Australian Government
Civil Aviation Safety Authority

AIRWORTHINESS BULLETIN

Bell 206 Main Rotor Blade Cracking

AWB 62-003 **Issue** : 1
Date : 13 November 2006

Purpose

The purpose of this AWB is to alert operators to the possibility of a crack developing in the main rotor blade of the Bell 206 helicopter.

Background

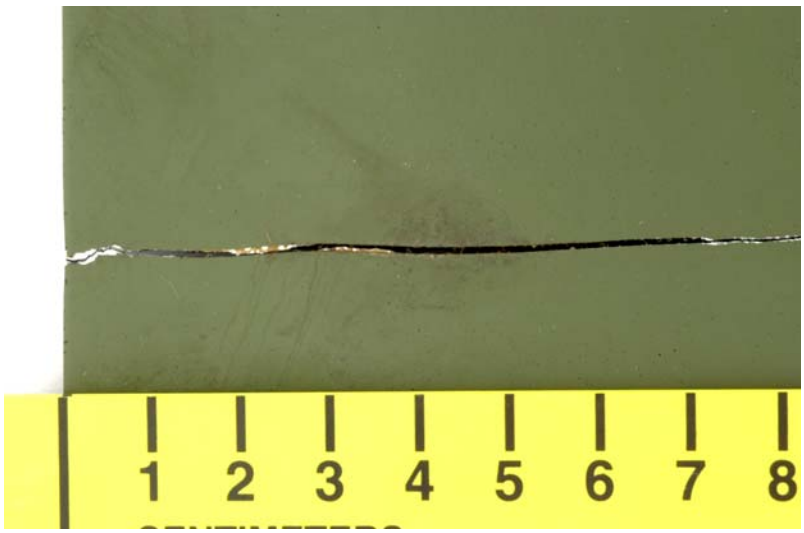
A large crack was discovered in a main rotor blade of an Australian Army Kiowa (civilian Bell 206) helicopter. The crack was running chordwise through the trailing edge of the blade and located approximately 1.5 metres from the blade root. The blade had accumulated approximately 2913 hrs TSN. See figure 1 below for crack location.

Figure 1 showing crack location

The skin crack was found to extend from the trailing edge towards the leading edge for a length of just over 200mm in both the upper and lower skins. More detailed examination of the upper skin revealed a discoloured patch of paint surrounding the crack, located approximately 45mm from the trailing edge (see figure 2 below). After sectioning of the blade, further examination of the fracture surface showed that the trailing edge spar had failed as a result of a fatigue crack, which had initiated at the forward face of the trailing edge spar (red arrow in

figure 3 below). The initiation point was examined and found to contain corrosion product, indicating the crack initiation was most likely due to a corrosion pit in the spar. How moisture ingress occurred to this location is not yet known.

Figure 2 Close up of skin crack.



Measurement in cm.

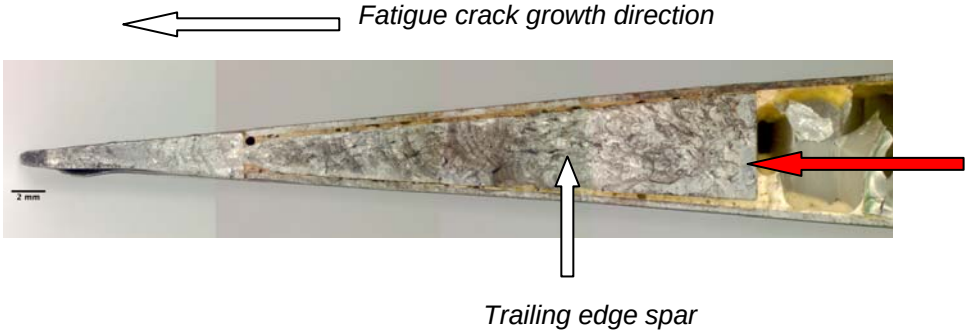


Figure 3 fatigue crack initiation point – crack initiation point indicated by red arrow.

Recommendation

The DSTO (Defence Science and Technology Organisation) is still investigating the failure. Until further information is received, it is strongly recommended that all operators;

1) Inspect the entire upper and lower blade surface, and in particular the trailing edge, for cracks, paint damage or evidence of paint bulging caused by corrosion. Undetected corrosion could eventually result in fatigue crack initiation.

2) Consult relevant manufacturer's information on detection and repair of cracking or corrosion.

If unexplained vibration or tracking and balance problems occur, this could be an indicator of a hidden blade crack. CASA strongly recommends that you land immediately and do not operate the helicopter until a thorough inspection is carried out to determine the cause of the vibration.

If there is any doubt about whether skin corrosion is significant or if you suspect there may be a crack, but can't see it (it may be hidden beneath the skin), then contact the manufacturer for further advice. CASA should also be notified by completion of a SDR defect report form.

Enquiries

Enquiries with regard to the content of this Airworthiness Bulletin should be made via the direct link e-mail address: AirworthinessBulletin@casa.gov.au

Or in writing, to:

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