Australian Government
Civil Aviation Safety Authority

Airworthiness Bulletin

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Cessna 400 - Inspection of Bonded Wing Spar Webs

An Airworthiness Bulletin is an advisory document that alerts, educates and makes recommendations about airworthiness matters. Recommendations in this bulletin are not mandatory.

1. Effectivity

All Cessna 404 and 441 series aircraft.

2. Purpose

To provide additional information and inspection advice for the control of corrosion and delamination of Bonded Wing Spar Webs.

3. Background

In 2018 CASA reviewed Airworthiness Directive (AD) AD/CESSAN 400/103 Amdt 3 related to Wing Spar Web debonding. The AD review was initiated due to an unsupported alternate NDT procedure referenced in the AD.

Since the initial issue of the Directive Textron have developed and published Cessna SID 57-10-07 and SID 58-10-07 to detect and control web spar debonds on Cessna 404 and 441 models respectively.

The accomplishment of the Cessna SIDs are mandatory in Australia under CASA Aviation Ruling 01/2014 therefore the CASA Airworthiness Directive AD/CESSNA 400/103 Amdt 3 was cancelled to avoid duplication of mandatory requirements.

The review included an assessment of the submitted defect reports with most being for minor defects/debonding due to corrosion on the wing spar web. Textron have advised that delamination of the order of 1 inch square were minor and not of immediate safety concern. The SID inspection repeat cycle of 5 years is based on the available reported incidents of corrosion in world fleet.

The cancelled CASA Airworthiness Directive required inspections annually and Australian SDR data indicates that the debond of wing spar webs can be detected at these reduced intervals where repairs can be more economic. On some occasions the extent of corrosion was however extensive and as a part of the AD review CASA ensured that all findings were reported to Textron for their management of the condition.

It should be remembered that corrosion initiation is predominately a calendar based event. Exposure in an unprotected environment increases the chance of corrosion developing, however delamination can be exacerbated by high ground-air-ground cycles where trapped moisture can potentially freeze during flight at cruise levels.

The Cessna SIDs contain a Corrosion Severity Map of Australia and surrounds. Typically the map shows severe band around the coast line indicating the sea as the salt source however due to the numerous inland salt lakes, dust and minerals, the severe environment areas annotated on the maps may not be representative of all factors contributing to corrosion in Australia

4. Summary and Recommendations

Cessna SID accomplishment is mandatory in Australia under Aviation Ruling 01/2014, the CASA considers that the condition of delamination in the bonded wing spar webs is being adequately managed by the manufacturer.

However, it is recommended in Australia, especially when operating in a severe environment that the bonded wing spar webs be inspected using the ultrasonic inspection described in the SID at reduced intervals, in some cases annually. Early detection is likely to result in more manageable and economic repairs. Reliance on visual inspections is unlikely to detect the issue and the underlying structure can be extensively damaged before any visual swelling is noticed

6. Reporting

All defects found as a result of SID inspections or additional inspections should be reported to CASA via the DRS system as required by the legislation.

7. Enquiries

Enquiries with regard to the content of this Airworthiness Bulletin should be made via the direct link email address:

AirworthinessBulletin@casa.gov.au

or in writing, to:

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