



AIRCRAFT ACCIDENT INVESTIGATION SUMMARY REPORT

Reference No.

SI/783/1019

Publication of this report is authorised by the Secretary under the provisions of Air Navigation Regulations 283 (1)

1. LOCATION OF OCCURRENCE

23 Kilometres north west of Essendon Airport, Victoria	Height a.m.s.l. 850 feet	Date 11.4.78	Time (Local) 2046 hours	Zone EST
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2. THE AIRCRAFT

Make and Model Beech B60	Registration VH-BKN	Certificate of Airworthiness Valid from 4.11.76
Certificate of Registration issued to	Operator	Degree of damage to aircraft
		Other property damaged Three strand wire fence
Defects discovered		

3. THE FLIGHT

Last or intended departure point Broken Hill	Time of departure 1827 hours	Next point of intended landing Essendon	Purpose of flight Travel	Class of operation Private
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4. THE CREW

Name	Status	Age	Class of licence	Hours on type	Total hours	Degree of injury
	Pilot	32	Senior Commercial	57	4200	Nil

5. OTHER PERSONS (All passengers and persons injured on ground)

Name	Status	Degree of injury	Name	Status	Degree of injury

6. RELEVANT EVENTS

During the afternoon of 11.4.78 the pilot operated the aircraft from Moorabbin to Broken Hill. Soon after take off from Moorabbin, while still on runway heading, the Collins PN101 compass precessed rapidly about one hundred degrees and the pilot used the fast slave switch to re-synchronise it.

On take off from Broken Hill for Essendon, the PN101 compass again malfunctioned in a similar manner. The aircraft climbed to Flight Level 175 and the flight continued in the cruise without further known incident.

By the time that the pilot initiated a descent for landing, daylight had ended. The Essendon Automatic Terminal Information being broadcast at this time included, "Runway 17, wet, wind 200° 10 to 15 knots, QNH 1014, temperature 14° C, 4 oktas of cloud at 1500 feet with lower patches, showers in the area, expect instrument approach".

The glide slope presentations of both VHF/NAV sets installed in the aircraft were unserviceable. Consequently the pilot elected to make a twin locator approach to runway 17 utilising the aircraft's single ADF and the Arcadia and Meadow locators, which were situated 5.6 n miles apart, with Meadow bearing 169° Magnetic from Arcadia.

After having been given descent clearance, the pilot advised Melbourne ATC, on request, that he was receiving the Arcadia locator transmission. He was then cleared direct to Arcadia and, subsequently, was informed that radar indicated he was two and a half miles to the right of the extended centre line of runway 17, eight miles from Arcadia. He was cleared to make a straight-in approach and instructed to call Essendon Tower when he began to descend from three thousand feet.

Continuous heavy rain which precluded the possibility of any external references was encountered as the aircraft approached Arcadia. The intended track of 169° from Arcadia to Meadow was intercepted just north of Arcadia and the aircraft passed slightly to the east of the aid on a heading of 175°. The aircraft was last observed on radar by Melbourne ATC when it was about two miles south of Arcadia. There was no prescribed requirement for the progress of the aircraft to be constantly monitored by radar.

6. Relevant Events (Cont'd)

Having established that he had passed Arcadia by means of a relative bearing of 170° on the ADF, the pilot commenced descent and reported to Essendon Tower that the aircraft was on final approach and had left 3000 feet. On receipt of this transmission the Essendon Tower controller noted that his radar screen was showing a return from an aircraft at Arcadia, and as there was no other traffic in the area he accepted that it was VH-BKN. He cleared the aircraft to continue approach and then turned his attention to other matters and did not further monitor the aircraft's approach.

The pilot has stated that, after passing Arcadia, he tuned the ADF to Meadow locator and obtained a relative bearing of 330° with the PN101 compass still indicating a heading of 175° . The magnetic compass was seen to be oscillating around 270° at this time. Arcadia locator was retuned and the relative bearing of 170° was confirmed. Once again an attempt was made to tune Meadow locator and on this occasion a relative bearing of 270° was registered by the ADF. The pilot also noted that the aircraft had descended to 1200 feet.

At this time, by referring to heading indicator instrumentation other than the PN101 compass, the pilot determined that the aircraft had turned onto, or was turning through, 300° although the PN101 compass continued to indicate a heading of 175° . He banked the aircraft to the left for a brief period and then levelled the wings, at the same time selecting take-off engine power to initiate a go-around. Flaps and landing gear were selected up but, as the aircraft assumed a climbing attitude on a track of 268° , the propellers and then the lower fuselage contacted the ground in a wet, grassed, gently sloping field. The propellers separated from the engines and, some 200 metres after initial impact, the aircraft settled on the ground. It slid a further 180 metres and passed through a wire fence, before coming to rest.

The evidence of the pilot indicates that the PN101 compass system had given false heading indications on two occasions prior to the accident. A similar false heading indication could be consistent with the circumstances leading to the accident. Extensive post-accident testing and examination of the equipment components failed to reproduce a malfunction of this nature and no defects which could have caused such a malfunction were found.

7. OPINION AS TO CAUSE

The cause of the accident was that the pilot did not take timely action to abandon a landing approach in instrument meteorological conditions when his various sources of navigation information became inconsistent. A contributory factor was that available air traffic control radar services were not used to monitor the progress of the aircraft during the final stages of the flight.

Approved for
publication

G. V. Hughes

(G. V. Hughes)
Delegate of the Secretary

Date 18.5.79



COMMONWEALTH OF AUSTRALIA DEPARTMENT OF TRANSPORT

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Height a.m.s.l.

850 feet

Date

11.4.1978

Time (Local)

2046 hours

Zone

EST

2. THE AIRCRAFT

Make and Model Beechcraft B60 Barra	Registration VH-BKN	Certificate of Airworthiness Valid from 4 November 1976
Certificate of Registration issued to	Operator 3 d	Degree of damage to aircraft Substantial
		Other property damaged Three strand wire fence
Defects discovered		

3. THE FLIGHT

Lost or intended departure point Broken Hill	Time of departure 1827 hours	Next point of intended landing Essendon	Purpose of flight Travel	Class of operation Private
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4. THE CREW

Name	Status	Age	Class of licence	Hours on type	Total hours	Degree of injury
●	Pilot	33	Senior Commercial	57	4200	Nil

5. OTHER PERSONS (All passengers and persons injured on ground)

Name	Status	Degree of injury	Name	Status	Degree of injury

6. RELEVANT EVENTS

During the afternoon of 11.4.78 the pilot operated the aircraft from Moorabbin to Broken Hill. Soon after take off from Moorabbin, while still on runway heading, the Collins PN101 compass ~~and~~ precessed rapidly one hundred degrees and the pilot used the fast slave switch to re-synchronise it.

On take off from Broken Hill for Essendon, the PN101 compass again malfunctioned in a similar manner and the fast slave switch was used to effect re-synchronisation. The aircraft climbed to flight level 175 and the flight continued in the cruise without further known incident.

By the time that the pilot initiated a descent for landing daylight had ended.

The Essendon Aerodrome Terminal Information being broadcast included, "Runway 17, wet, wind 200 degrees 10 to 15 knots, QNH 1014, temperature 14°C, 4 oktas of cloud at 1500 feet with lower patches, ~~lowers~~ in the area, expect instrument approach"

The glide slope presentation of both the VHF/NAV sets ^{installed in the aircraft} ~~fixed~~ were unserviceable. ~~and in consequence~~ the pilot ~~decided against attempting to make a precision approach and elected instead~~ to make a twin locator approach to runway 17 utilising the aircraft's single ADF and the Arcadia and Meadow locators, which are situated ^{5.6 km} ~~10.3 kilometres~~ apart, with Meadow bearing 169° ~~degrees~~ magnetic from Arcadia.

After having been given descent clearance, the pilot advised Melbourne Approach Control that he was receiving the Arcadia locator transmission. ^{in response} ~~When he further advised that he was cruising level at~~ ^{he was then cleared through to Arcadia and, subsequently} ~~three thousand feet he was informed by Approach Control that radar returns indicated that he was two and a half miles to the right of the extended centre line of runway 17, eight nautical miles from the Arcadia locator.~~ He was cleared to make a straight in approach and instructed to call Essendon tower when he began to descend from three thousand feet.

The intended track of 169 degrees from Arcadia to Meadow locator was intercepted just north of Arcadia and the aircraft passed slightly to the east of the ~~aid~~ ^{aid} on a heading of 175 degrees as it entered continuous heavy rain which precluded the possibility of any external references.

(Continued on attached sheet)

7. OPINION AS TO CAUSE

The probable cause of the accident was that when making an approach to land in instrument meteorological conditions, the pilot did not adequately scan all of the instrument aids available to him to ensure the proper continued passage of the aircraft.

Two radar screens capable of indicating the aircraft's significant deviation from its required track were not monitored.

Approved for
publication

Delegate of the Secretary

Date

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o. Relevant Events (Continued)

Having established that he had passed Arcadia by means of a relative bearing to that aid of 170 degrees on the ADF, the pilot commenced a descent and reported to Essendon Tower that the aircraft was on final approach and had left 3000 feet. On receipt of this transmission the Essendon tower controller noted that his radar screen was showing a return from an aircraft at Arcadia, and as there was no other traffic in the area he accepted that it was VH-BKN. He then turned to other matters and did not further monitor the aircraft's approach. *his attention*

The pilot ~~reports~~ that after passing Arcadia, he tuned the ADF to Meadow locator and obtained a relative bearing of 330 degrees, with the PN101 compass still indicated a heading of 175 degrees. Arcadia locator was retuned and the relative bearing of 170 degrees was confirmed. Once again an attempt was made to tune Meadow locator and on this occasion a relative bearing of 270 degrees was registered by the ADF. The pilot also noted that the aircraft had descended to 1200 feet.

At this time, by referring to heading indicator instrumentation other than the PN101 compass, the pilot determined that the aircraft had turned right onto, or was turning right through, 300 degrees magnetic although the PN101 continued to indicate a heading of 175 degrees. He banked the aircraft to the left for a brief period and then levelled the wings, at the same time selecting take off engine power to initiate a go around. Flaps and landing gear were selected up, but as the aircraft assumed the climb attitude it struck the ground on a heading of 268 degrees, nine kilometres north west of Arcadia locator.

The aircraft's progress had not been monitored by the Melbourne Approach controller after being in the vicinity of Arcadia locator. Radar monitoring by ATC of the aircraft's passage was not a mandatory requirement.