

**Aviation Safety Investigation Report
199503033**

**Ayres Corp
S2R-T34**

14 September 1995

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NOTE: All air safety occurrences reported to the ATSB are categorised and recorded. For a detailed explanation on Category definitions please refer to the ATSB website at www.atsb.gov.au.

The Bureau did not conduct an on scene investigation of this occurrence. The information presented below was obtained from information supplied to the Bureau.

Occurrence Number: 199503033 **Occurrence Type:** Accident
Location: Jerilderie
State: NSW **Inv Category:** 4
Date: Thursday 14 September 1995
Time: 0800 hours **Time Zone:** EST
Highest Injury Level: Minor
Injuries:

	Fatal	Serious	Minor	None	Total
Crew	0	0	1	0	1
Ground	0	0	0	0	0
Passenger	0	0	0	0	0
Total	0	0	1	0	1

Aircraft Manufacturer: Ayres Corp
Aircraft Model: S2R-T34
Aircraft Registration: VH-PDJ **Serial Number:** T34-160DC
Type of Operation: Commercial Aerial Agriculture - Other
Damage to Aircraft: Substantial
Departure Point: 13 km S Jerilderie NSW
Departure Time:
Destination: 13 km S Jerilderie NSW

Crew Details:

<u>Role</u>	<u>Class of Licence</u>	<u>Hours on</u>	
		<u>Type</u>	<u>Hours Total</u>
Pilot-In-Command	Commercial	283.0	2068

Approved for Release: Thursday, October 5, 1995

The pilot was tasked with spreading urea on rice crops. With about 550 litres of fuel on board he accepted 1150 kg of urea for the first hopper load of the day. The weather conditions included light and variable wind, less than five knots. The outside temperature was about 14 degrees celsius. He took off to the north from a 700 metre, level, dry, dirt airstrip. It was his first takeoff from this airstrip in this type of turbine powered aircraft. Prior to the takeoff, he was aware that his employer had taken off from the same airstrip with an equivalent load in the same type of aircraft in similar weather conditions in the past.

Well into the takeoff roll the pilot assessed that the far bank of an irrigation channel, just beyond the end of the strip, might be a danger so he activated the dump lever. Very little of the load managed to exit the hopper because solids, like urea, dump very slowly in contrast to liquids. Soon after the aircraft became airborne the left main landing wheel clipped the one metre high bank. Beyond the channel was about 600 metres of obstruction free flat paddock.

Suspecting that the landing gear may have suffered damage, the pilot overflew the loader who advised that the left landing gear leg was trailing. The pilot then elected to fly back to Jerilderie where another slow overfly confirmed the damaged landing gear. On final he shutdown the engine hoping to save it from unnecessary damage. The aircraft undershot the runway and came to rest in an oat crop about 100 metres short of the threshold.

Had the pilot loaded the aircraft only to 3042 kg, in accordance with the approved flight manual recommended agricultural gross weight for takeoff, the hopper would have contained about 150 kg of urea while flying with 550 litres of fuel on board. This being a highly uneconomical hopper load, the pilot elected to carry 1150 kg because in accordance with the flight manual, operation of the aircraft at a gross weight in excess of the recommended agricultural gross weight for takeoff is allowed at the discretion and on the responsibility of the pilot. Subsequent to the accident the pilot's employer again successfully tookoff from the 700 metre airstrip with 550 litres of fuel on board and 1150 kg of urea in the hopper in similar weather conditions.

The pilot advised that he commenced the takeoff from the threshold. His technique was to progressively increase power to 55 pounds of torque during the initial takeoff roll. Fifty five pounds of torque applies to a reduced takeoff power technique favoured by operators in an attempt to save engine wear and tear. Maximum takeoff power is 58.4 pounds of torque which the pilot applied when concerned about the approaching channel bank.

No fault with the aircraft has been found which may have contributed to the accident. The pilot advised that this aircraft performed as well as others of the same type which he had flown.

The consensus of opinion from other experienced agricultural pilots is that the aircraft was capable of taking off with the 1150 kg. They believe it possible that the pilot may have applied the reduced takeoff power a little too slowly, thereby accelerating too slowly during the initial portion of the takeoff roll. Also, when concerned about the embankment, he may have pulled back on the control column too early, and may have inadvertently placed the aircraft nose high in a condition of higher than desirable drag at an airspeed too slow for rotation. It is also possible that the aircraft encountered a light tailwind during the takeoff roll.

Significant Factors

The following factor is considered relevant to the development of the accident:

1. The takeoff technique applied by the pilot was not optimum for the combined factors of aircraft gross weight, weather conditions, and airstrip length with an obstacle at the end of the strip.

