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- fostering safety awareness, knowledge and action.

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Australian Transport Safety Bureau
PO Box 967, Civic Square ACT 2608
Australia

1800 020 616

+61 2 6257 4150 from overseas

www.atsb.gov.au

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Collision with terrain, VH-NTV

145 km north of Marree, South Australia

18 August 2011

Abstract

On 18 August 2011, an Aérospatiale Industries AS355F2 helicopter, registered VH-NTV, was operating in an area east of Lake Eyre, South Australia (SA). On board were the pilot and two passengers. The helicopter landed on an island in the Cooper Creek inlet, about 145 km north of Marree, SA, at about 1715 Central Standard Time.

At about 1900, the helicopter departed the island, and soon after takeoff it collided with terrain. The pilot and the two passengers were fatally injured, and the helicopter was destroyed by the impact forces and a fuel-fed fire.

The investigation is continuing.

FACTUAL INFORMATION

The information contained in this preliminary factual report is derived from the initial investigation of the occurrence. Readers are cautioned that new evidence will become available as the investigation progresses that may alter the circumstances as depicted in this preliminary report. As such, no analysis or findings are included in this report.

History of the flight

On 18 August 2011, an Aérospatiale Industries AS355F2 helicopter, registered VH-NTV (NTV), was operating in an area east of Lake Eyre, South Australia (SA) (Figure 1). The pilot and two passengers were filming and gathering information for the production of a television documentary.

Figure 1: Accident site location



At about 1715 Central Standard Time¹, the helicopter landed on an island in the Cooper Creek inlet, about 145 km north of Marree, SA so that the occupants could meet and interview a tour group.

At about 1900, the helicopter departed the island. It was understood that the occupants were intending to return to their accommodation at a property about 48 km north of Marree. One witness overheard the occupants discuss the option of looking at the lake when airborne.

A number of witnesses from the tour group reported seeing the helicopter depart in an easterly direction before turning to the north. Several reported seeing the helicopter descend before going out of view and immediately after they saw a red or orange glow. One witness

1 The 24-hour clock is used in this report to describe the local time of day, Central Standard Time (CST), as particular events occurred. Central Standard Time is Coordinated Universal Time (UTC) + 9.5 hours.

reported seeing a glow before the helicopter disappeared from view.

After advising authorities of the situation, the tour group initiated a search, and later that night they located the wreckage of the helicopter about 3 km east-north-east of the departure point (Figure 2). The pilot and the two passengers were fatally injured. The helicopter was destroyed by impact forces and a fuel-fed fire.

Figure 2: Back-to-base reporting points



Personnel information

Pilot qualifications and experience

The pilot held a valid Commercial Pilot (Helicopter) Licence (CPL(H)) that was issued in 1977, and a night visual flight rules (VFR) helicopter rating, issued in 1979. He was endorsed on the AS355 and several other helicopter types. He had over 16,300 hours flying experience, the majority being on helicopters.

The pilot held a current Class 1 Aviation Medical Certificate that was issued by the Civil Aviation Safety Authority (CASA). His last annual aviation medical examination was conducted in November 2010, and no problems were noted.

To maintain the validity of his CPL(H), the pilot was required to undergo a proficiency check every 2 years. The most recent check was conducted on 27 April 2010, with no record of any problems.

Pilot recent history

The helicopter departed Sydney, New South Wales for the documentary production task on 17 August 2011. The pilot flew 7.5 hours that day, with the last flight landing at about 1640. On 18 August, the pilot conducted 4.3 hours flying prior to the

accident flight, with the first flight commencing at about 0715. Prior to the 17th August, his last flight was on 25 July 2011.

People who met with the pilot and passengers on 17 and 18 August did not note any problems with the health or behaviour of the pilot. Several witnesses from the tour group reported that the pilot and passengers had a light meal but did not consume any alcohol during their visit on the afternoon of 18 August.

Aircraft information

General information

The helicopter was manufactured in France in 1988 (serial number 5380). It was first registered in Australia on 22 February 1989, and had accumulated about 11,920 hours total time in service at the time of the accident.

Figure 3: Previous photo of the helicopter²



In its role as a media helicopter, NTV had seating for a pilot and three passengers. It was certified for charter operations under the VFR.

The helicopter was fitted with two Rolls-Royce 250-C20F turboshaft engines. The accident was the first fatal accident involving a twin-engine helicopter in Australia since 1986, and the first involving an AS355 in Australia.

At the time of the accident, there were 10 AS355 helicopters registered in Australia (including NTV).

Airworthiness and maintenance

Preliminary examination of the helicopter's maintenance records indicated that it was maintained in accordance with the requirements

² Photo courtesy of the Australian Broadcasting Corporation.

of the airframe and engine manufacturers, and with CASA Schedule 5 for instrument, electrical and radio inspections. It was maintained to a night VFR standard, and had a current Certificate of Registration and Certificate of Airworthiness.

The helicopter's last 100-hourly servicing was completed on 9 August 2011. As part of this servicing, both engines were removed for inspection.

Between 9 and 17 August, the helicopter accumulated 15 flight hours. The pilot who flew it during this period reported that there were no problems with its performance and operation.

Fuel

The helicopter had a maximum fuel capacity of 730 L and a typical fuel burn of 210 L/hour. The pilot had organised for three 200 L, sealed drums of aviation turbine fuel (Jet A1) to be positioned at the property where the occupants were intending to stay on the night of 18 August. At about 1450 that day, the pilot landed at the property to refuel, and two of the three drums were nearly emptied during the refuelling. The helicopter departed the property at about 1610, and was operated for about 1.1 hours after refuelling.

Meteorological information

Witnesses from the tour group reported that the weather conditions during the period when the helicopter was at the island were fine, with no cloud and minimal wind. Video footage captured by a witness prior to the helicopter's departure was consistent with these reports.

Sunset in the area was at 1758 and the end of evening civil twilight at 1822. Moonrise was at 2158.³

Recorded information

The helicopter was not fitted with a flight data recorder or cockpit voice recorder, nor were they required to be fitted. Such recorders are rarely fitted to such aircraft.

The helicopter was fitted with a back-to-base reporting system. When activated, this system

transmitted the location of the helicopter to the operator once per minute. In addition to the helicopter's location, the system also transmitted data on its heading, altitude and groundspeed.

For the accident flight, the data showed that the system was activated at 1856:40 and that the helicopter became airborne at 1859:40. The last recorded data point that was transmitted by the back-to-base system was at 1900:40. At that time, the helicopter was at 1,165 ft above mean sea level (AMSL) and on a heading of 045° with a speed of 66 kts (Figure 2).

A Garmin GPSMAP 495 portable global positioning system (GPS) device was on the helicopter. Such devices can contain similar data as the back-to-base reporting system, but recorded more frequently.

The GPS device was recovered from the accident site and taken to the Australian Transport Safety Bureau (ATSB) facilities in Canberra. An initial examination found that a number of components on the device's circuit board were damaged in a manner consistent with the accident sequence. At the time of writing this report, the GPS device was undergoing further examination to determine if the stored data could be recovered.

Wreckage and impact information

Overview of the accident site

The wreckage was located on sandy, undulating terrain (Figure 4). All of the helicopter's major components and extremities were identified at the accident site.

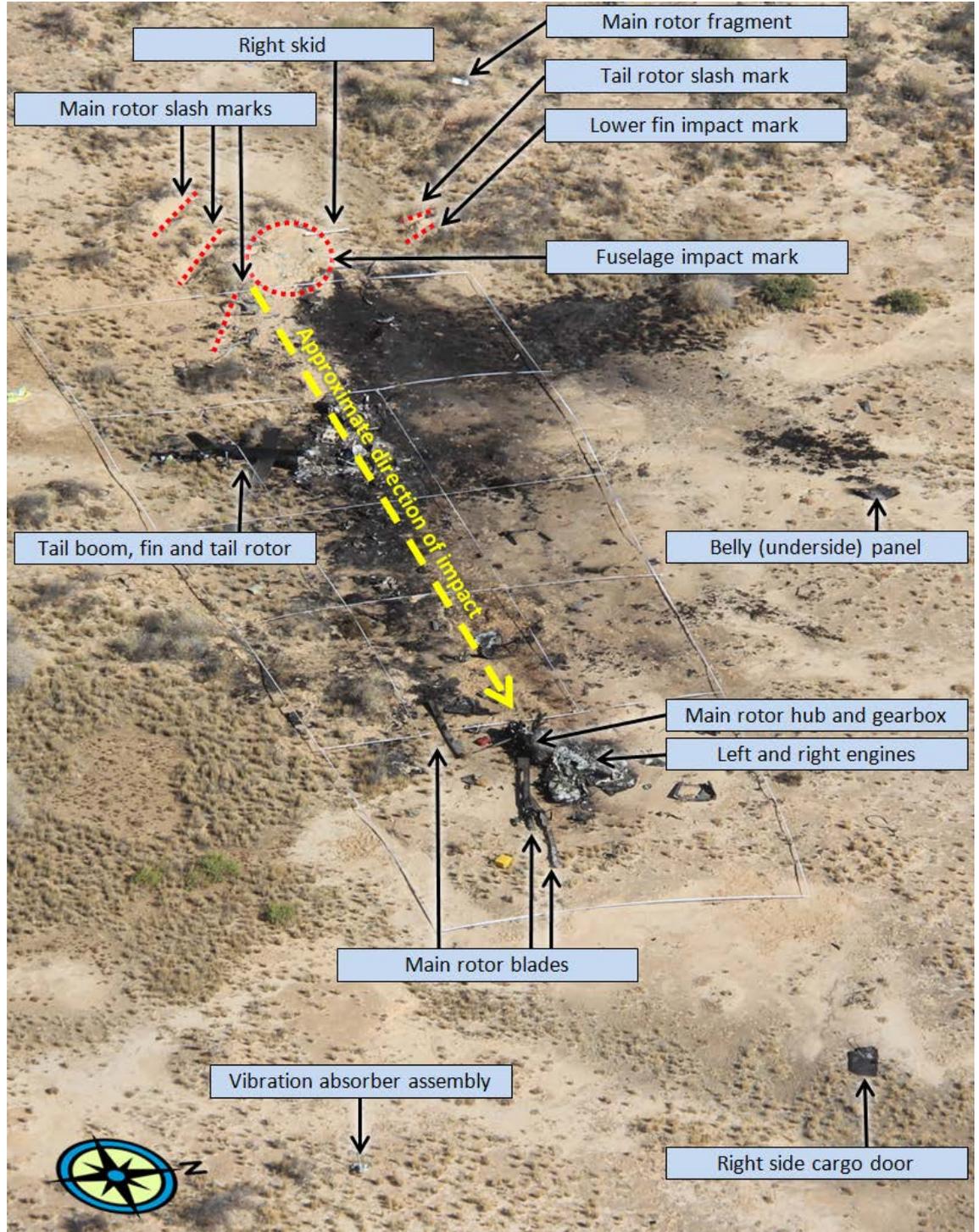
Figure 4: Helicopter wreckage



³ Astronomical information was obtained from Geoscience Australia (www.ga.gov.au/geodesy/astro).

The wreckage trail was about 60 m long and indicated that the helicopter was travelling in an easterly direction at the time of impact (Figure 5).

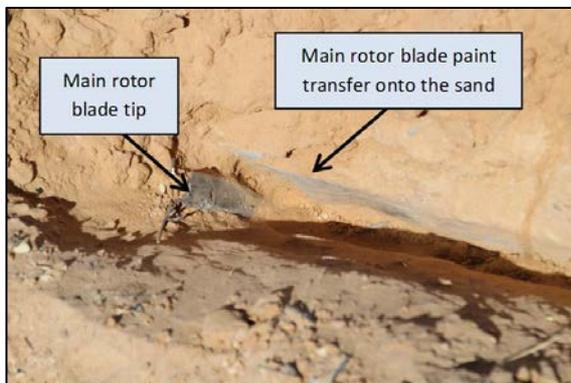
Figure 5: Wreckage trail



Much of the wreckage was destroyed by a fuel-fed fire. There was no evidence of fire along the estimated flight path. The first evidence of fire was identified in the wreckage trail, after the initial impact marks, consistent with a post-impact fire.

Ground strike marks from the helicopter's three main rotor blades were identified at the beginning of the wreckage trail (Figure 5). The marks, and the orientation of two main rotor blade tips found embedded in these marks, indicated that the helicopter impacted the ground in about a 90°, right-side low attitude (Figure 6)

Figure 6: Main rotor blade tip



Several components were recovered from the site for technical examination. These included: both engines; a number of components from the helicopter's flight control system and some of the flight instruments, including the standby artificial horizon.

Component examinations

An examination of the standby artificial horizon confirmed that its internal gyro was rotating at the time of impact (Figure 7). The roll attitude indication on the instrument was captured at about 90° right-side low. The pitch attitude in the instrument had some movement, and therefore its relative position at the time of impact could not be determined.

Figure 7: Standby artificial horizon



Organisational information

The operator had a valid Air Operator's Certificate to conduct charter and aerial work operations using several types of helicopters, including the AS355. Approved operations included aerial photography.

FURTHER INVESTIGATION

The investigation is continuing and will include:

- examination of the helicopter's maintenance and airworthiness records
- examination of the helicopter's engines, instruments and other recovered components
- attempted recovery and analysis of data from the GPS device
- review of the pilot's experience and medical status
- testing of fuel samples from the drums that were used to refuel the helicopter
- analysis of witness statements and the conduct of further interviews as required.