

GENERAL INFORMATION

Identification number:	2006138
Classification:	Serious incident
Date, time ¹ of occurrence:	12 December 2006, 09.45 hours
Location of occurrence:	30 NM north of Spijkerboor VOR
Aircraft registration:	N840PN
Aircraft model:	Gulfstream American 690C Jetprop 840
Type of aircraft:	Fixed wing
Type of flight:	Non-scheduled commercial
Phase of operation:	Descent
Damage to aircraft:	None
Cockpit crew:	One
Passengers:	Four
Injuries:	None
Other damage:	None
Lighting conditions:	Daylight

SUMMARY

At the start of descent the pilot noticed that the left power lever had jammed. In an attempt to move the power lever, the cable appeared to break and the power lever became disconnected. The pilot shut down the left engine, but attempts to feather the propeller failed. The pilot managed to land the aircraft safely at the destination airport.

FACTUAL INFORMATION

The flight

The flight from Shannon International Airport (EINN) to Lelystad Airport (EHLE) proceeded normally until top of descent, when the pilot noticed that he could not move the left power lever. After some attempts to move the power lever, the cable appeared to break and the power lever became disconnected. The pilot shut down the left engine, but attempts to feather the propeller failed. The propeller was windmilling which caused severe drag on that side. The pilot selected full power on the right engine and had to maintain the speed above 150 knots to keep comfortable control. He attempted to restart the left engine, but almost immediately lost control as the left engine went from windmilling to acceleration with full power. The attempt was therefore aborted, the pilot declared an emergency and switched the transponder to the emergency setting 7700. Air traffic control offered an

¹ All times in this report are local times unless otherwise specified.

immediate landing at Amsterdam Schiphol Airport (EHAM), but the pilot chose to continue to the original destination. According to a statement of the pilot this decision was made because he wanted to fly to an area clear of population with flat terrain. He transferred maximum possible fuel to the right side to assist in balancing the aircraft and established that he could comfortably fly the aircraft level in a clean configuration at 140 knots. A flapless approach and safe landing were made on runway 23 at EHLE.

The aircraft

The aircraft was a Gulfstream American 690C Jetprop 840 powered by two Garrett Turbine TPE331-10T turboprop engines driving two Hartzell 3-blade propellers. The aircraft was manufactured in 1981 and had a valid certificate of airworthiness.

The pilot

The pilot of the aircraft was a 48 year old male of Irish nationality.

Total experience in hours	5800
Experience on type in hours	290

Table 1: Flying experience pilot.

The weather

At the time of the incident the temperature was 5 degrees Celsius and the wind-force 10 knots out of direction 210 degrees. The visibility was more than 10 kilometres and no clouds were present.

INVESTIGATION AND ANALYSIS

The propeller of the left engine, including the propeller feathering mechanism, was removed and sent for investigation to a propeller repair and overhaul company in the United Kingdom. The propeller feathering mechanism was investigated with a representative of the United Kingdom Air Accidents Investigation Branch (AAIB) attending. This analysis is based on the contents of the propeller investigation report and additional information supplied by the pilot.

Jamming of the power lever

The jamming of the power lever was most likely caused by freezing of moisture in the throttle cable sleeve. There is a part of this which runs along the leading edge of the wing and is exposed to low temperatures at high altitude.

Failure of the propeller to feather

Figure 1 shows the propeller spring assembly components. On this propeller, feather is accomplished by use of blade counterweights and a feathering spring in the prop dome. During normal operations, engine oil pressure is used to drive the propeller pitch change piston. When the propeller is feathered, a valve opens and dumps the oil in the prop dome back to the engine gear case. This allows the counterweights, plus the feathering spring in the prop dome, to drive the blades to the feathered position.

Both parts of the split retainer were missing. All the components present were in good condition, the unit was 300 hour old.

The investigation concluded that the feathering problem was caused by the spring kit split retainer becoming somehow detached from the groove in the rear of the piston rod, see

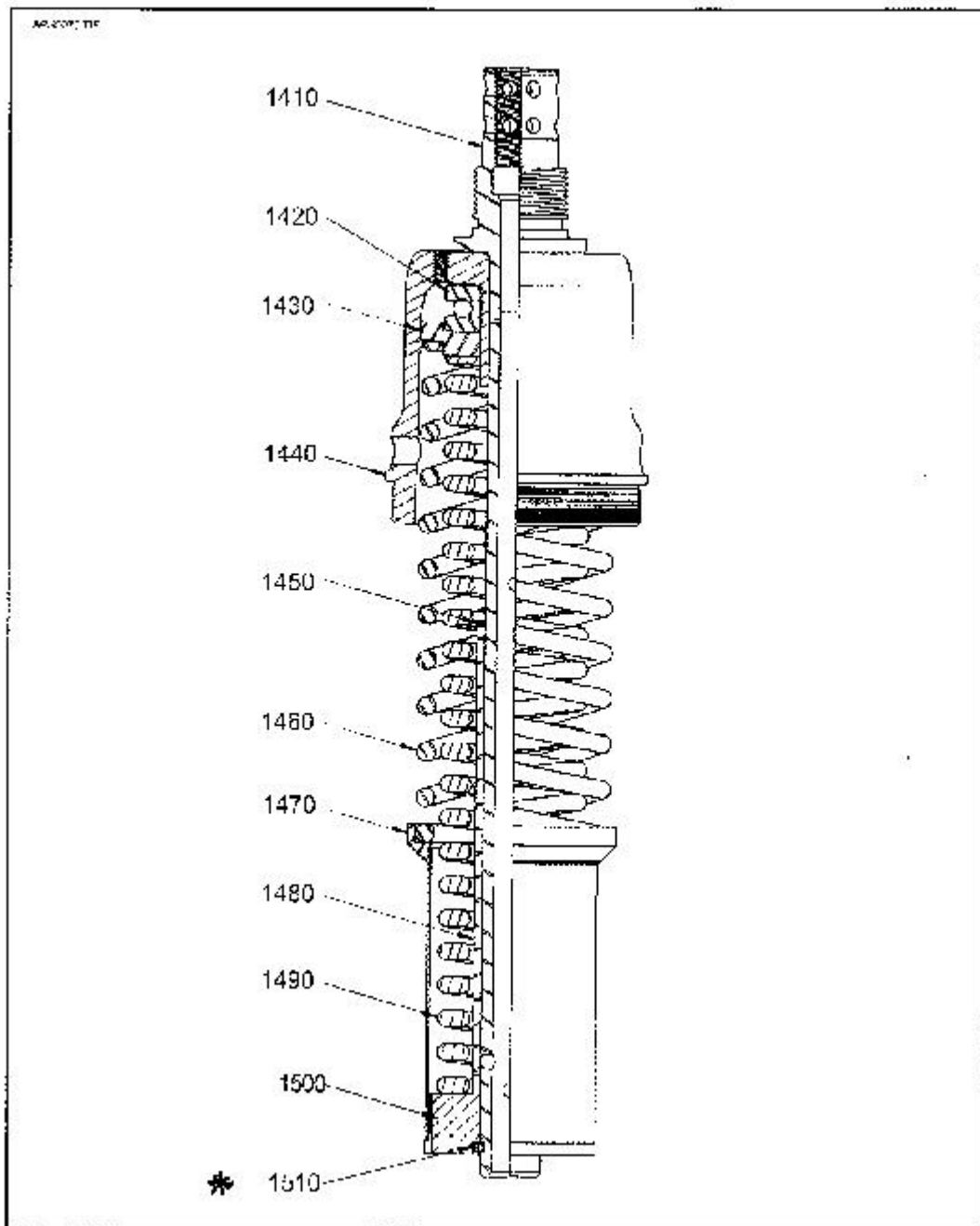


Figure 1: Propeller feathering mechanism spring assembly. The split retainer is component number 1510, indicated with a '*'.

figures 2 and 3. In this condition, the feathering spring does not apply any force on the piston rod. Without the spring kit assistance the only aid to feather the propeller would be the blade clamp counterweights.

The reason why the split retainer was missing could not be determined.

With the split retainer missing, the propeller can be moved throughout its operational range by hand. Checking this is not part of the pre-flight checklist however and would normally not be detected. The pilot declared that he had feathered the propeller on a training flight some three weeks before the occurrence of the incident, and the mechanism then seemed to be functioning correctly. This makes it unlikely that the split retainer was not originally installed.

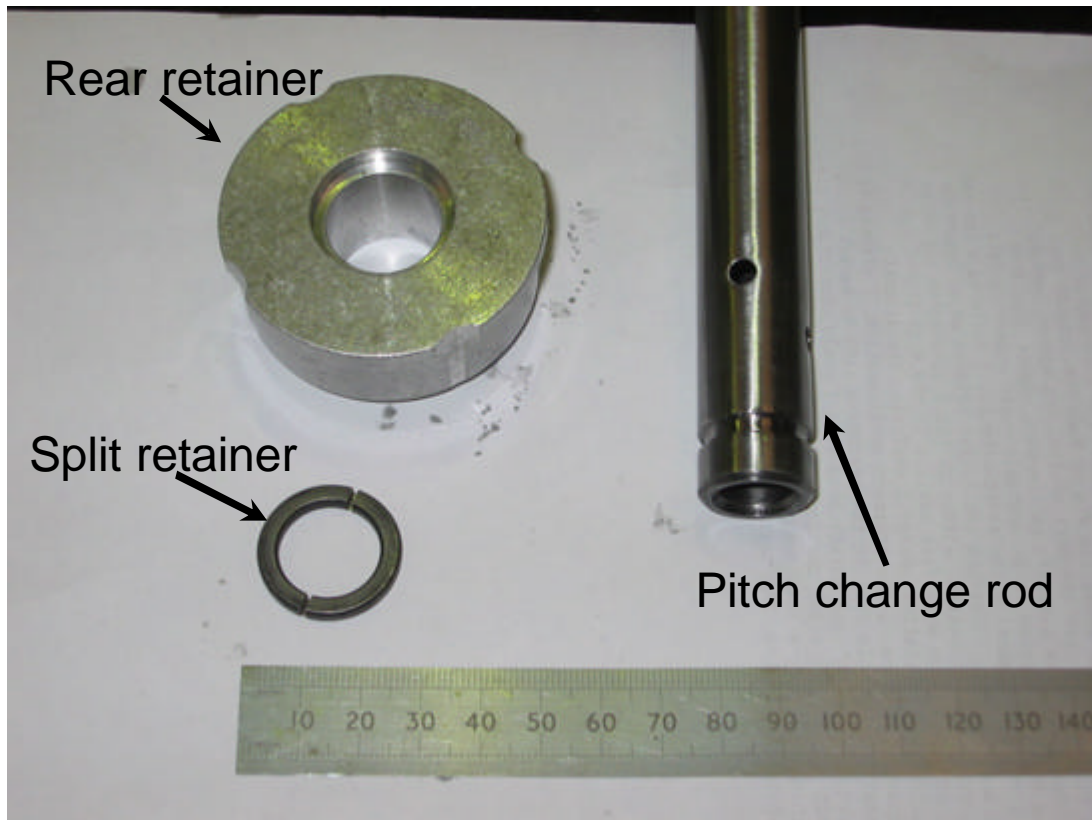


Figure 2: Rear retainer, pitch change rod and split retainer (new). Split retainer from N840PN was not found.

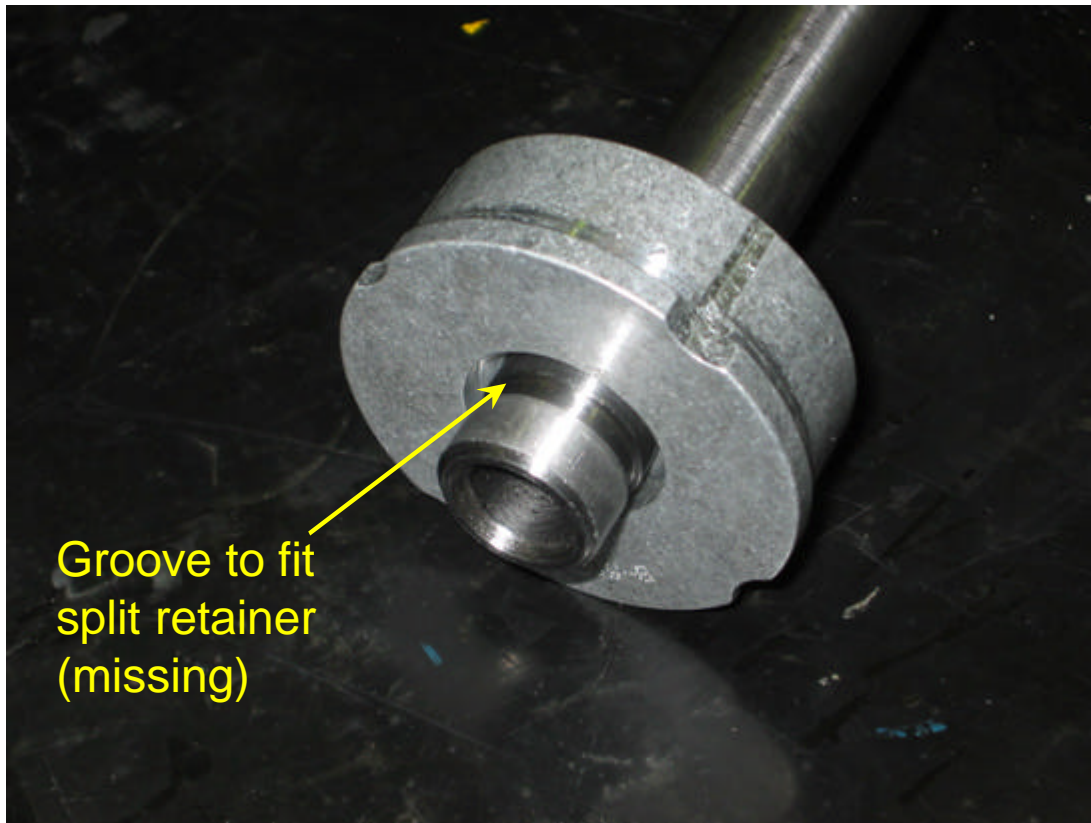


Figure 3: Rear retainer and pitch change rod (assembled).

CONCLUSIONS

The Board concludes that the serious incident was caused by a jammed power lever of the left engine and subsequent failure of the left propeller feather mechanism. The jamming of the power lever was most likely caused by freezing of moisture in the throttle cable sleeve. The feathering problem was caused by the spring kit split retainer becoming detached from the groove in the rear of the piston rod. The reason why the split retainer became detached could not be determined.