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Australian Transport Safety Bureau

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Aviation Occurrence Investigation AO-2008-083

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- knowledge and action.

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Collision with terrain, VH-EKS 67 km WNW Scone Aerodrome, New South Wales 24 December 2008

Abstract

At about 1452 Eastern Daylight-saving Time on 24 December 2008, a Cessna Aircraft Company 172L aircraft, registered VH-EKS, with a pilot and one passenger, departed Mudgee on a private visual flight rules (VFR) flight to a property near Glen Innes, New South Wales. About 15 minutes after departure, the pilot encountered increasing cloud and, after climbing to assess the weather ahead, decided to descend visually through the cloud in order to maintain visual meteorological conditions.

The pilot descended the aircraft into a valley that was enshrouded in cloud. After flying up the valley for a short time, the pilot decided to turn back. During the turn-back manoeuvre, the aircraft entered cloud. The pilot became disorientated and the aircraft collided with terrain.

The pilot and passenger were seriously injured and the aircraft was seriously damaged. Shortly after, the passenger succumbed to his injuries.

The pilot's decision not to obtain the relevant ⁽¹⁾ Bureau of Meteorology forecasts prevented a full ⁽¹⁾ understanding of the weather likely to affect the T flight and what impact this might have on his flight p planning, including alternate routes and fuel fr requirements. Similarly, the pilot's decision not to O submit any form of formal flight notification, and a to not replace the normally-carried portable Emergency Locator Transmitter, adversely affected the prompt commencement of a search 1 and rescue following the accident.

While not contributory to the accident, the investigation identified an error in the flight planning requirements in the Visual Flight Guide (VFG) for VFR flights away from a departure

aerodrome. The Civil Aviation Safety Authority (CASA) has advised that the VFG has been withdrawn for amendment.

The investigation also identified that the optional nature of the navigational component of the Aeroplane Flight Review (AFR) meant that a pilot's navigation skills could remain unassessed for an extended period. While this did not contribute to the accident, CASA has advised that the optional nature of the navigational component will be amended to being a recommended element of the AFR, and that guidance will be provided on its conduct.

FACTUAL INFORMATION

Sequence of events

At about 1452 Eastern Daylight-saving Time¹ on 24 December 2008, a Cessna Aircraft Company 172L aircraft, registered VH-EKS, departed Mudgee Aerodrome on a private visual flight rules (VFR)² flight to a rural property near Glen Innes (the station), New South Wales. On board were the pilot and one passenger.

The flight was the second by the pilot and passenger that day. They had previously flown from the station to Mudgee, departing at about 0900 and arriving at Mudgee at 1125. The pilot and passenger then worked at a property in

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L The 24-hour clock is used in this report to describe the local time of day, Eastern Daylight-saving Time (EDT), as particular events occurred. Eastern Daylight-saving Time was Coordinated Universal Time (UTC) + 11 hours.

The rules prescribed for visual flight, as identified in the Aviation Information Publication (AIP) EN ROUTE (ENR) Part 1.2 (AIP ENR 1.2).

Mudgee before returning to the aerodrome for the through the cloud, while continuing on to the return flight.

On departure from Mudgee, the pilot climbed the aircraft to 5,000 ft above mean sea level (AMSL), an altitude that was reported to be below the cloud, on a direct track to Glen Innes (Figure 1). The pilot reported that, crossing the Golden Highway and approaching the Coolah Tops National Park ('the Tops'), the weather ahead deteriorated, with increasing cloud above and below the aircraft and the cloud base lowering.

station. The descent continued to an altitude below 4,000 ft.

The pilot recalled that, when he levelled out, he started to lose sight of the Tops and surmised that he had descended into a valley. In fact, the pilot had descended the aircraft into Jemmys Valley, which is a closed valley framed by north-east to south-west ridgelines on its eastern and western sides, and an east-west ridgeline to the north (Figure 2). The elevation of the northern ridgeline



Figure 1: Track from Mudgee to Glen Innes

The pilot stated that he could see through and over the Tops at that time.

With the intention of assessing the weather ahead, the pilot climbed the aircraft to on top of the cloud, requiring an altitude of about 7,500 ft. He observed that the cloud ahead was increasing, with a blanket of cloud below and building thunderstorms. The pilot recalled deciding not to stay above the cloud, due to not being instrument rated,³ and descended the aircraft visually

3 Qualified to fly on instruments in accordance with the is about 1,150 m (3,750 ft), while the highest terrain is located at the north-western corner of the valley at a height of 1,240 m (4,070 ft).

The pilot stated that once in the valley, visibility

instrument flight rules (IFR). A pilot who is not instrument qualified is required to ensure that the flight maintains a visual reference with the horizon in accordance with the VFR. VFR flight on top of cloud is permitted in certain circumstances (see AIP ENR 1.1 paragraph 19.2.1 (b)). The criteria for VFR flight on top of cloud were not met on this flight.

quickly deteriorated and, as he had lost sight of With respect to the height of the cloud, the the horizon, he concentrated on keeping the aircraft straight and level. The pilot recalled that he flew slowly up the valley. As a result of the deteriorating weather, the pilot attempted a 180° turn, during which the aircraft entered cloud. The pilot then initiated an orbit and, shortly thereafter at about 1525,4 the aircraft collided with terrain at an elevation of about 900 m (2,950 ft).

The pilot and passenger were seriously injured and the aircraft was seriously damaged.⁵ Shortly after, the passenger succumbed to his injuries.

Figure 2: Valley looking Jemmys north-east (photo courtesy of **NSW Police Force**)



Witness information

The flight in Jemmys Valley was observed by a witness at the southern end of the valley, about 4 km to the south of the accident. The witness's house was at an elevation of 620 m (2,030 ft).

The witness stated that he heard an aircraft approaching his house from the south-west. He went outside and looked straight up at a small single-engine aircraft overflying his house very low, and heading up the valley. The aircraft was flying below the cloud base, but slowly climbing as it traversed up the valley. The witness recalled that, approaching the head of the valley, the aircraft entered cloud and that, shortly after, he thought he caught a glimpse of the aircraft turning to the left. The witness did not hear or observe any impact and presumed that the aircraft had climbed over the mountains.

witness recalled that the tops of the ridgelines to the east and west were enshrouded in cloud, and that the northern ridgeline was also completely covered in cloud. The witness estimated that the cloud base was between 800 and 900 m (2,620 to 2,950 ft).

The day after the accident, the witness led a search party to the last point that he had observed the aircraft. The wreckage was located nearby.

Pilot information

Oualification and experience

The pilot was issued with a Private Pilot (Aeroplane) Licence (PPL) in September 2002. At that time, he had about 100 flying hours. The pilot did not hold an instrument rating.

On the day of the accident, the pilot had a total aeronautical experience of 176 flying hours and a total of 2.7 hours of instrument flying. In the previous 90 days, he had flown 4.0 hours and logged 0.1 of an hour instrument flying.

Flight reviews

On the day before the accident, the pilot underwent a biennial Aeroplane Flight Review (AFR),⁶ which consisted of airborne and theory sections. The airborne section was of 1.1 hours duration and included circuit and aircraft handling work as well as 0.1 of an hour of simulated instrument flight.

The flight records for the AFR stated that the simulated instrument flight included inadvertent entry into cloud with 180° emergency recovery turns to exit the cloud, and 360° steep turns. Each was carried out with reference to instruments only. The instructor assessed the pilot as competent in both activities. The AFR also included 4.5 hours of theory work, with discussion on: the effect of changes to Area Forecasts, Aerodrome Forecasts (TAF),⁷ and meteorological

The time of the accident is calculated assuming direct 4 tracking from the departure point to the accident site using standard Cessna 172 performance figures.

The Transport Safety Regulations 2003 definition of 5 'serious damage' includes the destruction of the transport vehicle.

⁶ Also known as the Biennial Flight Review, the AFR was required under Civil Aviation Regulation 5.81. A key aspect of an AFR was to provide an independent assessment of the pilot's knowledge and skill.

⁷ An Aerodrome forecast (TAF) is a statement of expected meteorological conditions for a specified period in the airspace within a radius of 5 nm (9 km) of the relevant aerodrome reference point.

information decodes; threat and error management; and the requirements for flight under the VFR.

The pilot's previous AFR was conducted in October 2006. In the 2 years between those AFRs, the pilot had flown on 22 occasions for a total of 38.3 flying hours. Of those occasions, nine (totalling 28 flying hours) were flights of greater than 2 hours that involved cross-country navigation.

A navigation exercise was not included as part of the flying exercise in either of the AFRs.

General

The pilot stated the following:

- In the 24 hours preceding the flight, he had adequate rest and nourishment and he felt fit and healthy for the flight — there was no evidence of fatigue or other physiological issues with regard to the pilot's performance during the flight.
- To the best of the pilot's knowledge, the flight was his first encounter with marginal or deteriorating weather conditions in the previous 2 years.
- The pilot had a vehicle positioned in Mudgee, and was prepared to drive the return trip should the weather conditions so require.

Aircraft information

The aircraft, serial number 17259908, was manufactured in the United States (US) in 1971. There was no evidence of any airworthiness or maintenance issues with the aircraft.

The aircraft was fully fuelled to 144 L prior to the departure from the station but was not refuelled at Mudgee. Using standard Cessna 172 performance data, the aircraft would have used 66 L on the flight from the station to Mudgee, leaving 78 L available for the return flight.

Using full fuel and the relevant weights as provided by the pilot, the aircraft was probably under its maximum take-off weight and within centre of gravity limits on departure from the station and from Mudgee.

error Meteorological information

Area forecast

The Area 20^8 forecast that was issued at 0851 and covered the period 0850 to 2200 on the day of the flight, included broken⁹ stratus between 2,500 ft and 5,000 ft in the area of the ranges and western slopes, and scattered cumulus/stratocumulus between 5,000 ft and 10,000 ft, becoming broken in any rain and isolated thunderstorms. Visibility was forecast to reduce to 3,000 m in thunderstorms and 4,000 m in showers.

The forecast for Area 20 that was issued at 1458 later that day was relatively unchanged.

Aerodrome forecasts

The TAF for Mudgee, covering the period 1300 on 24 December to 0100 on 25 December, included 10 km or greater visibility with broken cloud at 2,500 ft above ground level (AGL) and broken cloud at 4,500 ft AGL. The forecast included the possibility of 30-minute periods throughout the forecast period of reductions in visibility to 4,000 m in any rain showers, and of broken cloud at 1,000 ft AGL.

The TAF for Glen Innes for the day of the flight, included 10 km or greater visibility with scattered cloud at 3,000 ft AGL and broken cloud at 5,000 ft AGL. The forecast included two possible deteriorations in the weather for 30-minute periods throughout the forecast period as follows:

- reductions in visibility to 4,000 m in rain showers
- a 40% probability of thunderstorms, with the associated visibility reducing to 3,000 m.

Bureau of Meteorology report

Advice from the Bureau of Meteorology (BoM) stated that, at the time of the accident, scattered to broken low-level cloud with a base of less than 3,500 ft was likely to have been present in the

For the purposes of providing aviation weather forecasts to pilots, Australia is divided into a number of forecast areas (ARFOR). The planned flight was contained in ARFOR Area 20.

⁹ Cloud amounts are reported in oktas. An okta is a unit of sky area equal to one-eighth of total sky visible to the celestial horizon. Few = 1 to 2 oktas, scattered = 3 to 4 oktas, broken = 5 to 7 oktas and overcast = 8 oktas.

area of the accident. Winds were generally east to south-east at less than 15 kts, and no precipitation or thunderstorm activity was reported. The BoM did not report any other weather phenomena that could have affected the safety of flight in the recording regions adjacent to the area of the accident.

Operational information

Flight planning requirements

Before beginning a flight, a pilot in command was required to study all available information for the intended operation. When the flight was away from the vicinity of an aerodrome, a pilot must study, amongst other things, current weather reports and forecasts for the planned route and aerodromes to be used, and plan the flight accordingly.¹⁰ Further, a pilot in command was required to ensure that there was sufficient fuel for the particular flight to be undertaken safely.¹¹

As the pilot's destination was a private landing field, the minimum meteorological forecast requirement was for an area forecast covering the destination.¹² Alternate criteria¹³ also applied, requiring the planning of an alternative destination when more than scattered cloud was forecast below the VFR alternate minimum cloud base of 1,500 ft AGL, or when the forecast visibility reduced to less than the alternate minimum of 8 km. The elevation of the station was about 3,750 ft.

The Area 20 cloud and visibility forecasts that were issued at 0851 were below the alternate 14 AIP ENR 1.10, section 1.2 permitted departure when a criteria for the flight from Mudgee to the station. The nearest alternate was Glen Innes Aerodrome, which required 30 minutes holding fuel due to the possibility of 30-minute deteriorations in the visibility and cloud base at that aerodrome.

Pilot's planning for the flights

The pilot stated that he planned the flights from the station to Mudgee and return but did not obtain aviation weather forecasts for the departure point or destination for either flight that

- 10 CAR 239.
- 11 CARs 233 and 234.
- 12 AIP ENR Part 1.10 paragraph 1.2.1.
- 13 AIP ENR Part 1.1 Section 73.

day.¹⁴ Prior to departure from Mudgee, the pilot phoned for destination weather from a source in the Glen Innes region. With respect to the departure, the pilot stated that he had visually assessed the weather conditions at Mudgee Aerodrome to be suitable for the departure.

The pilot did not submit any form of formal flight notification for the flight.¹⁵ However, the pilot stated that, before the aircraft departed Mudgee, he notified certain persons of the intended flight. There was no notification from those persons to the relevant authorities of the flight being overdue.

Communications

The pilot reported that, during the flight from the station to Mudgee, he contacted Brisbane air traffic control (ATC) to advise flight details, the number of persons on board and to obtain an area QNH.¹⁶ For the return journey, the pilot stated that he attempted to contact ATC on departure from Mudgee, but without success. However, there was no ATC record of any communication from or with the pilot for the return flight.

The pilot made appropriate radio calls on the Mudgee Common Traffic Advisory Frequency (CTAF)17 of 126.7 MHz for the arrival and departure, those calls being recorded by AVDATA.18

- forecast could not be obtained, provided the pilot was satisfied that the aircraft could be returned safely to the departure point within 1 hour. However, in such cases, a suitable forecast for the destination was required to be obtained within 30 minutes of departure; otherwise the flight cannot be continued.
- 15 Although flight notification was not required for the flight, the pilot had the option of initiating flight following through; the submission of full flight details, or nomination of a time for the initiation of search and rescue (SARTIME) with an ATC facility, or the submission of a flight note with a responsible person (see AIP ENR 1.10).
- 16 That pressure setting which, when placed on the pressure setting sub-scale of a sensitive altimeter of an aircraft located at the reference point, will cause the altimeter to indicate the height of the reference point AMSL.
- 17 Used by pilots to report their position at non-towered aerodromes.
- 18 AVDATA was a centralised billing service. At Mudgee and

Medical and pathological information

The passengers' postmortem concluded that the severity of the passenger's injuries was such that 'There was no chance of survival even if prompt emergency treatment [was] made available.'

Survival aspects

Emergency locator transmitter

The aircraft was not fitted with a fixed emergency locator transmitter (ELT)¹⁹ and the pilot did not carry a portable ELT on the flight.²⁰ The pilot stated that he normally carried a portable ELT on all flights; however, as its batteries had failed about 1 week before the flight, it was removed from the aircraft and not replaced. The pilot stated that he had intended to purchase a new portable ELT, but decided to delay the purchase due to the pending change from the analogue 121.5 and 243 MHz system to the new, digital 406 Mhz signalling system.²¹

Search and rescue information

After the accident, the pilot attempted to call for assistance on the aircraft's radios and on his personal mobile phone, but without success. However, the pilot succeeded in alerting a truck driver at Cassilis, which was about 28 km to the south-west, via an ultra-high frequency Citizens Band radio that was fitted to the aircraft. The truck driver contacted police and informed them of the accident. In the ensuing radio communications between the pilot and the truck driver, the pilot provided the following information:

• He estimated his position as either 25 or 50 km south-west of Tamworth.

other appropriately-equipped aerodromes, aircraft billing is determined by recordings of the CTAF frequency.

- 19 A distress beacon that is activated on a specific frequency following an accident, either automatically on impact or manually.
- 20 CAR 252A required that a flight not commence without an approved and serviceable ELT, either fitted or portable. With conditions, the removal of a portable ELT that was usually carried in an aircraft was permitted for a period not exceeding 90 days.
- 21 See CASA Project SS 08/03 titled Oerational and technical amendments for emergency locator transmitters (ELTs), available at <u>http://www.casa.gov.au/scripts/</u> nc.dll?WCMS:PWA::pc=PC_93099.

- He identified that the aircraft had departed from Mudgee at about 1430.
- He passed a Global Positioning System²² position that he believed to be the location of the accident. That position was determined to be about 37 km south of the aircraft's intended destination.
- He advised of his and his passenger's injuries.

An aerial search was commenced in the Melville Ranges area to the south of Tamworth at about 1700 on the day of the accident. That area coincided with the pilot's estimated position relative to Tamworth, that had been passed to the truck driver. A ground search was also conducted in the Glen Innes region, based on the GPS position that was also provided by the pilot. The Glen Innes search was later supplemented by an aerial search.

A search of the Liverpool Ranges was commenced at first light the next morning. The wreckage was located at about 1005, or about 18 hours after the collision with terrain. Medical aid arrived at the accident site at 1045.

Additional information

Aeroplane flight review

A pilot was required to undergo an AFR every 2 years.²³ Guidance on the conduct of an AFR was contained in Civil Aviation Advisory Publication (CAAP) 5.81-1(0) *Flight Crew Licensing Flight Reviews*. When designing a flight review to suit a pilot's particular needs, the assessor was required to address those items considered 'obligatory' and to include any other aspects that may be appropriate to a specific person. A review of aircraft navigation was an optional part of the AFR.

The CAAP referenced the US Federal Aviation Administration (FAA) publication *Conducting an Effective Flight Review.*²⁴ That publication stated that airwork alone will tell the assessor little about the pilot's ability to make safe and appropriate

²² A Global Navigation Satellite System that is used extensively by the aviation industry.

²³ CAR 5.81.

²⁴ Available at http://www.faa.gov/pilots/training/media/ flight_review.pdf

decisions in real-world flying. The FAA publication 200505107 and AO-2007-061.27 recommended that the flight review be conducted as a short cross-country flight with a diversion. The intention was to examine the pilot's decision making ability and situational awareness. Further, the planning of the navigation exercise refreshed the pilot's flight planning skills.

Visual Flight Guide

The Visual Flight Guide (VFG) was produced as an aid for use by VFR pilots.²⁵ There was no evidence that the pilot used the VFG in any planning activity associated with the flight. However, during the investigation, a transcription error was identified in the guide. The transcription error incorrectly limited the application of the requirements of CAR 239, by indicating that only IFR flights away from the vicinity of an aerodrome were required to conduct flight planning. This was contrary to the CAR, which stated that all flights away from the vicinity of an aerodrome were required to make a careful study of particular flight planning items.

Research and previous occurrences

The Australian Transport Safety Bureau (ATSB) Research Investigation Report B2005/0127 General Aviation Pilot Behaviours in the Face of Adverse Weather²⁶ analysed weather related decision making in general aviation. It drew on reports from the ATSB occurrence database to analyse pilot's decision making behaviour when pilots conducting VFR flights encountered marginal or deteriorating weather.

The report made the following conclusions:

- There are significant dangers associated with VFR flight into IMC - 76% of VFR into IMC accidents involved a fatality.
- A safe pilot is a proactive pilot. Dealing with adverse weather is not a one-off decision, but a continually evolving process.

The issue of VFR flight into IMC has also been the subject of a number of ATSB safety investigations; most recently in Aviation Occurrence Reports

ANALYSIS

Meteorological information and flight planning

Obtaining and assessing relevant aviation weather forecasts are an essential component of planning a flight, including route and fuel planning. As such, weather forecasts are integral to reducing the risk presented by weather conditions that may be unsuitable for the proposed flight. By not availing himself of the available Bureau of Metorology (BoM) meteorological information, the pilot precluded a full, pre-takeoff appreciation of the weather-related risk affecting the flight, and limited his available options when bad weather was encountered during the flight.

The pilot's report, witness observations, the Area 20 forecast and the BoM analysis of the weather conditions in the area were all consistent, and suggested an increased risk that the pilot would not be able to maintain visual meteorological conditions along the intended flight track. Had the pilot taken the time to obtain and assess an en route forecast once airborne, or before committing to descending below the cloud to continue the flight, he may have made different decisions about how to best manage the situation and the accident may therefore not have occurred.

The insufficient fuel on board for the flight, including for a possible diversion as a result of the forecast weather, indicated that the flight planning undertaken prior to the flight was inadequate. However, while the pilot's actions to not obtain relevant weather information prior to the accident flight were symptomatic of poor threat and error management, there was no evidence that fuel was a factor in the development of the occurrence.

Approaching the Tops

The initiation of a climb to 7,500 ft approaching the Tops in order to assess the weather ahead, suggested an initially proactive response by the pilot to the deteriorating weather. From that position, there were three possible choices for the pilot; continue on the planned track to the

²⁵ The notice page of the VFG included the disclaimer: 'The information contained in the Guide is likely to be subject to change without notice over time. It should therefore be seen as an educational tool only.'

²⁶ Available at http://www.atsb.gov.au/publications/2005 /pilot behaviours adverse weather.aspx

²⁷ Available at www.atsb.gov.au

destination, divert around the weather, or return to Mudgee.

The subsequent action by the pilot to descend and continue his attempts to reach Glen Innes indicated an ongoing desire to reach his destination. His action to descend below the low cloud ahead, and into the high terrain, significantly elevated the risk of a collision with terrain.

The flight in Jemmys Valley

Given the width of the southern end of Jemmys Valley, and the estimated turning circle of the aircraft at the pilot-reported slow speed, an early decision to turn back may have been successful. The pilot's claim of an almost immediate decision to execute the turn back as he entered Jemmy's Valley could not be reconciled with the estimated 85 seconds taken to fly from the witness's residence to the northern ridgeline, which was 4 km past the witness's location.

The low cloud most likely covered the high and rising terrain as the pilot flew up the valley, diminishing the pilot's natural horizon, including his appreciation of the decreased width of the valley in this area. Together with the pilot's low experience and minimal exposure to flight in instrument meteorological conditions, it was probable that the pilot became disorientated, reducing the likelihood of a successful turn back, and precipitating the collision with terrain.

The emergency response

There was considerable confusion about where to search for the aircraft as a result of the pilot's initially incorrect position information. The pilot's decision not to submit any form of formal flight notification, and to not replace the portable Emergency Locator Transmitter, contributed to the delay and confusion in mounting a prompt search and rescue following the accident.

The Aeroplane Flight Review

The Aeroplane Flight Review (AFR) that was conducted on the day before the accident covered the skills and knowledge that were directly relevant to the intended flight to Glenn Innes. • However, as a navigational exercise was optional in the AFR, it was possible for navigational planning and in-flight skills and decision making • to not be regularly assessed.

The pilot's approach in this instance to the

planning and conduct of the flight, and associated decision making in the face of the adverse weather, suggested that those skills may have eroded since his initial training. The subsequent AFRs represented ideal opportunities for the confirmation of the pilot's navigational skills and general threat and error management during cross-country flights.

Notwithstanding these observations, there was no evidence to show that the decision not to conduct a navigational exercise in either AFR contributed to this accident.

The Visual Flight Guide

The lack of any evidence that the pilot used the Visual Flight Guide (VFG) to plan the flight meant that the transcription error in the VFG was unlikely to have contributed to the accident. However, by not referring to the source documents, there was the potential for the error to result in a pilot operating under the visual flight rules to not properly plan, or to carry insufficient fuel for a flight.

FINDINGS

From the evidence available, the following findings are made with respect to the collision with terrain that occurred 67 km west-north-west of Scone Aerodrome, New South Wales on 24 December 2008, and involved Cessna Aircraft Company C172L aircraft, registered VH-EKS. They should not be read as apportioning blame or liability to any particular organisation or individual.

Contributing safety factors

- The pilot chose not to obtain the relevant aviation weather forecasts for the flight.
- The pilot chose not to turn back or divert, after climbing to 7,500ft and identifying deteriorating weather ahead.
- The weather conditions were such that there was an increased risk of the pilot being unable to continue the flight in visual meteorological conditions.
- The pilot flew into instrument meteorological conditions, in which he was not qualified to operate.
- The pilot became disoriented, reducing the likelihood of a successful turn back and precipitating the collision with terrain.

Other safety factors

- The pilot did not fully plan the flight in flight accordance with the planning requirements, specifically with respect to fuel planning.
- The current advice in Civil Aviation Advisory . Publication 5.81-1(0) Flight Crew Licensing Flight Reviews in relation to the assessment of navigation skills. represents a missed opportunity to identify a pilot's capacity to make safe and appropriate decisions during cross-country flying. [Minor safety issue]
- The flight planning requirements at page 88 of the Visual Flight Guide included a transcription error that inadvertently limited the application the requirements of Civil Aviation of Regulation 239. [Minor safety issue]

Other key findings

• The pilot's decisions not to submit any form of flight notification and not to replace the emergency locator transmitter aircraft's contributed to the delay and confusion in mounting an expeditious search and rescue.

SAFETY ACTION

The safetv issues identified during this investigation are listed in the Findings and Safety Actions sections of this report. The Australian Transport Safety Bureau (ATSB) expects that all safety issues identified by the investigation should be addressed by the relevant organisation(s). In addressing those issues, the ATSB prefers to encourage relevant organisation(s) to proactively initiate safety action, rather than to issue formal safety recommendations or safety advisory notices.

All of the responsible organisations for the safety issues identified during this investigation were given a draft report and invited to provide submissions. As part of that process, each organisation was asked to communicate what • the pilot safety actions, if any, they had carried out or were planning to carry out in relation to each safety issue relevant to their organisation.

Civil Aviation Safety Authority

Flight Crew Licensing Flight Reviews

Safety Issue

The current advice in Civil Aviation Advisory Publication 5.81-1(0) Flight Crew Licensing Flight Reviews in relation to the assessment of navigation skills, represents a missed opportunity to identify a pilot's capacity to make safe and appropriate decisions.

Action taken by the Civil Aviation Safety Authority

The Civil Aviation Safety Authority (CASA) has advised that it has reviewed the guidance in Civil Aviation Advisory Publication 5.81-1(0) Flight Crew Licensing Flight Reviews concerning the conduct of navigational exercises during an Aeroplane Flight Review. CASA will amend the CAAP to recommend that a navigational exercise is considered for inclusion in an AFR. The frequency of those navigational exercises will also be addressed.

ATSB assessment of response/action

The ATSB is satisfied that the action taken by CASA adequately addresses the safety issue.

Visual Flight Guide transcription error

Safety Issue

The flight planning requirements at page 88 of the Visual Flight Guide included a transcription error that inadvertently limited the application of the requirements of Civil Aviation Regulation 239.

Action taken by CASA

CASA has advised that the Visual Flight Guide has been withdrawn for amendment.

ATSB assessment of response/action

The ATSB is satisfied that the action taken by CASA adequately addresses the safety issue.

SOURCES AND SUBMISSIONS

Sources of Information

The sources of information during the investigation included:

- the aircraft maintainer
- the Approved Testing Officer
- Airservices Australia (Airservices)
- the Bureau of Meteorology (BoM)
- the Australian Maritime Safety Authority (AMSA)

- the NSW Police Force
- the Civil Aviation Safety Authority (CASA).

Submissions

Under Part 4, Division 2 (Investigation Reports), Section 26 of the *Transport Safety Investigation Act 2003*, the Australian Transport Safety Bureau (ATSB) may provide a draft report, on a confidential basis, to any person whom the ATSB considers appropriate. Section 26 (1) (a) of the Act allows a person receiving a draft report to make submissions to the ATSB about the draft report.

A draft of this report was provided to the pilot, AMSA, Airservices, the NSW Police Force and CASA. Submissions were received from the pilot, AMSA and CASA. The submissions were reviewed and where considered appropriate, the text of the report was amended accordingly.