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Australian Transport Safety Bureau

Near collision between a Beechcraft 76 aircraft, VH-ZUA and a Eurocopter AS350 helicopter, VH-SWX

Near the Gold Coast Airport, Queensland, 4 January, 2015

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Aviation Occurrence Investigation
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Addendum

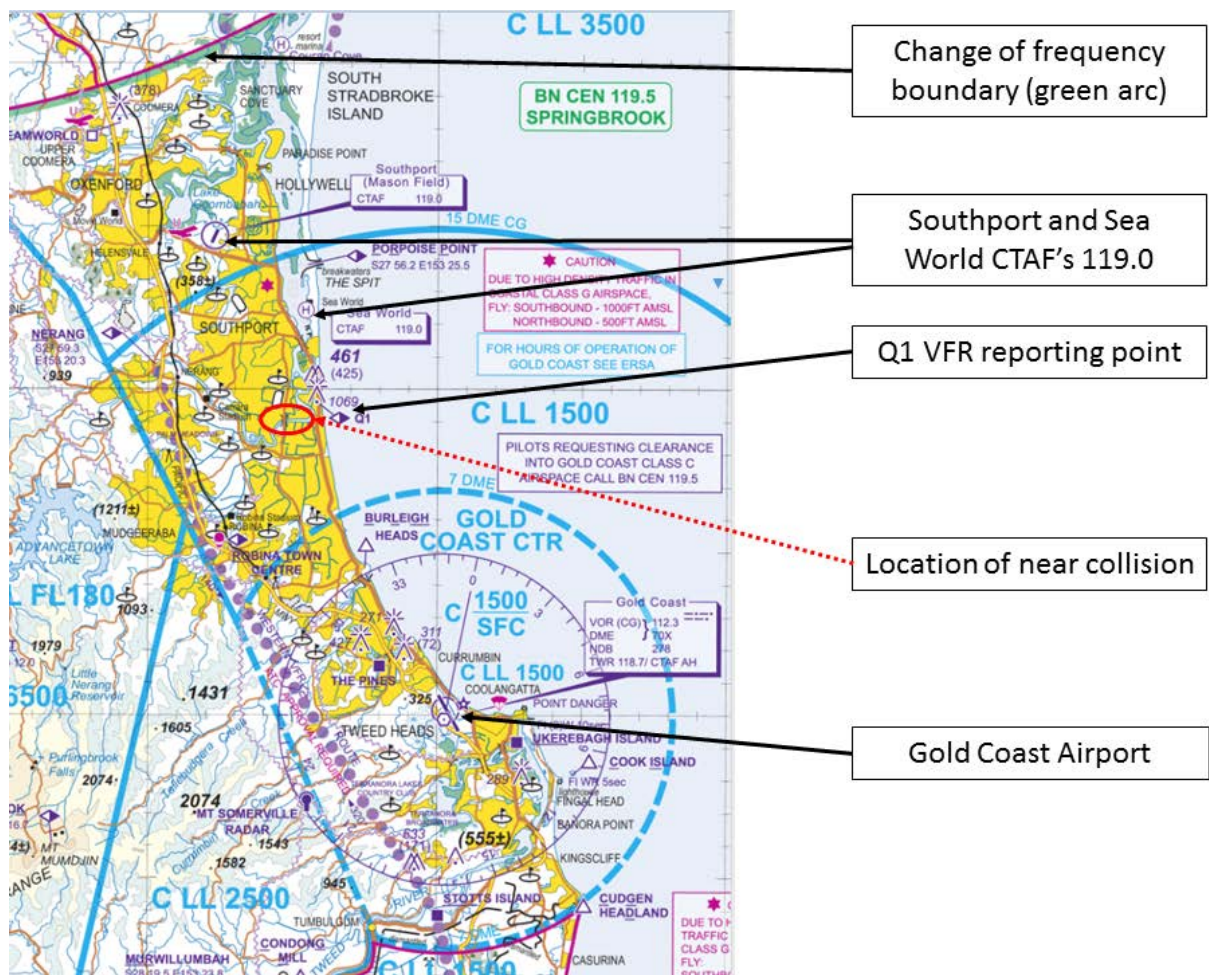
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Near collision between a Beech 76 aircraft, VH-ZUA and a Eurocopter AS350 helicopter, VH-SWX

What happened

On 4 January 2015, the pilot of a Beechcraft 76 aircraft, registered VH-ZUA (ZUA), commenced a ferry flight from Archerfield to the Gold Coast, Queensland. The private flight was conducted under the visual flight rules (VFR), and the pilot was the sole person on board. The aircraft departed Archerfield at about 1200 Eastern Daylight Time (EDT), and climbed to a planned cruising level of 1,500 ft above mean sea level.

Figure 1: Gold Coast VTC



Source: Aircservices Australia: Visual Terminal Chart modified by the ATSB

At about 1210, as ZUA approached the change of frequency boundary (Figure 1) just north of Dreamworld, the pilot changed to the area frequency (119.5 MHz) on COMM 1¹ with the

¹ COMM 1 (Garmin 530) COMM 2 (Garmin 430) were the very high frequency (VHF) radios fitted to the aircraft allowing an active and a standby frequency in each box

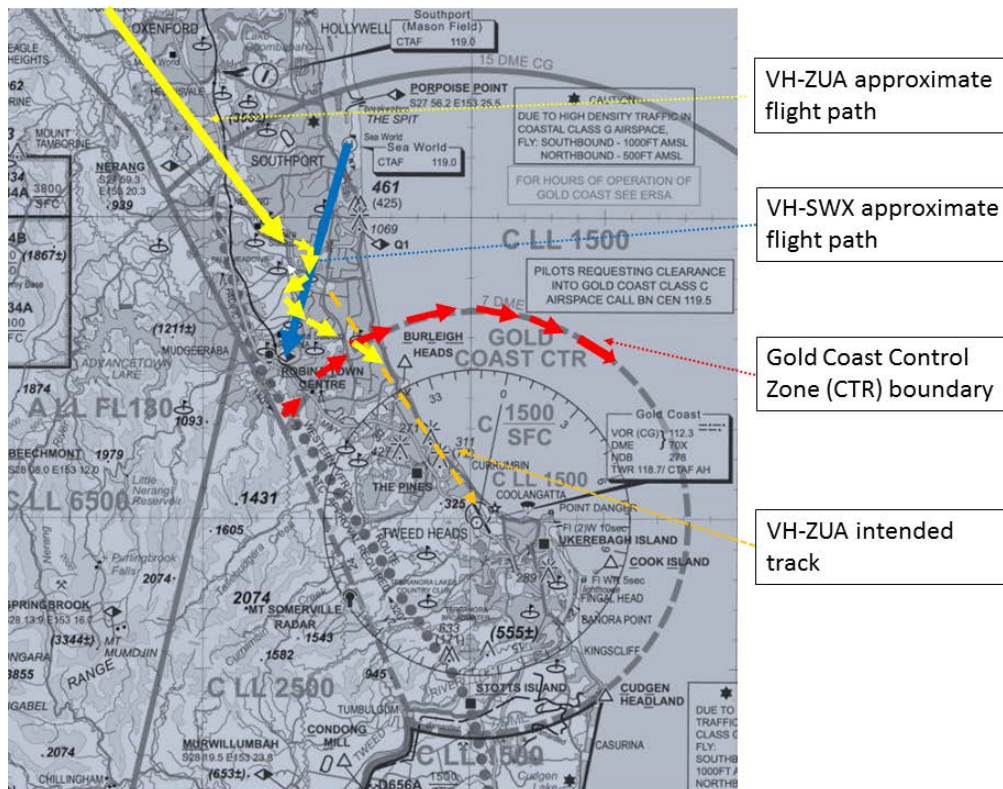
Southport CTAF frequency (119.0 MHz) in the standby section of the Garmin 530. As he approached Southport airport, the pilot moved the standby frequency (119.0 MHz) into the active box and as required, broadcast the aircraft's position and intentions. The CTAF frequency is common to both Southport Airport and the nearby Sea World helipad (Figure 1).

At about 1212, the pilot of an AS350 helicopter, registered VH-SWX (SWX) prepared to depart from Sea World, Queensland, for a 15 minute local commercial scenic flight. The first sector was from Sea World to overhead the Robina shopping centre (Figure 2). On board were the pilot and 5 passengers.

The pilot obtained the Gold Coast automatic terminal information service (ATIS) prior to becoming airborne at about 1215 and broadcasting his intentions on the Sea World CTAF frequency of 119.0 MHz (the same frequency as the Southport CTAF). As a small sector of the scenic flight was to be conducted in the Gold Coast control Zone, the pilot obtained a transponder code from Gold Coast Ground air traffic control soon after the helicopter had departed.

At about 1220, as ZUA neared the Q1 VFR reporting point (Figure 1), the pilot requested and obtained a clearance from the Gold Coast tower controller to enter the control zone. The pilot acknowledged and read back the clearance, which was to track from his present position direct to the Gold Coast airport at 1,500 ft. Soon after, the tower controller issued the pilot a Safety Alert, advising of traffic in his 10 o'clock position², 2 NM and tracking west (toward ZUA) at an unverified level of 1,400 ft (Table 1). The pilot acknowledged the Safety Alert, advising the tower controller that the traffic was in sight.

Figure 2: Approximate flight path of ZUA and SWX



Source: Airlines Visual Terminal Chart modified by ATSB

² The clock code is used to denote the direction of an aircraft or surface feature relative to the current heading of the observer's aircraft, expressed in terms of position on an analogue clock face. Twelve o'clock is ahead while an aircraft observed abeam to the left would be said to be at 9 o'clock

Table 1: Summary of radio communication by ZUA and SWX

Time	Action	Frequency MHz	Content
1215	SWX departed helipad for a 15 minutes scenic flight	CTAF 112.3 CTAF 119.0 GC Ground (SMC) 121.8	COMM 2 (Obtained ATIS from Gold Coast) COMM 1 Airborne Sea World; on climb to 1,500 tracking for Robina. (COMM2 was tuned to Gold Coast Ground to obtain a transponder code for the sector of the flight which transited through controlled airspace).
1219.58	Approaching Q1, ZUA to TWR	118.7	Advised TWR that ZUA was approaching Q1, 1,500 inbound and in receipt of the current ATIS and requested a clearance to enter the Control Zone.
1220.14	Gold Coast TWR to ZUA	118.7	Cleared ZUA direct to the Gold Coast, 1,500 with an expectation for a straight in approach to RWY 14.
1220.22	ZUA to TWR	118.7	Pilot read back the clearance
1220.28	TWR to ZUA	118.7	Issued ZUA with a SAFETY ALERT for traffic in their 1000 position, 2 NM and tracking west unverified level 1,400 ft
1220.51	ZUA to TWR		PIC reported traffic sighted
1221.18	Centre to ZUA	119.5	Issued ZUA with a SAFETY ALERT for traffic in their 10 o'clock position same level, and half a mile. Centre called twice but did not receive a response from the PIC of ZUA.
1221.29	Centre to TWR		Issued a SAFETY ALERT to TWR. TWR advised that the pilot of ZUA had been issued a SAFETY ALERT for traffic
1221.42			Near Collision
1221.57	ZUA to TWR	118.7	Reported to TWR that he had just taken evasive action to avoid the helicopter, and was now tracking to the Gold Coast again
1223.40	SWX to TWR	118.7	PIC obtains clearance to enter the Gold Coast control zone and also requests further information about ZUA
1224.00	SWX to TWR	118.7	PIC advised TWR that a fixed wing aircraft [ZUA] had passed from behind about 30 ft over the top of the helicopter. He had made two calls on 119.0 to make contact with the pilot but had not received a reply

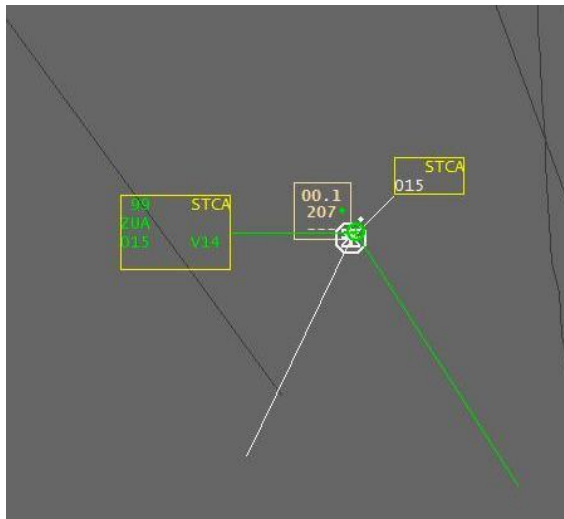
Source: Airservices Australia

Also noticing the short term conflict alert (STCA) (Figures 3 and 4) on the air situation display, the Brisbane Centre controller twice attempted to make contact with ZUA which was still in uncontrolled airspace; but there was no response. The controller then contacted the Gold Coast tower controller via the internal coordination line, to confirm that a safety alert had been issued. The tower controller advised the Brisbane Centre controller that a safety alert had already been issued and the situation was under control.

Soon after, while distracted by entering and changing frequencies on both COMM 1 and COMM 2, the pilot of ZUA had lost sight of SWX and turned his attention to visually re-acquire the helicopter. The pilot then realised that the helicopter was not flying parallel to his course as he had initially thought; but was on a collision course with ZUA and at a similar altitude. The pilot initiated a short climb and a steep right turn in ZUA. He did not see SWX during this evasive manoeuvre, so turned left and continued to the Gold Coast as cleared, and advised the tower controller of the conflict and subsequently landed.

Figures 3 and 4: Radar surveillance data

Figure 3

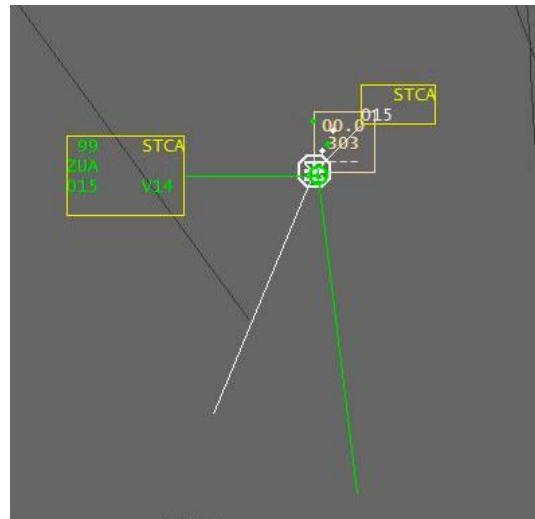


Time: 2.21.37 ZUA at 1,500 ft; SWX 1,500 ft ; about 100 m horizontally

STCA – Short term conflict alert

Source: Airservices Australia

Figure 4



Time: 2.21.42 Near collision

ZUA at 1,500 ft; SWX 1,500 ft; Nil horizontal distance showing on radar

The traffic collision avoidance system (TCAS) on board the helicopter did not alert the pilot to the potential conflict, possibly because ZUA overflew the helicopter from behind, which may have shielded the TCAS aerial.

VH-ZUA radio equipment

ZUA had Garmin 530 and Garmin 430 units installed.

VH-SWX radio equipment

SWX had two communication navigation (COMM NAV) units installed, also allowing the pilot to have two active and two standby radio frequencies selected. SWX also had a terrain collision avoidance system (TCAS) fitted.

VH-ZUA Pilot experience and comments

The pilot had around 270 hours total time, with about 38 hours on the B76 type aircraft. He had been undergoing training for a multi-engine command instrument rating (MECIR), and this positioning flight was his first solo flight in the aircraft.

He recalled being advised about conflicting traffic by the Gold Coast tower controller, and recalled having responded 'traffic sighted'. He reported when he first sighted SWX, he incorrectly thought it was tracking parallel to ZUA, and did not appear to be getting any closer. Hence he turned his attention to trying to reset the CTAF of 119.0 MHz on COMM1, to enable him to communicate with the helicopter. At this stage, he had changed the selected frequencies to having the Gold Coast tower frequency on COMM 1, and the ATIS and CTAF on COMM 2. Then he changed COMM 2 to have the Gold Coast Ground frequency selected in preparation for taxi after landing.

During the process of entering, changing and selecting frequencies on the two COMM sets, his attention had shifted from keeping the helicopter in sight, to attempting to communicate with it and arrange clearances.

He reported that at this stage SWX appeared to have ‘turned toward him’³ and as he watched it he realised it was heading directly at ZUA. He commenced evasive action by initiating a brief climb and a steep turn to the right. His intention was to parallel the track of the helicopter and keep it in sight.

Additionally, he reported that his sleep the night before had been disturbed.

VH-SWX pilot experience and comments

The pilot held a Commercial licence (Helicopter) and had around 6,500 hours flying experience. The pilot commented that the first awareness of ZUA was when it passed over the helicopter from behind.

Safety message

This incident highlights the importance of having the correct radio frequencies planned and correctly set up prior to and during flight and the need for vigilance when keeping conflicting traffic in sight. Pre-flight preparation is an essential part of safe flying operations and can prevent a loss of situational awareness and avoid the pilot’s attention being focused for long periods inside the cockpit.

- CASA has developed the *Look out! Situational awareness* DVD for pilots to learn more about the safety-critical skills that makes up situational awareness. There is a strong emphasis on the need to prepare and plan for every flight. The DVD gives a definition of situational awareness of “what’s happened, what’s happening and what might happen”.

The CASA DVD is available from the CASA online store here:

<http://shop.casa.gov.au/products/look-out-situational-awareness-dvd>

General details

Occurrence details

Date and time:	4 January 2015 – 1221 EST	
Occurrence category:	Serious incident	
Primary occurrence type:	Near collision	
Location:	325 M 20 km Gold Coast	
	Latitude: 27° 59.77' S	Longitude: 153° 25.28' E

Aircraft details

Manufacturer and model:	Beech Aircraft Corporation B76	
Registration:	VH-ZUA	
Serial number:	ME-351	
Type of operation:	Private	
Persons on board:	Crew – 1	Passengers – Nil
Injuries:	Crew – Nil	Passengers – N/A
Damage:	None	

³ SWX was on a direct track to overhead Robina town centre. Hence the potential conflict and alert by ATC. The pilot of ZUA has incorrectly assessed the helicopter as previously paralleling ZUA’s track and then turning toward him.

Aircraft details

Manufacturer and model:	Eurocopter AS.350B2	
Registration:	VH-SWX	
Serial number:	9053	
Type of operation:	Charter – Scenic Flight	
Persons on board:	Crew – 1	Passengers – 5
Injuries:	Crew – Nil	Passengers – Nil
Damage:	None	

About the ATSB

The Australian Transport Safety Bureau (ATSB) is an independent Commonwealth Government statutory agency. The ATSB is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers. The ATSB's function is to improve safety and public confidence in the aviation, marine and rail modes of transport through excellence in: independent investigation of transport accidents and other safety occurrences; safety data recording, analysis and research; and fostering safety awareness, knowledge and action.

The ATSB is responsible for investigating accidents and other transport safety matters involving civil aviation, marine and rail operations in Australia that fall within Commonwealth jurisdiction, as well as participating in overseas investigations involving Australian registered aircraft and ships. A primary concern is the safety of commercial transport, with particular regard to fare-paying passenger operations.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* and Regulations and, where applicable, relevant international agreements.

The object of a safety investigation is to identify and reduce safety-related risk. ATSB investigations determine and communicate the safety factors related to the transport safety matter being investigated.

It is not a function of the ATSB to apportion blame or determine liability. At the same time, an investigation report must include factual material of sufficient weight to support the analysis and findings. At all times the ATSB endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner.

About this report

Decisions regarding whether to conduct an investigation, and the scope of an investigation, are based on many factors, including the level of safety benefit likely to be obtained from an investigation. For this occurrence, a limited-scope, fact-gathering investigation was conducted in order to produce a short summary report, and allow for greater industry awareness of potential safety issues and possible safety actions.