SERIOUS INCIDENT

Aircraft Type and Registration:	Beech B200, G-YVIP	
No & Type of Engines:	2 Pratt & Whitney Canada PT6A-42 turboprop engines	
Year of Manufacture:	1988 (Serial no: BB-1306)	
Date & Time (UTC):	23 October 2020 at 0920 hrs	
Location:	Bournemouth Airport, Dorset	
Type of Flight:	Private	
Persons on Board:	Crew - 2	Passengers - None
Injuries:	Crew - None	Passengers - N/A
Nature of Damage:	Circuit breaker panel damaged	
Commander's Licence:	Airline Transport Pilot's Licence	
Commander's Age:	40 years	
Commander's Flying Experience:	7,200 hours (of which 900 were on type) Last 90 days - 45 hours Last 28 days - 20 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and operator's safety investigation report	

Synopsis

The aircraft landed safely after an electrical fire and smoke in the cockpit during the final approach. The operator's investigation found that the commander's circuit breaker (CB) panel showed evidence of moisture ingress and the back-lighting circuit board was burned. They concluded that the most likely scenario is that rainwater entered the cockpit through the storm window, which is above the CB panel. Following this event, the operator took action to ensure that all their King Air aircraft have an improved storm window seal and that their aircraft are parked inside a hangar when they are not in use.

History of the flight

The aircraft was on final approach to Bournemouth Airport in clear weather, at a height of approximately 1,200 ft. Very shortly after selecting approach flap, they noticed a yellow glow and smoke coming from behind the commander's CB panel. They attempted to isolate the problem by operating the MASTER SWITCH gang bar, which switches off the battery and electrical generators, but this had no effect, so they declared a MAYDAY. The first officer tried to reach the fire extinguisher under his seat but found this to be difficult because of his shoulder straps. After landing the crew evacuated the aircraft on the runway and the airport fire service attended but the smoke stopped without intervention when the aircraft was shut down.

Operator's investigation

The operator found evidence of moisture ingress in the commander's CB panel and there was overheat and burning damage on the back-lighting circuit board (Figure 1).

Figure 1

CB panel showing evidence of moisture ingress and overheating

The commander's CB panel is under the left storm window, which can be opened. The window has a seal to minimise the risk of moisture leaking into the cockpit, and the operator assessed this to be serviceable after the incident. They reported that there is a '*reasonable body of evidence that they are prone to water ingress, particularly when the aircraft is parked outside in the rain*', and that water, which tends to collect on the outside of the window, can enter the cockpit when it is opened. They said that an improved seal is available as an optional modification, but this had not been fitted to G-YVIP.

The operator reported that they normally keep their aircraft in a hangar when they are not in use, but G-YVIP was a recent addition to their fleet and anecdotal evidence indicated that it previously spent most of its time outside. Another possible contributory factor was that the operator's crews had been routinely opening the storm window recently to clear the cockpit of a 'fogging' agent that was used for sterilisation in response to the global coronavirus pandemic. They considered that this might have increased the likelihood of water ingress.

Conclusion

The operator's investigation found evidence of moisture ingress, overheat and burning damage in the commander's CB panel, which is under the left storm window. They concluded that the most likely scenario is that moisture entered the cockpit through the window, eventually resulting in electrical breakdown of the CB panel back-lighting circuit board.

Safety actions

The operator has installed the improved window seal across their fleet of King Air aircraft, and whenever possible, their aircraft will be parked inside the hangar and only towed outside when required.