



Australian Government

Australian Transport Safety Bureau

Collision with terrain involving an Air Tractor AT-502B, VH-PTF

45 km W of Moree Airport, New South Wales, on 18 December 2014

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Addendum

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Collision with terrain involving an Air Tractor AT-502B, VH-PTF

What happened

On 18 December 2014, at about 0520 Eastern Daylight-saving Time (EDT), the pilot of an Air Tractor AT-502B aircraft, registered VH-PTF (PTF), commenced aerial agricultural spraying on a property about 45 km west of Moree, New South Wales.

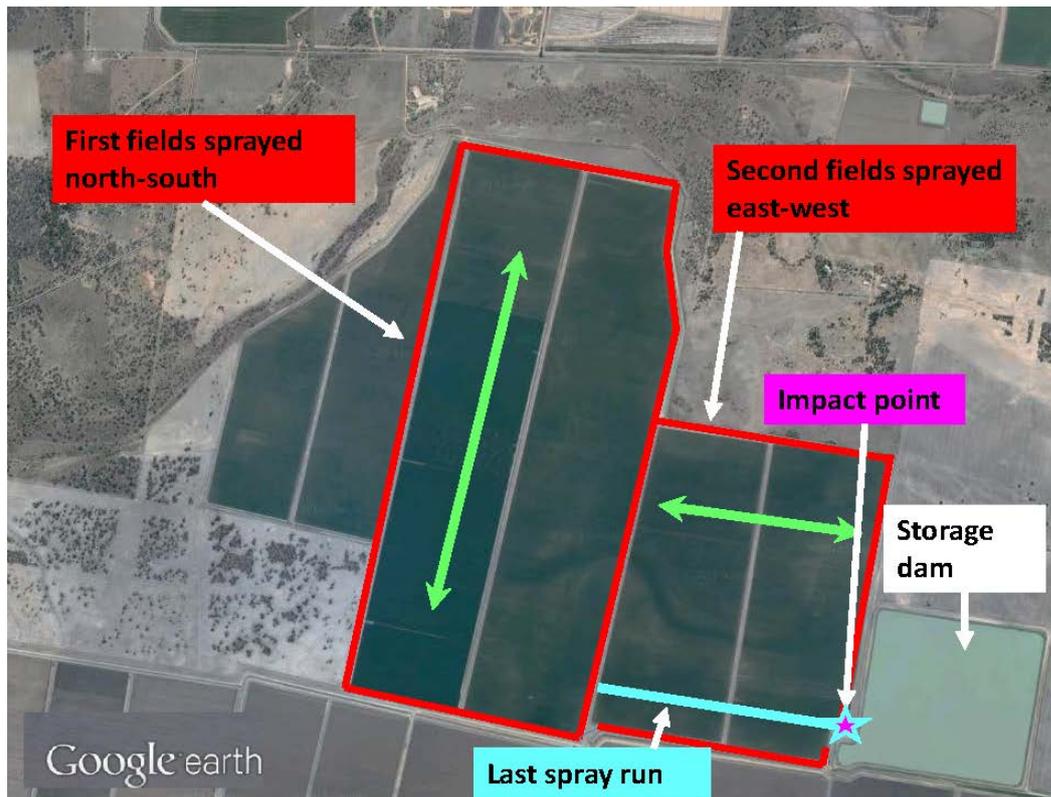
The job consisted of spraying four fields (Figure 1), and the operator had tasked three aircraft, including PTF, to complete the job. The pilots first sprayed the two western-most fields, operating in a north-south direction. To avoid a property to the north-east of the treatment area, the two remaining fields were sprayed in an east-west direction.

Damage to VH-PTF



Source: Pilot

Figure 1: Spray areas and impact location



Source: Google earth

The pilots established three parallel racetrack patterns to operate in, with the pilot of PTF operating at the southern end of the field. The pilot overflowed the storage dam wall heading east, in order to set up the reference points in the GPS, which established the racetrack pattern to be flown. At that time, he observed the dam wall and the sun was rising but obscured by cloud. The pilot then turned the aircraft towards the west and commenced the first spray run, again overflying the dam wall. At about 0700, after completing that spray run, the pilot turned the aircraft to the east again for the second spray run.

The sun was then above the cloud and directly in the pilot's eyes, obscuring his visibility ahead of the aircraft. The glare from the sun reduced the pilot's depth perception, and he could see a shadow on the western side of the dam wall, but not the top of the wall. As the pilot was about to commence a climb and turn at the end of the spray run, he sighted some weeds just south of the aircraft and extended the run to spray the weeds. The pilot then turned the spray off and commenced a climb from about 5 ft above the crop height. As the aircraft climbed to about 30 ft, the landing gear collided with the dam wall, about 60 cm below the top of the wall. The pilot initially thought the aircraft had struck an object such as a windmill. He saw that the left flap had partially detached from the wing and was hanging at an angle and the right flap had detached completely. He also observed a large quantity of fuel escaping from the ruptured left fuel tank.

The pilot then slowly dumped the chemical load while monitoring the flight characteristics of the damaged aircraft, and assessed the options of landing immediately, returning to the airstrip he had departed from, or continuing to Moree where more services were available. The pilot elected to return to the airstrip on the property about 4 km away, mindful that he may need to conduct a forced landing at any time. A pilot operating nearby advised the pilot of PTF that the landing gear was no longer attached.

At about 0704, PTF landed on a dirt road parallel to the airstrip. Both landing gear struts had been detached, which had then broken off the right flap, damaged the left flap and ruptured both fuel tanks. During the landing the propeller was damaged (Figure 2). The pilot was not injured.

Figure 2: Damage to VH-PTF



Source: Pilot

Pilot comments

The pilot reported that during the second spray run, he was aware that the dam wall was ahead of him. As he approached the end of the spray run, he saw the weeds and elected to spray them because they were within reach of the aircraft. He had also considered spraying them later, on the final spray run. While he considered his options, he had shifted the focus of his attention away from the dam wall, assuming that he would be well clear of it.

The storage dam was marked on the work order provided to the pilots at the start of the day, but the wall was not marked nor was it identified as a hazard.

He had the sun visor down on his helmet, but it was still very hard to see due to the sun glare.

Safety action

Whether or not the ATSB identifies safety issues in the course of an investigation, relevant organisations may proactively initiate safety action in order to reduce their safety risk. The ATSB has been advised of the following proactive safety action in response to this occurrence.

Aircraft operator

As a result of this occurrence, the operator of VH-PTF has advised the ATSB that they are taking the following safety actions:

Reminder to company pilots

All company pilots will be reminded of the importance of identifying hazards as part of the pre-application checks. The circumstances leading to the accident will be discussed with the pilots. The importance of identifying hazards and how to mitigate their risks will be reiterated during annual proficiency checks.

Safety message

This incident highlights the importance of assessing whether to conduct a precautionary landing or continue a flight after damage or an issue with the aircraft has been identified.

The ATSB report *Wirestrikes involving known wires: A manageable aerial agriculture hazard*, available at www.atsb.gov.au/publications/2011/avoidable-2-ar-2011-028.aspx, cautioned pilots to conduct an aerial reconnaissance to confirm the location of wires and other hazards. Having a plan and a procedure to minimise the risk of collision with hazards is a valuable mitigation strategy. For further risk management strategies for agricultural operations, the Aerial Application Pilots Manual is available from www.aerialag.com.au/Home.aspx.

The ATSB conducted a database review of reported occurrences involving sun glare as a contributing safety factor. A range of incidents and accidents occurred due to glare from a rising or setting sun, including: airborne collisions with terrain and objects, such as fences, trees and other aircraft; difficulty for pilots to correctly select and set switches and controls on the instrument panel; near collisions where one or more pilots could not clearly sight another aircraft; and ground collisions. Research conducted by the US Federal Aviation Administration (FAA) into sunlight and its association with aviation accidents, found that 130 accidents occurred between 1988 and 1998 in which sun glare was a contributing factor. The article is available at www.hf.faa.gov/docs/508/docs/cami/0306.pdf.

General details

Occurrence details

Date and time:	18 December 2014 – 0700 EDT	
Occurrence category:	Accident	
Primary occurrence type:	Collision with terrain	
Location:	45 km W Moree aerodrome, New South Wales	
	Latitude: 29° 25.37' S	Longitude: 149° 23.35' E

Aircraft details

Manufacturer and model:	Air Tractor Inc. AT-502B	
Registration:	VH-PTF	
Serial number:	502B-0404	
Type of operation:	Aerial Work – Aerial Agriculture	
Persons on board:	Crew – 1	Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Substantial	

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.