Australian Government
Civil Aviation Safety Authority

AIRWORTHINESS BULLETIN

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CASA Interpretation of CAA NZ AD DCA/GEN/36A Parts manufactured by Croydon Aircraft Company

1. Effectivity

All aircraft fitted with parts manufactured by the Croydon Aircraft Company Limited.

2. Purpose

To provide additional clarification on what constitutes “acceptable technical data” for the purposes of conducting an “inspection for conformity” in order to comply with Note 2 of NZ CAA Airworthiness Directive (AD) DCA/GEN/36A and the other related ADs.

3. Background

NZ CAA AD DCA/GEN/36A became effective on 9 March 2018. Under the automatic acceptance provisions of CASR Part 39, this AD is also applicable to Australian operators of affected aircraft.

This AD affects parts that were primarily supplied for de Havilland DH.60, DH.82 and DH.83 series aircraft, but could also include other makes and models.

4. Recommendations

As per Note 2 of the NZ CAA AD which states:

“Affected parts can only be returned to service if inspected for conformity to acceptable technical data and an appropriate release to service made.”

Acceptable technical data

For the purposes of complying with this note, “acceptable technical data” should be taken to mean data that meets the requirements as defined in Part 21.008 (a) of the *Civil Aviation Safety Regulations 1998* (CASR) - in particular, parts (a) (i) and (ii) which specify the drawings, materials and processes specified in the type design.

This data will be specified in the approved STC data package for the relevant part which would include drawings as well as documents attesting to appropriate wood selection, manufacturing processes such as gluing, machining and protective coating applications.

However, composite or laminated spars were subject to a comprehensive manufacturing processes for which appropriate records, coupons and glue

samples may not be known to exist. These records greatly assist in attesting to the completeness and acceptability of the design. Therefore, without such documentation, composite or laminated spars cannot automatically be considered to have been manufactured to acceptable or complete technical data.

In the absence of appropriate manufacturing documents or records for the composite or laminated spars, an alternative approach for returning these spars to service is for the applicant to conduct any necessary testing to verify that the manufacturing processes applied during manufacture of the laminated or composite spar in question were appropriate.

Any conformity inspection procedure with technical data for the return to service of these Croydon Aircraft Company wooden spars will need to be approved under ***CASR 39.004(2) Approvals and exclusions in relation to airworthiness directives*** as an Alternative Means of Compliance (AMOC) to the AD for either solid or composite/laminated spars. The nature and extent of this process will vary between solid and composite/laminated spars.

Conformity

To satisfy the conformity requirements for return to service specified in NZ CAA AD DCA/GEN/36A, and other NZ CAA ADs related to Croydon Aircraft Company wing and aileron spars, CASA recommends that the person inspecting the spars should refer to CASR 21.033 parts (2) (b), (c) and (d) for what is necessary to conduct a conformity inspection.

As previously stated, the type design is contained within the relevant STC data package for the part concerned, which would include the drawings and any additional relevant instructions promulgated by the manufacturer (Type design holder).

The purpose of the conformity inspection is to satisfy the conformity inspection requirements of the applicable AD that is intended to confirm that the installed wooden spar being inspected has been manufactured to the type design data that was approved for its construction.

A conformity inspection of the solid wood and/or laminated spars produced by Croydon Aircraft Company should consist of the following, which is not an exhaustive list:

Technical data

Obtaining the necessary relevant technical data can be achieved through contacting Croydon Aircraft Company and/or other sources:

a. Copies of the type design drawings for the applicable STC. These drawings will need to identify all dimensions of the woodens spar and any protective coatings that are applied.

b. A copy of the goods inwards documentation for the wood used in the wooden spar fitted to the aircraft being inspected. This is needed to confirm that that the correct wood has been used to manufacture the spar.

c. For laminated/composite wooden spars the gluing of the laminates is critical and needs to be verified if there is no acceptable manufacturing documentation to demonstrate that the gluing process was followed per the defined type design specification. This will require at least:

   i. samples from the manufacturer for the spar in question being provided, or otherwise

   ii. the applicant conducting tests on the samples taken from the spar in question. If samples need to be taken from the wooden spar undergoing the conformity inspection, then the spar must be repaired using approved repair data.

d. Reference can be made to *FAA Aircraft Mechanic Handbook Chapter 6 Aircraft Wood and Structural Repair* and *UK Civil Aviation Authority (CAA) Leaflet 51-10* for information about gluing of wood and testing of glued wooden joints.

Inspection process

An inspection will identify at least the following:

a. The AD that this conformity inspection is aimed at compliance with.

b. Inspect for and record the identification markings on the solid wooden spar.

c. Confirmation of the wood used in the construction of the solid wooden spar.

d. Confirmation of the protective coating applied.

e. Critical dimensions to be checked during the conformity inspection. This will at least include:

   i. web thickness,

   ii. inside radii of spar cut outs,

   iii. upper and lower spar cap thickness and width,

   iv. height, front and rear faces and length of spar,

   v. grain orientation, and

vi. any unacceptable defects such as cross grain, hard knots, shakes and splits, compressions, etc.

f. The number of locations, which need to be identified, along the solid wooden spar that the measurements are to be taken. It would be expected that at least three inspection locations are required as a minimum but four would be preferred.

g. For laminated or composite spars, the inspection procedure should include the number of test samples to confirm the gluing process was carried out correctly and should include, location of the samples from the spar if they are not available from the manufacturer, testing method/technique of glue joint procedure, testing environment and recording of results.

AMOC application process

A blank conformity inspection record (conformity procedure), shall be developed by the authorised person intending to conduct the conformity inspection and submitted to CASA as part of the AMOC application. The conformity inspection record should identify, as a minimum:

a. the aircraft by registration and serial number,

b. wooden spar identification, which should state if it is a solid or laminate spar,

c. the applicable technical data requirements as per the relevant sub-paragraphs of the Technical data section above:

   i. for solid spars: a & b, and

   ii. for composite/laminated spars: a-d inclusive.

d. the applicable inspection process intended to be used as per the relevant sub-paragraphs of the Inspection process above:

   i. for solid spars: a-f inclusive, and

   ii. for composite/laminated spars: a-g inclusive.

e. the name of the person conducting the inspection,

f. their authorisation/licence number,

g. start date of inspection,

h. completion date, and

i. signature block.

After generating the blank conformity inspection record (tailored for either the solid or a composite/laminated spar), it will be required to be submitted to CASA under CASR 39.004(1) for review and if found acceptable the conformity inspection process can then be approved as an AMOC against the applicable AD related to Parts Manufactured by the Croydon Aircraft Company under CASR 39.004(2).

Once the conformity inspection procedure has been conducted/carried out, a copy of the completed conformity inspection record and all referenced documentation should be included with the aircraft maintenance documentation.

For additional information on Certification Conformity reference can be made to Draft CASA Advisory Circular (AC) 21-26 v1.0 dated August 2014.

If the person conducting the conformity inspection has any doubt or concerns about generating the conformity inspection procedure, recording records or the type design data, they should contact an appropriate CASR 21M authorised person.

5. Reporting

A copy of the completed conformity inspection records should be forwarded to the CASA Regional Office that has oversight of the aircraft concerned.

6. Supporting Documentation

1. NZ CAA AD DCA/GEN/36A Parts manufactured by Croydon Aircraft Company.
2. NZ CAA AD DCA/DH82/129B Croydon Manufactured Wing and Aileron Spars – Inspection.
3. NZ CAA AD DCA/DH60/111B Croydon Manufactured Wing and Aileron Spars – Inspection.
4. NZ CAA AD DCA/DH83/105B Croydon Manufactured Wing and Aileron Spars – Inspection.
5. CASA draft Advisory Circular 21-26 v1.0
6. FAA Aircraft Mechanic Handbook Chapter 6 Aircraft Wood
7. Structural Repair and UK Civil Aviation Authority (CAA) Leaflet 51-10

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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