FINAL REPORT

AIC 16-1001

PAPUA NEW GUINEA

ACCIDENT INVESTIGATION COMMISSION

SHORT SUMMARY REPORT

North Coast Aviation

P2-NCA

Pacific Aerospace Ltd PAC 750XL

Bunguwat Airstrip, Morobe Province

PAPUA NEW GUINEA

10 April 2016

About the AIC

The Accident Investigation Commission (AIC) is an independent statutory agency within Papua New Guinea (PNG). The AIC is governed by a Commission and is entirely separate from the judiciary, transport regulators, policy makers and service providers. The AIC's function is to improve safety and public confidence in the aviation mode of transport through excellence in: independent investigation of aviation accidents and other safety occurrences within the aviation system; safety data recording and analysis; and fostering safety awareness, knowledge and action.

The AIC is responsible for investigating accidents and other transport safety matters involving civil aviation, in PNG, as well as participating in overseas investigations involving PNG registered aircraft. A primary concern is the safety of commercial transport, with particular regard to fare-paying passenger operations.

The AIC performs its functions in accordance with the provisions of the PNG Civil Aviation Act 2000 (As Amended), Civil Aviation Rules 2004 (as amended), and the Commissions of Inquiry Act 1951 (as amended), and in accordance with Annex 13 to the Convention on International Civil Aviation.

The object of a safety investigation is to identify and reduce safety-related risk. AIC investigations determine and communicate the safety factors related to the transport safety matter being investigated.

Readers are advised that in accordance with Annex 13 to the Convention on International Civil Aviation, it is not the purpose of an AIC aircraft accident investigation to apportion blame or liability. The sole objective of the investigation and the Final Report is the prevention of accidents and incidents. (Reference: ICAO Annex 13, Chapter 3, paragraph 3.1.)

However, it is recognised that an investigation report must include factual material of sufficient weight to support the analysis and findings. At all times the AIC endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why it happened, 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.

At 0815 local time, on 10 April 2016, a Pacific Aerospace PAC 750XL single turbine-engine aircraft, registered P2-NCA, owned and operated by North Coast Aviation, was involved in a take-off roll accident at Bunguwat, Morobe Province. The AIC was informed of the accident by the operator around midday on Monday 11 April 2016 and commenced an investigation.

The AIC has produced a short summary report for greater industry awareness of potential safety issues and possible safety actions.

Nose wheel into soft ground during take-off roll involving P2-NCA PAC-750XL

Occurrence Details

On 9 April 2016, at about 2215 UTC[1] (0815 local on 10 April 2016), a Pacific Aerospace PAC 750XL single turbine-engine aircraft, registered P2-NCA, owned and operated by North Coast Aviation (NCA), landed at Bunguwat Airstrip, in the Morobe Province of Papua New Guinea. The aircraft had departed from Nadzab earlier. Passengers disembarked and cargo was unloaded. About 15 minutes later, the pilot taxied out and lined up for take-off with four passengers and cargo on-board. The pilot lined up towards the far left of the strip. As soon as the aircraft started rolling, the nose-wheel and the left main wheel started digging into the surface of the strip. About 20 metres into the roll the nose-wheel, already about 10 cm deep into the surface, compressed the soil in front of it to a harder surface causing the nose-wheel fork to snap off (Figure 4). The nose suddenly dropped and the nose landing-gear strut, under the weight of the engine, dug deep into the ground (Figure 1). The propeller subsequently struck the ground and caused the engine, which was still running at take-off power, to abruptly stop. None of the passengers and the pilot were injured and they egressed the aircraft unaided.

Figure 1: P2-NCA at Bunguwat

1 The 24-hour clock, in Coordinated Universal Time (UTC), is used in this report to describe the local time as specific events occurred. Local time in the area of the accident, Papua New Guinea Time (Pacific/Port Moresby Time) is UTC + 10 hours.

Background

Bunguwat is located about 30 nm (60 km) north of Nadzab (Figure 2), at an elevation of about 5,400ft (See Figure 2). The Morobe Provincial Government often charters North Coast Aviation for flights to deliver school materials to the Bunguwat Village. The villagers also charter flights to Nadzab for the transport of passengers, and vegetables to sell in Lae. This is typical for isolated villages with no physical connection to the outside world other than by aircraft. Air transport is crucial and having and maintaining an airstrip is vitally important. The villagers had recently extended the airstrip by approximately 50 metres, which was the area the pilot used to commence his take-off roll at time of the occurrence.

Figure 2: Bunguwat located north of Nadzab

The Aircraft

The pilot stated that the aircraft had performed normally before the accident. The nose-wheel fork with the attached wheel separated from the nose landing-gear oleo on impact, when the attaching bolts fractured (Figure 1). The propeller was substantially damaged when the aircraft's nose dropped and the propeller blades, rotating under take-off power, struck the ground. The propeller assembly, still attached to the reduction drive gearbox, separated from the engine. Subsequently the engine and its mounts sustained substantial damage.

The aircraft was substantially damaged.

Figure 3: Propeller Damage

Figure 4: Aircraft track and impact point

Meteorological Conditions

The weather at Bunguwat usually deteriorates after 2400 (1000 local). The operator's pilots normally operate into and from Bunguwat before that period. Witnesses including a passenger and the pilot confirmed that the sky was clear at the time of the accident. However, the villagers pointed out that there was significant rain during the previous day and night.

The Bunguwat Airstrip

The Bunguwat Airstrip is a one-way strip oriented 150 degrees in the take-off direction. It has been in service for many years. It is maintained by the villagers under the direction and funding of NCA. The take-off end of the strip was extended about 50 metres several months ago. The NCA Flight Operations Manager stated that the extension is usually used to manoeuvre and line-up. The grass strip appeared to be satisfactorily maintained. However, during the on-site investigation, it was observed that there was a significant amount of dead grass on the surface that had been left there after it had been cut. This would prevent moisture collected on the ground from evaporating and drying out quickly.

Figure 5: Patch referred to by pilot as appearing dark and damp on the day of accident

The Operator

North Coast Aviation operates into Bunguwat at least once a week. The company has a couple of check and training pilots for the type of aircraft they operate, and so carry out type endorsement flights, route and aerodrome checks on new pilots upon recruitment.

The notes section of NCA Airstrips Guide, Rev 0, dated 20/10/2014 for Bunguwat stated "T/O 15 soft patches".

Pilot information

The pilot had flown into remote PNG strips many times before the day of the accident, and had a lot of experience flying in Papua New Guinea. However, he had not flown frequently to Bunguwat. The pilot's log book and company training file recorded that the pilot had flown there twice under supervision. Once in the Britten Norman BN2 twin piston Islander on 4 May 2015 and the other on 8 February 2016 in the PAC 750XL.

During his interview, the pilot stated that he decided to line up on the left side of the strip (well left of the centreline), because he observed a patch of bare earth on the right side which, to him appeared darker than other parts and damp (Figure 3). However, he did not walk along the strip, along his intended take-off path, to check the integrity of the surface and suitability for the take off.

The pilot also stated that the short take-off roll felt completely normal and then it all happened so suddenly.

AIC comment

- The turn-around time was about 15 minutes after the pilot landed at Bunguwat on Sunday 10 April 2016.
- He had landed the PAC-750 using the centreline for the touch-down, landing roll and taxi to the apron area. There was no issue of soft ground along that surface of the strip.
- It is likely that the cut/dead grass lying on the strip surface would prevent evaporation and drying, and allow the ground beneath it to hold water for longer periods.
- The pilot had only flown into Bunguwat twice before the accident flight. Once on 4 May 2015 with a check pilot and once on 8 February 2016 with the Chief Pilot on Britten Norman Islander BN2A aircraft. This flight was his first on the PAC 750XL aircraft.
- A passenger, who was the head teacher of the local community school, informed the investigators that the surface used by the pilot was actually an extension of the airstrip by about 50 metres beyond the original threshold.
- During his interview with the AIC investigators, the pilot stated that he misjudged the general surface condition of the airstrip, and chose the left side of the airstrip for his take-off roll, which he subsequently found was soft/boggy compared to the centreline.
- Even though he had safely landed and taxied along the firm surface of the centreline of the strip, he chose to use the left side of the strip for the takeoff, without doing a pre-flight inspection of that surface. The NCA Airstrips Guide should have alerted him to added caution due to the statement of soft patches.
- An inspection (walk-through) during the on-site investigation confirmed that the ground condition of the surface to the right of the centreline, while not dry, was sufficiently hard for a take-off roll.

General details

Date and time:	9 April 2016 2215 UTC	
Occurrence category:	Accident	
Primary occurrence type:	Aircraft bogged during take-off roll — Nose-wheel assembly failed	
Damage	Substantial nose gear, propeller, engine and airframe damage	
Location:	Bunguwat Airstrip, Morobe Province	
	Latitude: 06° 0′ 22″ E	Longitude: 146° 43′ 11″ E
Type of operation:	Charter	
Persons on board:	Crew: 1	Passengers: 4
Injuries:	Crew: 0	Passengers: 0

Crew details

Nationality	New Zealand
Licence type	PNG CPL
Licence number	P22215
Total hours	1795.5
Total hours on type	191.7
Total hours last 90 days	191.7
Total hours last 7 days	25.3

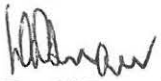
Aerodrome details

Aerodrome and code	Bunguwat, BWT
Runway directions and slope	15/33 (One-way strip; take-off 15) 5% down to South East
Runway surface and strength	Limestone/clay grass strip
Runway length	530 m (includes the 50 m extension towards northern end)
Runway elevation	5,400 ft

Aircraft details

Aircraft manufacturer and model:	Pacific Aerospace Ltd PAC 750XL
Registration:	P2-NCA
Serial number	134
Total time in service	6,101.1 hours
Engine	
Engine manufacturer and model	Pratt and Whitney Canada PT6A-34
Engine serial number	PCE-RB0324
Total time since overhaul	2,085.8 hours
Propeller	
Propeller manufacturer and model	Hartzell B3TN
Propeller serial number	BUA27097
Total time since overhaul	2,521.8 hours

Approved



David Inau, ML

Chief Executive Officer

Date: 03/06/16