



NO. 94-001

CESSNA R182

ZK-EKL

AWAROA 12 NM EAST OF TAKAKA

9 JANUARY 1994

ABSTRACT

This report relates to the landing accident of Cessna R182, ZK-EKL, at Awaroa private airstrip on 9 January 1994. The safety issues discussed are the adequacy of the windsocks, the operator's information to pilots on wind conditions and the checking of pilots.

TRANSPORT ACCIDENT INVESTIGATION COMMISSION

AIRCRAFT ACCIDENT REPORT NO 94-001

Aircraft Type, Serial Number and Registration:	Cessna R182, 00054 ZK-EKL
Number and Type of Engines:	One Lycoming 0-540-J3C5D
Year of Manufacture:	1977
Date and Time:	9 January 1994, 1200 hours*
Location:	Awaroa. 12NM East of Takaka. Latitude: 40°51.85'S Longitude: 173°02'E
Type of Flight:	Air Transport, Charter
Persons on Board:	Crew: 1 Passengers: 4
Injuries:	Crew: 1 Nil Passengers: 4 Nil
Nature of Damage:	Substantial
Pilot in Command's Licence:	Commercial Pilot Licence (Aeroplane)
Pilot in Command's Age:	23
Pilot in Command's Total Flying Experience:	709 hours 3.5 hours on type
Information Sources:	Transport Accident Investigation Commission field investigation
Investigator in Charge:	Mr K A Mathews

* All times in this report are NZDT (UTC + 13 hours)

1. NARRATIVE

1.1 On 9 January 1994, ZK-EKL, a Cessna R182, was being flown on a charter flight from Paraparaumu Aerodrome to Awaroa private airstrip 12 NM east of Takaka.

1.2 The aircraft departed Paraparaumu with 5 POB at an AWW of 1390 kg, 16 kg under the maximum of 1406 kg permitted for take-off and landing. With the planned fuel burn off the landing weight at Awaroa was anticipated to be 1354 kg.

1.3 The 55 minute flight proceeded normally, and there were no aircraft handling or weather problems encountered enroute to Awaroa.

1.4 Awaroa Airstrip was at an elevation of 20 feet, 535 m in over-all length, and orientated east/west. It was level, and the surface consisted of short dry grass with a useable width of 7 m.

1.5 Landings and take-offs could be made in either direction, but the preferred direction for landing was to the east and for take-offs to the west. This was due to the close proximity of high terrain to the east. There was an overrun area on the eastern end of the airstrip. The effect of some tall trees off the western end of the airstrip was to displace the threshold by approximately 100 m. This displacement of the threshold was not marked. The effective landing distance available to the east was some 435 m, and for a landing to the west 535 m.

1.6 To carry out Air Transport operations, the published landing distance required for the Cessna R182 to operate into a strip such as Awaroa was 600 m at 1406 kg in still air conditions. A five knot tail wind, the maximum on the landing graph, would have increased the required distance to 720 m. For Air Transport operations a twenty knot head wind would have been required to land in the distance available to the east, and twelve knots in the distance available to the west.

1.7 Upon arrival at Awaroa the pilot overflew the airstrip and estimated the wind strength as up to 15 knots from the north. This was assessed from the wind sock positioned midway along the airstrip on its northern side.

1.8 As the pilot flew the aircraft in a left hand circuit to position himself for an approach and overshoot to

the east, he experienced a marked degree of turbulence and downdraughting. He decided to continue the approach up to his nominated landing decision point and overshoot. This was in order to give himself time to more accurately evaluate the landing conditions, and to alert the pilot of an aircraft parked on the eastern extremity of the strip to move his aircraft.

1.9 A significant degree of turbulence and sink was experienced on final approach, and at the decision point a go-around was initiated. Further sink and marked turbulence was experienced on overshoot with the aircraft clearing the trees off the eastern end of the overrun area by an estimated 50 feet.

1.10 The pilot continued in a left hand turn and flew the aircraft to a left downwind position for another approach and overshoot to the east.

1.11 As he approached his landing decision point he encountered severe turbulence and sink. Because of the severity of the conditions he encountered, the pilot considered he had no choice but to attempt to land, rather than overshoot and run the risk of colliding with the trees and high terrain in the overshoot path.

1.12 The aircraft touched down 207 m past the displaced threshold, 228 m from the eastern end of the airstrip and from the parked aircraft which had blocked the overrun area.

1.13 There was insufficient runway distance remaining to stop his aircraft. To avoid a collision with the parked aircraft the pilot steered his aircraft off the southern edge of the airstrip in an attempt to go around the parked aircraft. As a result the right main undercarriage wheel struck some rough ground and the undercarriage leg folded backwards due to the overload. The aircraft then slewed to the right and came to rest approximately 15 m from the parked aircraft.

1.14 The damage to the aircraft was confined to the right main undercarriage and supporting structure, right main wingtip, and the right horizontal stabilizer.

1.15 A third seat belt was fitted to the second row of seats, but there was no record of an approved modification for an additional seat belt to be fitted in that position.

When the operator purchased ZK-EKL some twelve years previously, the seat belt was already installed. He assumed appropriate approval had been obtained, and operated the aircraft using the additional seat belt.

1.16 The pilot had a total flight time of 3.5 hours on the Cessna R182, which included an unsupervised flight to Awaroa the previous day. He had been checked out at Awaroa, in accordance with the company's operations manual, in a Cessna 172 on 23 December 1993. On the day of the accident he was on his fourth flight to Awaroa since the check out and his second flight in the Cessna R182.

1.17 The pilot had received formal training in strip operations early in 1993, and as an instructor pilot had subsequently conducted courses in strip operations for other pilots.

1.18 The pilot stated that he had estimated the prevailing wind at Awaroa prior to the landing as up to 15 knots from the north, giving a direct left cross wind for the approach to the east. This was assessed from the windsock.

1.19 Several ground witnesses to the accident, including the pilot of the parked aircraft, stated that the wind was blowing from the west to north-west and very strong, probably 25 to 30 knots. White sand had also been observed being whipped up off the nearby beach by the wind.

1.20 Strong north-westerly winds with moderate to severe turbulence was forecast for the region, and the New Zealand Meteorological Service's aftercast of the prevailing wind conditions showed a strong north-westerly airstream covered most of South Island and the Cook Strait area at the time of the accident, with associated turbulence

and downdraughts in the lee of the ranges. Because of the ranges and broken nature of the ground to the west and north-west of Awaroa the wind would have been gusty with a strong possibility of downdraughts.

1.21 The pilot of the parked aircraft, who had landed at Awaroa about one hour before the accident, had made his approach and landing to the west because of the prevailing wind conditions. During his approach to land he had experienced significant turbulence, which was usual in a westerly or north-westerly wind. He stated that the windsock, because of its location, was an unreliable indicator of the overall wind conditions for landing at Awaroa and should be used only as a general guide.

1.22 During his check out at Awaroa the pilot of the Cessna R182 stated that he had not had the limitations of the windsock drawn to his attention, nor had he gained any experience at operating into Awaroa in north-westerly wind conditions.

1.23 The company's operations manual did not refer to the limitations of the windsock at Awaroa airstrip, nor did it point out the hazards a pilot may encounter when operating into Awaroa in strong north-westerly wind conditions.

1.24 The pilot of the parked aircraft was aware that he had obstructed the overrun area. It was a normal procedure to park aircraft in this position and then taxi to an adjacent area, or take-off, when another aircraft was observed to be circling to land. This was necessary as the land owners did not normally approve of aircraft parking off the airstrip itself. In the event, the pilot was some distance from his parked aircraft and had insufficient time to move it before ZK-EKL touched down.

2. FINDINGS

2.1 The pilot was appropriately licensed and authorised for the flight.

2.2 The aircraft had a valid Certificate of Airworthiness and Maintenance Release.

2.3 The aircraft's centre of gravity and operating weight were within limits.

2.4 The centre seat passenger in the second row of seats was not provided with an approved restraint system.

2.5 Strong gusty north-westerly wind conditions with associated downdraughts and turbulence were as forecast for the Awaroa area at the time of the accident.

2.6 The pilot had had no prior exposure to the hazards of attempting to land at Awaroa in strong north-westerly wind conditions.

2.7 In view of the pilot's level of experience on the Cessna R182 type a check out at Awaroa in the Cessna R182 would have been appropriate.

2.8 The combination of the chosen direction for the planned approach and overshoot in the existing wind conditions, and the inability to overshoot safely, forced the pilot to make a late touch-down with insufficient distance remaining to stop the aircraft.

2.9 The windsock at Awaroa gave misleading information as to the prevailing wind conditions.

2.10 The pilot was not aware of the limitations of the wind sock at Awaroa.

2.11 The landing distance available to the east at Awaroa was insufficient for the Cessna R182 to comply with the published landing requirements for Air Transport Operations.

2.12 In view of the landing distance required for Air Transport operations, the choice of the Cessna R182 for the flight to Awaroa was inappropriate.

2.13 A contributing factor to this accident was the pilot's failure to use all the resources and cues available to him to determine the wind conditions for landing.

3. SAFETY RECOMMENDATIONS

3.1 It was recommended to the manager of Welair that he:

Negotiate, with the owner and other operators, for a second full-size windsock to be positioned at Awaroa in an appropriate location, to help pilots gauge the prevailing wind conditions more accurately (019/94), and

Amend Welair's Operations Manual to include a paragraph alerting pilots to the hazards of operating into Awaroa in strong north-westerly wind conditions (020/94), and

Ensure for operations into airstrips, that a pilot's ability has been checked in each aircraft type which the company requires him or her to operate into that strip (021/94).

The manager of Welair responded:

"The windsock is not ideally situated. It often indicates more cross wind than is actually experienced at strip level. This is due to the sheltering gorse adjacent to the strip. We agree another windsock on the strip would be

an improvement. However if the wind is west or north-west the direction is clearly indicated by the windsock although the magnitude is often wrong.

During the check out pilots are briefed on the various conditions likely to be experienced. Not just north-westerly conditions either. We will amend the operations manual to formalize this aspect.

The pilot was checked out on the Awaroa airstrip in accordance with the approved procedure laid down in the Welair Operations Manual. Although this check was carried out in a C172 he was subsequently type rated in a CR182 and completed approximately an hour of short take-offs and landings in that aircraft. He has significant experience on light twins and high performance singles such that handling the CR182 presented few problems. He demonstrated more than adequate competence during both his Awaroa and Type Rating checks. Additionally the C172 and CR182 have similar handling characteristics once the latter's gear is down in the landing configuration."

3 May 1994

M F Dunphy
Chief Commissioner

GLOSSARY OF ABBREVIATIONS USED IN THIS REPORT

AUW	All up weight
kg	Kilograms
km	Kilometres
m	Metres
NM	Nautical miles
NZDT	New Zealand Daylight Time
POB	Persons on Board
UTC	Coordinated Universal Time