



Australian Government

Australian Transport Safety Bureau

In-flight fire and collision with terrain involving Beechcraft B58 Baron, VH-NPT

near East Kimberley Regional Airport, Kununurra, Western Australia on
16 April 2022

ATSB Transport Safety Report

Aviation Occurrence Investigation (Defined)

AO-2022-026

Preliminary – 21 September 2022

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Addendum

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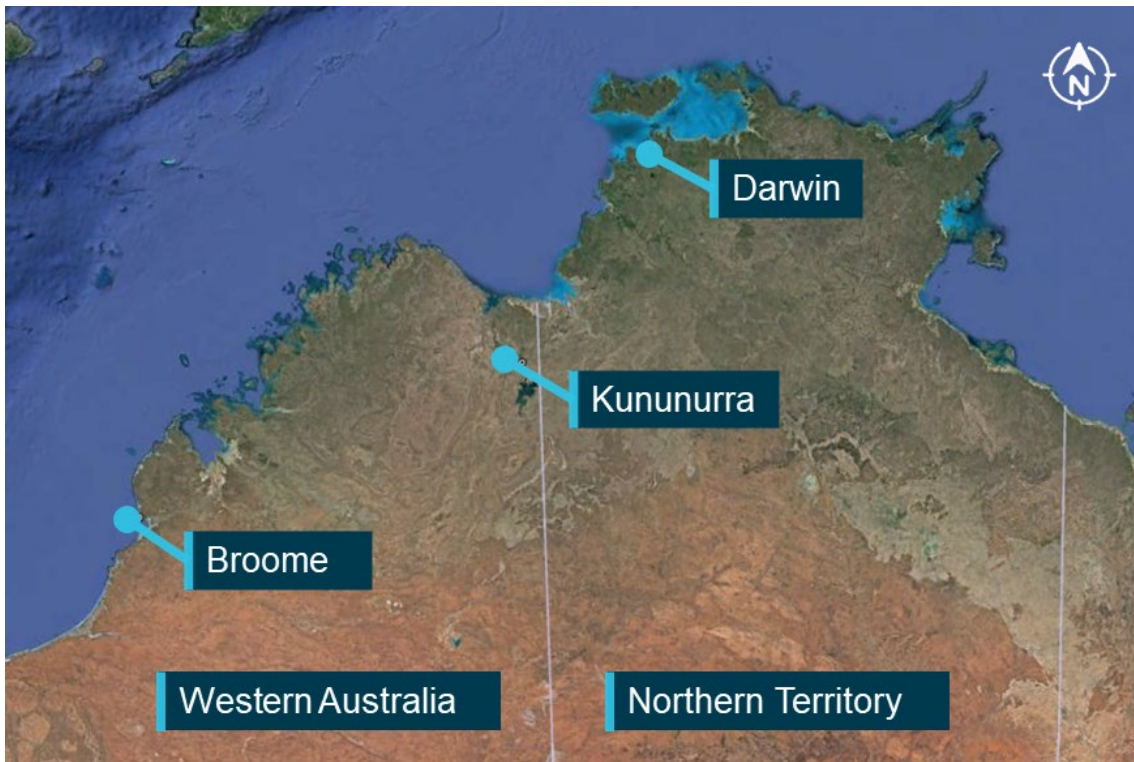
Preliminary report

This preliminary report details factual information established in the investigation’s early evidence collection phase, and has been prepared to provide timely information to the industry and public. Preliminary reports contain no analysis or findings, which will be detailed in the investigation’s final report. The information contained in this preliminary report is released in accordance with section 25 of the *Transport Safety Investigation Act 2003*.

The occurrence

At 0613 Western Standard Time¹ on 16 April 2022, a Beechcraft B58 Baron (B58), registered VH-NPT (NPT) and operated by Aviair Pty Ltd, departed Broome Airport, Western Australia, for a regular charter flight to several remote locations in northern Western Australia. The aircraft departed with the pilot, one passenger and 4 boxes of cargo on board. The flight was planned to transit through the East Kimberley Regional Airport at Kununurra (Figure 1) to refuel, then continue to Halls Creek where the passenger was to disembark, Fitzroy Crossing to unload cargo and then return to Broome via Derby.

Figure 1: Flight area



Source: Google Earth annotated by the ATSB

At 0749 WST the pilot called air traffic control (ATC) requesting traffic for a direct track to waypoint Kununurra Whiskey Foxtrot (KNXWF) for approach to runway 12 at Kununurra (Figure 2). At 0817 the pilot of NPT contacted ATC advising that they were leaving their cruising altitude of 9,000 ft on descent for Kununurra.

¹ Western Standard Time (WST): Coordinated Universal Time (UTC) +8 hours

Figure 2: NPT flight path and Brisbane Centre radio calls



Source: Google Earth and AvPlan annotated by the ATSB

Seventeen minutes later NPT joined a straight in approach to runway 12. The pilot recalled slowing the aircraft, extending the first stage of flaps and attempting to extend the landing gear.

Upon selecting the landing gear handle, the gear down and locked indicators (3 green lights) illuminated immediately. The pilot reported that this was unusual, as normal operation required a few seconds for the landing gear to extend and the lights to illuminate. The pilot also recalled, co-incident with the landing gear handle activation, that the landing gear warning horn erroneously activated, however no sound was heard from the landing gear motor and no decrease in aircraft performance was felt indicating gear extension. The pilot stated that these unusual indications were followed immediately by an electrical burning smell and smoke emerging from below the left side of the aircraft instrument panel, forward of the pilot's circuit breaker panel.

About a minute later at 08:35:54 the pilot made a PAN PAN² call on the Brisbane Centre frequency advising of smoke and suspected fire in the cockpit. The pilot then activated the SOS³ function on a dash mounted Spidertracks⁴ unit. The pilot recalled switching off the electrical power to the aircraft and by that time flames were emanating from the same location as the previously-observed smoke.

The pilot then expended the onboard fire extinguisher while continuing a straight in approach to runway 12 (Figure 4). However, the fire almost immediately returned, emanating from the same location, and creating significant smoke in the cockpit. The pilot reported that soon after this they lost visibility of both the instruments and the outside environment. In response, they opened the aircraft's storm window⁵ to attempt to clear the smoke and obtain a visual reference.

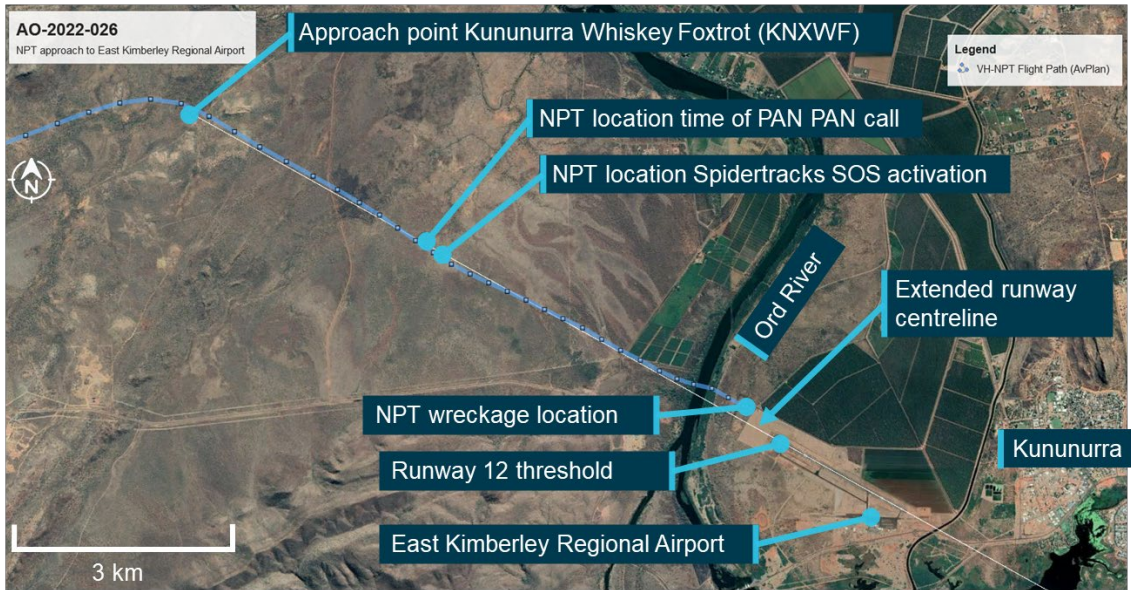
² PAN PAN: an internationally recognised radio call announcing an urgency condition which concerns the safety of an aircraft or its occupants but where the flight crew does not require immediate assistance.

³ SOS function is an emergency transmission from the Spidertracks unit that alerts predetermined personnel via text message that an aircraft is in distress and an emergency response is likely to be required.

⁴ Spidertracks is a subscription aircraft monitoring service that allows operators to track and monitor the location of aircraft at 2 minute intervals. The location is recorded and transmitted by a unit that is fitted to the aircraft. This unit also has 'Watch' and 'SOS' functions that allow the pilot to alert predetermined ground-based personnel of a situation requiring monitoring or an emergency situation.

⁵ Storm Window is a small window inset in the pilot's side window allowing ventilation, or visibility in the event it is lost through the forward windscreen

Figure 3: NPT approach to East Kimberley Regional Airport

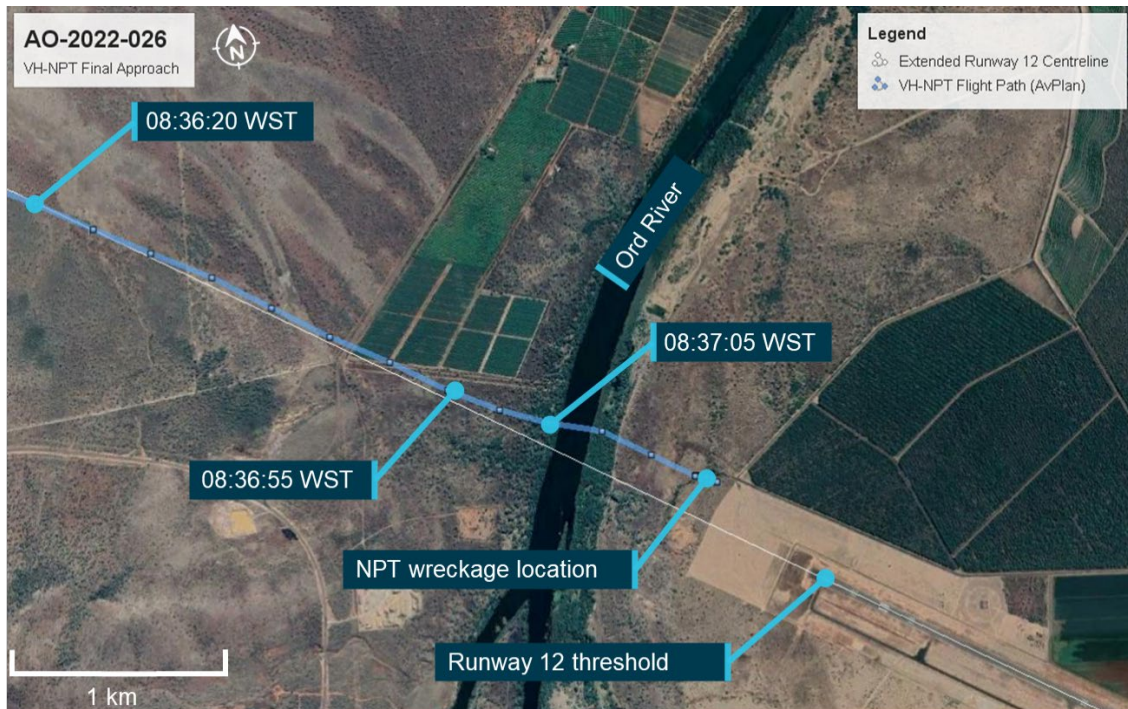


Source: Google Earth, AvPlan and Airservices Australia annotated by the ATSB

Recorded flight data indicated that, at 0837, the aircraft started diverging significantly left of the extended runway centre line, crossing the Ord River at low level approximately 1.5km from the threshold of runway 12. The aircraft subsequently collided with terrain about 600m beyond the river and about 800m from the runway 12 threshold (Figure 4) and was consumed by a significant post-impact fire.

The pilot sustained serious injuries, but was able to extricate themselves and the passenger from the wreckage. The passenger later succumbed to their injuries.

Figure 4: NPT final approach and wreckage location



Source: Google Earth, AvPlan and Airservices Australia annotated by the ATSB

Context

Aircraft Information

NPT was a Beechcraft B58, low-wing, twin engine aircraft. It was manufactured in the United States in 1996 and first registered in Australia in 2012. The aircraft was fitted with 2 Continental IO-550-C piston engines driving 3 blade constant speed propellers.

NPT was acquired by the operator in 2019. It was configured for charter operations with rear club⁶ seating for up to 4 passengers and front seating for 2 pilots. The aircraft was configured with dual cockpit controls.

The last 100 hourly inspection was completed 9 days prior to the accident flight. Since this time, and prior to the accident flight, the aircraft had accrued 18.7 hours of flight time.

The B58 is fitted with a fuel-burning cabin heater in the nose of the aircraft. This heater is fed via a direct line from the left-wing leading-edge fuel tank. The fuel line traverses internally along the lower left fuselage entering the aircraft's nose-wheel bay where the heater is located.

Maintenance records indicated that the heater was infrequently used, and the pilot commented that the heater was not utilised during the accident flight.

Fire Suppression

NPT was fitted with a portable 2 kg halon fire extinguisher for emergency use by the crew. The extinguisher was located centrally between the pilots' seats and the rearward facing passenger seats. The extinguisher was inspected and reweighed as part of the last 100 hourly inspection in accordance with Civil Aviation Safety Authority requirements.

Site and wreckage information

The initial impact point with terrain was approximately 45 m from the main wreckage location with the aircraft tracking approximately 117° and becoming inverted during the impact sequence.

Despite the aircraft being consumed by a post impact fire some of the aircraft's contents, including several documents and personal effects were thrown clear during the impact sequence, leaving them largely unaffected.

Due to the severity of the post-impact fire the ATSB was not able to conduct a complete wreckage examination. However, there was evidence of engine rotation prior to the impact and no evidence found of pre-existing defects in the engines or flight control components that could have contributed to the accident. The landing gear was observed in the stowed position and no landing gear impact marks were visible at the accident site.

Pilot Information

The pilot held a current Commercial Pilot License (Aeroplane) with their last flight review conducted in December 2021. They also held a:

- class 1 aviation medical certificate, valid until January 2023
- multi engine aircraft instrument rating with retractable undercarriage and manual propeller pitch control endorsements.

Prior to the accident flight, the pilot had accumulated approximately 2,482 hours of aeronautical experience, of which just over 120 hours were in command of the B58. The pilot had completed their most recent operational proficiency check on 9 January 2022 with a line check on the B58 carried out on 25 January 2022.

⁶ Club seating indicates seats in the forward passenger cabin facing the rear and at the rear of the passenger cabin facing forward.

Recorded Data

The aircraft was not fitted with a flight data recorder or cockpit voice recorder, nor was it required to be.

The operator tracked each of their aircraft using a Spidertracks unit. The system consisted of a device located in each aircraft that recorded and transmitted its position at two-minute intervals and allowed the pilot to signal an emergency or alert through a dedicated button on the device.

The operator also utilised the AvPlan electronic flight bag application for pilots to undertake flight planning. The application records position information at 5-second intervals. The pilot of NPT had a device with the application installed and active for the flight and the ATSB received data for the accident flight. This provided multiple flight parameters including ground speed and tracking details for the aircraft from the time of take-off until it collided with terrain.

In addition, the aircraft was fitted with a transponder that broadcast ADS-B⁷ data to ground stations and nearby aircraft fitted with ADS-B IN. The ATSB was able to retrieve the data transmitted by this unit from ground stations operated by both Airservices Australia and other third-party receivers, including one at the East Kimberly Regional Airport.

The ATSB also obtained and reviewed relevant radio communications from the Brisbane Centre and common traffic advisory frequencies.

Meteorological Information

An aerodrome meteorological report (METAR⁸) was issued by the automatic weather station at East Kimberley Regional Airport approximately 7 minutes before NPT collided with terrain. The report showed fine weather, with winds from the north at 2 kt, visibility greater than 10 km and nil cloud detected.

The ATSB also reviewed CCTV footage from the East Kimberley Regional Airport. Figure 5 shows the location of a camera covering the regular public transport apron, with the threshold of runway 12 in the background. The camera image showed, consistent with the METAR, a smoke plume rising near-vertically from the accident site approximately 3 minutes after the accident indicating little to no wind immediately after the accident.

⁷ Automatic Dependent Surveillance – Broadcast - A means by which aircraft, aerodrome vehicles and other objects can automatically transmit and/or receive data such as identification, position and additional data, as appropriate, in a broadcast mode via a data link

⁸ METAR - a routine aerodrome weather report issued at routine times, hourly or half-hourly.

Figure 5: Location of CCTV camera



Source: Google Earth annotated by the ATSB

Related occurrence

The ATSB identified another in-flight fire in a B58 that contained similarities to this occurrence.

AO-2014-040

On 26 February 2014 at about 1645 local time, a Beech 58 aircraft, registered VH-SBS, departed Darwin for Gove, Northern Territory, on a private ferry flight with a supervising pilot and pilot in-command-under-supervision (ICUS) on board.

At about 1815, the pilot detected fumes and smoke emanating from within the cockpit. The pilot flying ICUS saw smoke and flames by their left leg adjacent to the circuit breaker panel and immediately switched off the electrical master switch. The supervising pilot seated in the right seat took control of the aircraft and commenced an immediate descent. The pilot ICUS retrieved the BCF extinguisher from underneath their seat and extinguished the fire.

An engineering inspection found electrical wiring had penetrated through the heater supply fuel line causing it to arc out and burn a hole in the fuel line. With an ignition source and fuel, the fire in the cabin was started. Engineers disconnected and capped the heater fuel line and reconnected the vacuum line.

The engineer also reported that the wires had been bundled together and were rubbing on the fuel line. Inspection of the wires prior to the flight would have required the internal panel to be removed, and was not a routine inspection item.

Safety advisory notice

Both the heater fuel line and the aircraft wiring of NPT were burnt away by the post impact fire, and an examination was not possible. However, the location, initiation and severity of the fire is similar to the incident detailed in AO-2014-040. As such, while the specific circumstances of the fire initiation and development remain under investigation, in the interest of transport safety, the ATSB has issued a safety advisory notice encouraging operators of B58 aircraft to:

- note the circumstances of this accident and previous ATSB investigation AO-2014-040
- conduct a detailed examination of the wiring and fuel line on the left side of the aircraft forward of, and behind, the pilot's circuit breaker panel.

- review the Electrical Wiring Chafing Protection section in Model Communiqué 116
- review anti-chafing wiring provisions within the relevant aircraft maintenance manual to ensure serviceability of anti-chafing materials.

Further investigation

The investigation is continuing and will include analysis of recorded flight data and a review of:

- the aircraft's fuel and electrical systems
- domestic and international related occurrences.
- aircraft records
- survivability aspects.

Should a critical safety issue be identified during the course of the investigation, the ATSB will immediately notify relevant parties so appropriate and timely safety action can be taken.

A final report will be released at the conclusion of the investigation.

Acknowledgements

The ATSB wishes to acknowledge the assistance provided by the Western Australia Police Force, Helispirit and East Kimberley Regional Airport personnel during the onsite phase of the investigation.

General details

Occurrence details

Date and time:	16 April 2022 – 0837 WST	
Occurrence class:	Accident	
Occurrence categories:	Inflight Fire, Collision with Terrain	
Location:	near East Kimberley Regional Airport	
	Latitude: 15° 46.164876' S	Longitude: 128° 41.774814' E

Aircraft details

Manufacturer and model:	BEECH AIRCRAFT CORP 58	
Registration:	VH-NPT	
Operator:	AVIAIR PTY LTD	
Serial number:	TH-1769	
Type of operation:	Charter	
Activity:	Passenger	
Departure:	Broome Airport	
Destination:	Kununurra Airport	
Persons on board:	Crew – 1	Passengers – 1
Injuries:	Crew – Serious	Passengers – Fatal
Aircraft damage:	Destroyed	