

AUSTRALIAN SPORT ROTORCRAFT ASSOCIATION INC



ABN 53 412 417 012

SAFETY DIRECTIVE

No: 2019.01

Date: 30 March 2019

Subject: Titanium Aircraft Group (TAG) Gyroplanes – All models

Background.

In February 2019, a TAG gyroplane was seen to crash into the sea off the coast of WA after the rotor system detached from the airframe. Both occupants of the gyroplane suffered fatal injuries.

Inspection of the wreckage revealed that the joiner plates of the folding mast system had failed. The mechanical cause of the failure has not yet been determined, pending the finalisation of several scientific and metallurgical inquiries.

Subsequently, the wreckage was released into the custody of the wife and mother of the 2 deceased who asked a friend to dispose of it. Whilst cutting the rotor blades to facilitate easier disposal, he noticed that a leading edge balance rod was missing. He finally discovered that the end cap of the same blade was also missing. The whereabouts of the missing rod and end cap is unknown. There is no evidence to suggest mishandling or mismanagement of the wreckage after the W.A. Coroner's Office released it.

This observation raises a **real possibility** that the balance rod had departed the Forrest Beach Titanium Explorer rotor under centrifugal force during cruise, which – if this occurred – would have resulted in an instantaneous and massive rotor imbalance. Where massive in-flight rotor imbalances occur (in helicopters), it is usual for the rotor support structure to fail almost instantaneously as well because the imbalance forces are so extreme.

There is a **real possibility**, therefore, that if such a massive instantaneous rotor imbalance occurred with the Forrest Beach Titanium Explorer, then the failure of the folding-mast side-plates would have been a secondary, rather than primary cause of the double fatality.

A **real possibility** exists that the balance rod arrangement of some TAG rotors may be affected. Because owners have no feasible way of inspecting and checking the integrity of the balance rods of their blades, ASRA must take definitive action.

Urgent follow-up inquiries will now be undertaken in relation to the integrity or otherwise of the October 2018 Orange fatality rotors. Urgent follow up inquiries will also be initiated with TAG Aviation concerning the integrity of the mass balance and weighting of their rotor system.

In the meantime, ASRA considers that this very serious question mark over the TAG rotor system represents a serious and imminent risk to flight safety.

Directive.

With immediate effect, all gyroplanes manufactured by the Titanium Aircraft Group (TAG) are grounded until further notice.

Follow-up.

The manufacturer has advised that not all blades are affected, as some use lead shot encased in a carbon fibre sock for balance purposes. All owners must contact the gyroplane manufacturer to determine if their gyroplane is affected.

ASRA may progressively lift this grounding order on a machine-by-machine basis once the following steps in relation to each machine are undertaken:

- (1) The present owner ensures that he or any person likely to fly their Titanium immediately desists from flying;
- (2) The present owner then contacts TAG to determine whether the rotor fitted to their Titanium may be affected;
- (3) TAG in-turn informs both the owner and ASRA whether the rotor blades fitted to that particular machine are affected or not; and
- (4) The ASRA Operations Manager may then remove the particular gyroplane from the general grounding order if and only if TAG have given written assurances that the rotor blades on that particular machine are not affected.
- (5) If the ASRA Operations Manager exempts a particular Titanium from this general grounding order, then that fact is to be immediately entered into the gyroplane logbook and the rotor system is retained on that gyroplane until further notice and not swapped over to another machine.



Allan Wardill
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Saturday, 30 March 2019