Civil Aviation Authority

SAFETY NOTICE

Number: SN–2021/016

Issued: 9 September 2021

Rudder Lower Pintle Pivot Pin
British Aircraft Corporation 167 Strikemaster and Jet Provost (All Marks)

This Safety Notice contains recommendations regarding operational safety.

Recipients must ensure that this Notice is copied to all members of their staff who need to take appropriate action or who may have an interest in the information (including any 'in-house' or contracted maintenance organisations and relevant outside contractors).

Applicability:	
Aerodromes:	**Not primarily affected**
Air Traffic:	**Not primarily affected**
Airspace:	**Not primarily affected**
Airworthiness:	**All BCAR A8-23 / A8-24 / A8-25 Organisations**
Flight Operations:	**All British Aircraft Corporation (BAC) 167 Strikemaster and Jet Provost operators**
Licensed/Unlicensed Personnel:	**All maintenance engineers in airworthiness organisations operating, servicing, maintaining BAC 167 Strikemasters and Jet Provost (All Marks)**

1 Introduction

1.1 A number of British Aircraft Corporation (BAC) 167 Strikemaster and Jet Provost aircraft operate on a National Permit to Fly on the UK civil register for which this Safety Notice (SN) is concerned.

1.2 On 5 October 2006, a BAC 167 Strikemaster VH-AKY, suffered an in-flight break-up 20 km NE Bathurst, NSW, Australia. The subsequent Australian Transport Safety Bureau (ATSB) 200605843 accident investigation determined that the break up and loss of the aircraft may have been initiated by the separation of the aircraft rudder and mass balance assembly, resulting in the loss of the vertical stabiliser (fin), elevator and horizontal stabiliser assembly (tailplane), and starboard wing.

It is possible that the separation of the rudder and mass balance assembly may have been the result of a failure or loss of the rudder lower pintle pivot pin castellated securing nut (Appendix 1 Fig 23). Such a loss or failure could be caused by:

- Damage to the pin thread or castellated nut (stripped or missing threads)
- A missing nut locking split pin, and incorrect assembly of the nut
- Failure of the castellated nut or threads due to excessive corrosion

1.3 The ATSB report was not able to conclusively attribute the missing castellated nut as the actual cause of the rudder separation, or positively confirm the mechanism for the loss or failure of the locking nut, since the nut was not recovered from the wreckage. However, there was sufficient evidence from the wreckage and examination of the pivot pin to establish that a deficiency in the lower nut engagement of the pin had been identified, along with evidence of stripped nut and pin threads. Consequently, the effective nut-pin engagement was estimated to be less than two effective full threads (See Appendix 1 Fig 24, 25 and 26). It was not determined if the locking split pin failure had occurred during the accident or was missing prior to the accident.

1.4 During a routine annual maintenance inspection in 2012, a BAC 167 Strikemaster operator found an instance of a loose and partially thread stripped pintle pivot pin lower castellated nut. The stripped nut was only being held in place by its locking split pin. The defective part/s were subsequently replaced.

1.5 The purpose of this SN is to highlight this particular deficiency in the rudder lower pintle pivot pin assembly and recommends that owners and operators of BAC 167 Strikemaster and Jet Provost aircraft carry out inspection of the affected pintle pin and nut at the next scheduled maintenance necessitating removal of the aircraft rudder assembly and engine jet pipe. Subsequent inspections should be carried out annually during scheduled maintenance activities.

2 Recommended Actions to be Taken

2.1 For any applicable BAC 167 Strikemaster and Jet Provost aircraft, it is recommended that operators should carry out an inspection of the affected part/s as per section 1.5 above, and subsequent inspections annually, by way of:

Removal of the relevant fairings, rudder assembly and jet pipe in order to access the lower rudder pintle pivot pin assembly for inspection.

1) With access to the lower pivot pin assembly, check the castellated top and bottom nuts for correct installation, torque/tightness, and the presence of a locking split pin.

2) With the rudder assembly and jet pipe removed, inspect the condition of the securing nuts and threads on the pin. Inspect the surface condition of the nuts and the threads for corrosion or damage.

3) If during inspection, any defects to the nuts, pins or threads are found, take corrective measures by way of suitable repair or replacement of defective parts, and report to CAA GA Unit in Section 3 below.

3 Queries

3.1 Any queries or requests for further guidance as a result of this communication should be addressed to the GA Unit, Safety & Airspace Regulation Group, Civil Aviation Authority, Aviation House, Gatwick Airport South, West Sussex RH6 0YR. Tel: +44 0330 1383495 E-mail: ga@caa.co.uk

4 Cancellation

4.1 This Safety Notice will remain in force until further notice.

Appendix 1

BAC 167 Strikemaster Rudder Lower Pintle Pivot Pin

Figure 23: Lower pivot pin assembly. Pivot pin (green) and lower castellated nut (red)

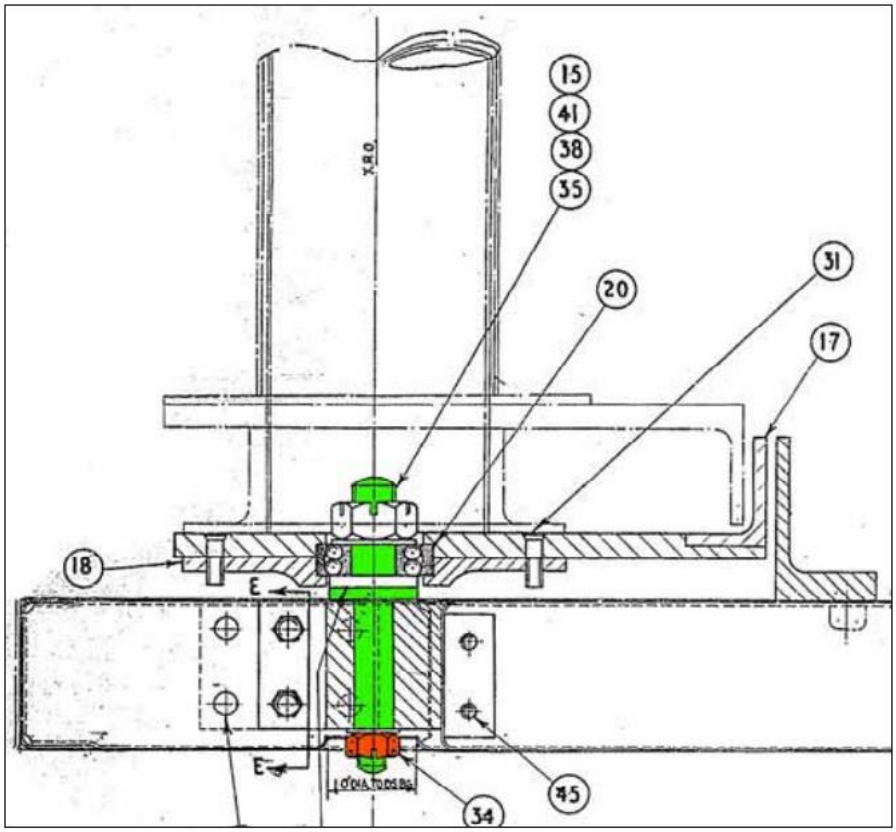

Image source: BAC drawing number K145-12-667.

BAC 167 Strikemaster Rudder Lower Pintle Pivot Pin

Figure 24: Rudder lower hinge pin

BAC 167 Strikemaster Rudder Lower Pintle Pivot Pin

Figure 25: Thread remnants on rudder lower hinge pin

BAC 167 Strikemaster Rudder Low Pintle Pivot Pin

The ATSB found that the lower castellated nut had been screwed down the threaded shank such that only one full thread of the nut body had engaged the pin threads. The majority of the nut threads had entered the unthreaded, reduced-section shank between the threads and the main body of the pin (Figure 26).

Figure 26: Illustration of over-engaged (left) and normally-engaged (right) pivot pin nuts