Beechcraft Baron B58, N523B

AAIB Bulletin No:10/2001 **Ref: EW/C2001/6/6/025** **Category 1.3**

Aircraft Type and Registration:	Beechcraft Baron B58, N523B	
No & Type of Engines:	2 Teledyne Continental IO-550-C piston engines	
Year of Manufacture:	2000	
Date & Time (UTC):	6 June 2001 at 1322 hrs	
Location:	About 1 nm east from Isle of Man Airport	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - none
Injuries:	Crew - 1 fatal	Passengers - N/A
Nature of Damage:	Aircraft destroyed	
Commander's Licence:	Commercial Pilots Licence (USA)	
Commander's Age:	55 years	
Commander's Experience:	555 hours (of which about 80 were on type)	
	Last 90 days - 13 hours	
	Last 28 days - 7 hours	
Information Source:	AAIB Field Investigation	

History of flight

The intended flight was from Isle of Man Airport to Gloucester Airport with only the pilot on board. At 1312 hrs the aircraft was cleared to taxi to the holding point of Runway 08. The following exchange between ATC and the pilot took place at 1314 hrs:

ATC	"----REPORTING FIVE THOUSAND METRES IN HEAVY RAIN WITH ONE OKTA AT SIX HUNDRED SIX OKTA AT EIGHT HUNDRED AND EIGHT OKTA ONE THOUSAND FOUR HUNDRED FEET WHAT TYPE OF CLEARANCE WOULD YOU LIKE"
N532B	"I'LL TAKE IFR TO THE ZONE BOUNDARY PLEASE"

ATC "YOUR CLEARANCE IS TO LEAVE ON TRACK FOR CONWAY CLIMBING FLIGHT LEVEL FIVE FIVE AND SQUAWK FOUR FIVE SIX THREE"

The clearance was read back correctly and, at 1315 hrs, the pilot was told to line up and report ready. At 1319 hrs, he reported that he was ready for departure and was given clearance to take off. Several witnesses saw the aircraft take off, heard the engine noise reduce and saw it disappear into cloud at about 300 ft agl, with the landing gear retracted. The Tower controller also reported that the take off appeared normal and, shortly afterwards, the aircraft disappeared from his view as it entered cloud.

There is primary and secondary radar available at Isle of Man Airport but it is not recorded and the aircraft was out of range of the nearest mainland radar station. The only evidence of the aircraft's flight path after it entered cloud, was the Tower controller's recall of primary returns he had seen on his radar monitor; being primary returns, there was no information on the aircraft's altitude nor was the allocated squawk, 4563, displayed.

The radar monitor showed a series of primary radar contacts which started about 1 nm east of the airfield and which the controller associated with N523B. He noticed that the contacts were drifting slightly north of the normal climb out track. He allowed sufficient time for the pilot to complete his after take off checks before making the following transmission at 1321:07 hrs:

ATC "NOT SEEING YOUR SQUAWK AT THE MOMENT CONFIRM YOU HAVE FOUR FIVE SIX THREE"

N532B "CON FIRM JUST GOT A PROBLEM WITH MY COMPASS"

This transmission ended at 1321:19 hrs and was the last recorded from N523B.

At the time, the word "COMPASS" was unintelligible to the controller but he thought the pilot appeared to be relatively unconcerned and the tone of his voice was normal. Shortly afterwards the primary returns indicated that the aircraft had entered a right turn, initially he thought towards the intended track to Conway. However, the turn continued until the aircraft appeared to be tracking back towards the airfield. The controller selected full lighting on Runway 26 and made the following transmissions:

ATC "--YOU'RE CLEAR TO LAND TWO SIX IF YOU NEED IT TWO ONE ZERO AT EIGHT KNOTS"

ATC "CONFIRM THE NATURE OF THE PROBLEM"

Less than 10 seconds later, at about 1321:35 hrs, the radar contact disappeared. The controller attempted to make radio contact with the aircraft with received no response so, as the last contact was over the sea, he initiated the 'Aircraft Ditched Procedure'.

The controller assessed the position of the final radar contact as about 1 nm east of the threshold and slightly south of the centreline. An hour later, some floating debris from the aircraft was recovered about 1/2 nm west of this position.

An aircraft enthusiast was in a car on the cliff top, to the east of the 26 end of the runway. She had an airband scanner and was monitoring the ATC transmissions. She reported that she recognised the aircraft callsign as being that of the Beech Baron which she had seen on several previous occasions. The visibility was poor and it was raining heavily. She did not see the aircraft take off but from the transmissions she was monitoring, she was aware that it was airborne and that it had a problem. Shortly afterwards she saw "lights low down coming towards me". She identified it as an aircraft and saw it "pitch into the sea", however she could not tell whether it was the front or the back which hit the water first. The position she indicated to the investigating team was between the airfield and the last radar position recalled by the controller.

Aircraft, surface vessels, divers and an ROV were used to search an area defined by the aircraft's radar track and last contact, the eye witness report and the debris located on the surface. The adjacent shoreline was also searched, but no more wreckage was located and the search was eventually abandoned.

Meteorology

An observation made at 1320 hrs was:

Surface wind	160°/3 kt
Visibility	5,000 metres
Weather	Heavy Rain
Cloud	2 oktas at 300 ft
	6 oktas at 500 ft
	8 oktas at 800 ft
Temp/DP	10°C/10°C
QNH	1006 mb

The instantaneous surface wind, given with the take off clearance was 200°/5 kt

History of the aircraft.

The aircraft had been manufactured in February 2000. Shortly after this, it was ferried from the factory in Wichita, Kansas, to the UK agent for Raytheon Aircraft. The owner accompanied the ferry pilot on this trip. Although all the aircraft's technical documentation, including log books, is reported to have been on-board the aircraft when it crashed, information from the Raytheon agent confirms that the aircraft had been properly maintained by themselves or a Raytheon-approved organisation as would have been necessary to validate the warranty. The last check had been the first Annual Check in March 2001.

The agent drew AAIB's attention to a Raytheon 'Safety Communique' No.182 dated 30 May 2001. They stated that the contents of the communique had been telephoned to the owner/pilot of N523B on the morning of the accident. In essence, the communique described how three cases of flap drive cable separation had been found on Bonanza and Baron aircraft and that the cause of the separations had been improper heat treatment of an end fitting. All cables manufactured in the calendar year 2000 were 'suspect'.

The document went on to describe an inspection of the cable data tag to determine the year of manufacture. Those cables found with a year 2000 tag were to be replaced and the inspection was to be accomplished within 25 flying hours of receipt of the communique. Failure of the cable could result in an asymmetric flap condition, although Raytheon stated that both aircraft were controllable even in a fully asymmetric condition. A list of emergency procedures was provided for an asymmetric flap condition together with a limitation that flaps should not be used for take-off until the cables had been inspected/replaced.

The agent stated that the owner had been apprised of the communique and fully understood the limitation and procedures. However, it is possible that, as this aircraft was manufactured in February 2000, it had been fitted with flap drive cables manufactured earlier to which the Safety Communique did not apply.

Examination of the wreckage

The only parts recovered from the aircraft were done so about an hour after the accident by the rescue services. This comprised floating debris, mainly interior furnishing, seats, a liferaft and other cabin contents. A main landing gear wheel, complete with the chromed piston, and the forward portion of the two-part main cabin door were the only significant parts of the aircraft structure to be recovered. From the condition of these pieces, it was obvious that the aircraft had hit the water at a relatively high speed and (probably) a steep angle: the damage was too great to have resulted from, say, a controlled ditching.

Without any more significant pieces of the aircraft being recovered, no further engineering analysis is possible.

Conclusion

The pilot stated that he had a problem with the compass and it appears that the transponder was either not functioning correctly or had not been selected on. While a compass problem may be a contributory factor, in isolation it should not have resulted in the loss of the aircraft, even in the prevailing weather conditions.

There is insufficient evidence available to determine even possible causal factors in this accident, however the Chief Inspector of Air Accidents will consider reopening the investigation should a significant amount of the wreckage subsequently be located and recovered.