

R2, which applies to all Cessna Aircraft Company (Cessna) Models 401, 401A, 401B, 402, 402A, 402B, 411, and 411A airplanes. AD 79-10-15 R2 currently requires repetitive inspections of the right and left wing spar lower cap areas for fatigue cracks and requires wing spar cap repair or replacement as necessary. Cessna has performed fatigue and crack growth analyses of the wings of these airplanes, and the Federal Aviation Administration (FAA) has evaluated this information and determined that a wing spar modification is necessary as well as periodic inspections. The earlier NPRM would have required you to repetitively inspect the wing spar caps for fatigue cracks with any necessary repair or replacement on all airplanes and incorporate a spar strap modification on each wing spar on certain airplanes. We received a request to reopen the comment period for this action in order to allow more time to evaluate the impact of the actions of the proposed AD. Therefore, we are reopening the comment period to allow the public additional time to comment on the proposed AD.

DATES: The Federal Aviation Administration (FAA) must receive any comments on this proposed rule on or before December 8, 2003.

ADDRESSES: Submit comments to FAA, Central Region, Office of the Regional Counsel, Attention: Rules Docket No. 2002-CE-05-AD, 901 Locust, Room 506, Kansas City, Missouri 64106. You may view any comments at this location between 8 a.m. and 4 p.m., Monday through Friday, except Federal holidays. You may also send comments electronically to the following address: 9-ACE-7-Docket@faa.gov. Comments sent electronically must contain "Docket No. 2002-CE-05-AD" in the subject line. If you send comments electronically as attached electronic files, the files must be formatted in Microsoft Word 97 for Windows or ASCII text.

You may get service information that applies to this proposed AD from the Cessna Aircraft Company, Product Support, P.O. Box 7706, Wichita, Kansas 67277; telephone: (316) 517-5800; facsimile: (316) 942-9006. You may also view this information at the Rules Docket at the address above.

FOR FURTHER INFORMATION 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.

SUPPLEMENTARY INFORMATION:

Comments Invited

How Do I Comment on This Proposed AD?

The FAA invites comments on this proposed rule. You may submit whatever written data, views, or arguments you choose. You need to include the proposed rule's docket number and submit your comments to the address specified under the caption **ADDRESSES**. We will consider all comments received on or before the closing date. We may amend this proposed rule in light of comments received. Factual information that supports your ideas and suggestions is extremely helpful in evaluating the effectiveness of this proposed AD action and determining whether we need to take additional rulemaking action.

Are There Any Specific Portions of This Proposed AD I Should Pay Attention to?

The FAA specifically invites comments on the overall regulatory, economic, environmental, and energy aspects of this proposed rule that might suggest a need to modify the rule. You may view all comments we receive before and after the closing date of the rule in the Rules Docket. We will file a report in the Rules Docket that summarizes each contact we have with the public that concerns the substantive parts of this proposed AD.

How Can I Be Sure FAA Receives My Comment?

If you want FAA to acknowledge the receipt of your mailed comments, you must include a self-addressed, stamped postcard. On the postcard, write "Comments to Docket No. 2002-CE-05-AD." We will date stamp and mail the postcard back to you.

Discussion

What Events Have Caused This Proposed AD?

Reports of fatigue cracks on Cessna 401, 402, and 411 series airplanes caused FAA to take AD action (AD 79-10-15 R2, Amendment 39-3711) to require repetitive inspections of the right and left wing spar lower cap areas for fatigue cracks and to require wing spar cap repair or replacement as necessary.

Accomplishment of the inspections required by AD 79-10-15 R2 is required in accordance with Cessna Service Bulletin ME79-16, Revision 3, dated February 8, 1980.

AD 79-10-15 R2 allowed for the incorporation of Cessna Service Kit SK402-36 or SK411-56 on the front wing spar lower cap as terminating

action for the repetitive inspections on the applicable wing.

Since issuance of AD 79-10-15, Cessna has analyzed the wing, including fatigue and crack growth analyses, on the affected airplanes. Analysis included:

- A determination of the probable location and modes of damage based on analytical results, available test data, and service information;
- Classical fatigue analyses;
- Crack growth and residual strength analyses including use of linear elastic fracture mechanics methods;
- Full-scale ground testing to validate analytical models; and
- A flight strain survey to develop stress spectra used in the analyses.

The inspections required by AD 79-10-15 R2 in accordance with Cessna Service Bulletin ME79-16, Revision 3, are accomplished using a surface eddy current inspection method.

Based on the analysis, Cessna has found that the eddy current method will not find the crack until it is .03 inch longer than the critical crack length. When the crack reaches the critical length, it is not reliably detectable because it is under the head of the fastener. Once the main spar cap is severed, the remaining structure will no longer meet the residual strength requirements. Wing separation could then occur under loading conditions significantly less than those established for the design limit load.

Cessna reported only one instance where cracks were detected using the nondestructive inspection (NDI) eddy current procedure. There are other reported instances where cracks were detected visually in the wheel well area on the aft flange. The problem with visual inspections is the access doubler flanges cover a large percentage of the forward spar flange. This limits the effectiveness of the visual inspections.

To meet industry NDI standards, cracks need to be found on Cessna Models 401, 401A, 401B, 402, 402A, 402B, 411, and 411A airplanes through NDI inspection methods with a 90-percent probability of detection at a 95-percent confidence level.

Cessna's analysis indicates that the probability and confidence levels are not being met.

What Are the Consequences if the Condition Is Not Corrected?

This condition, if not corrected could result in wing spar cap failure due to undetected fatigue cracks. Such failure could result in loss of a wing with consequent loss of airplane control.