Airport Road, Mid-Continent Airport, Wichita, Kansas 67209; telephone: (316) 946-4125; facsimile: (316) 946-4107; e-mail: [paul.nguyen@faa.gov](mailto:paul.nguyen@faa.gov).

**May I Get Copies of the Documents Referenced in this AD?**

(j) You may get copies of the documents referenced in this AD Cessna Aircraft Company, Product Support P.O. Box 7706, Wichita, Kansas 67277; telephone: (316) 517-5800; facsimile: (316) 942-9006.

Issued in Kansas City, Missouri, on February 20, 2005.

David R. Showers,  
Acting Manager, Small Airplane Directorate,  
Aircraft Certification Service.