



FINAL REPORT

AIC 14-1007

**PAPUA NEW GUINEA
ACCIDENT INVESTIGATION COMMISSION
SHORT SUMMARY REPORT**

North Coast Aviation

P2-TLF

Pacific Aerospace Ltd PAC 750XL

Bulago Airstrip, Hela Province

PAPUA NEW GUINEA

24 September 2014

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.

On 24 September 2014, the PNG AIC was informed by the Civil Aviation Safety Authority of PNG (in accordance with Section 62 of the PNG Civil Aviation Act (2000)) of a Pacific Aerospace Ltd PAC 750XL landing accident at Bulago, Hela Province. The AIC commenced an on-site investigation.

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

Landing on newly constructed airstrip

Aircraft bogged during landing roll – Nose-wheel assembly failed

Occurrence Details

On 24 September 2014, the pilot of a Pacific Aerospace Ltd PAC 750XL aircraft, registered P2-TLF, operated by North Coast Aviation (NCA), flew to the newly constructed, but as yet unopened, Bulago airstrip, in the Hela Province of Papua New Guinea to assess the progress of the new strip. After six orbits and two mock approaches assessing the strip and establishing an approach profile, the pilot decided that the strip was suitable for a landing. At 0203 UTC¹ the aircraft touched down on the strip.

During the landing roll the main and nose wheels sank through the limestone and gravel surface of the strip into the clay beneath and the nose wheel and nose-wheel fork were torn from the oleo. The propeller was substantially damaged as the nose-gear oleo dug into the surface.



Figure 1: P2-TLF at Bulago

Background

Bulago (05° 27.83' S / 142° 09.74' E) is located about 8 nm (15 km) south-southwest of Agali in a remote part of the Hela province (See Figure 2). There are no roads leading to the area and the local people are completely isolated. The nearest access to air transport is at Agali. About 2 months prior to the accident, Frontier Resources a mineral exploration company planning a drilling project in the Bulago valley area, had requested NCA to commence operations into the strip under construction at Bulago. Construction had commenced a number of years before, but it had not been inspected or opened (approved for aircraft operations), nor had it been used.

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.

At various times between 20 and 40 villagers were working on the construction using spades and bush tools, including digging sticks and rocks. Two months prior to the accident, the pilot made contact with the person in charge of upgrading the strip, and continued this contact while he and his fellow pilots from NCA did some observations when they overflew Bulago to assess the construction progress. They took the opportunity to divert to, and overfly, Bulago at low level during some of their daily flights in and out of Agali.

North Coast Aviation had delayed the first landing at Bulago for about 3 weeks from the day the drilling was planned to commence (about 1 September 2015), because they were not satisfied that the strip was ready. However, the strip construction personnel and the geologist at Bulago (the pilot's father), spoke to the pilot assuring him that it was ready.

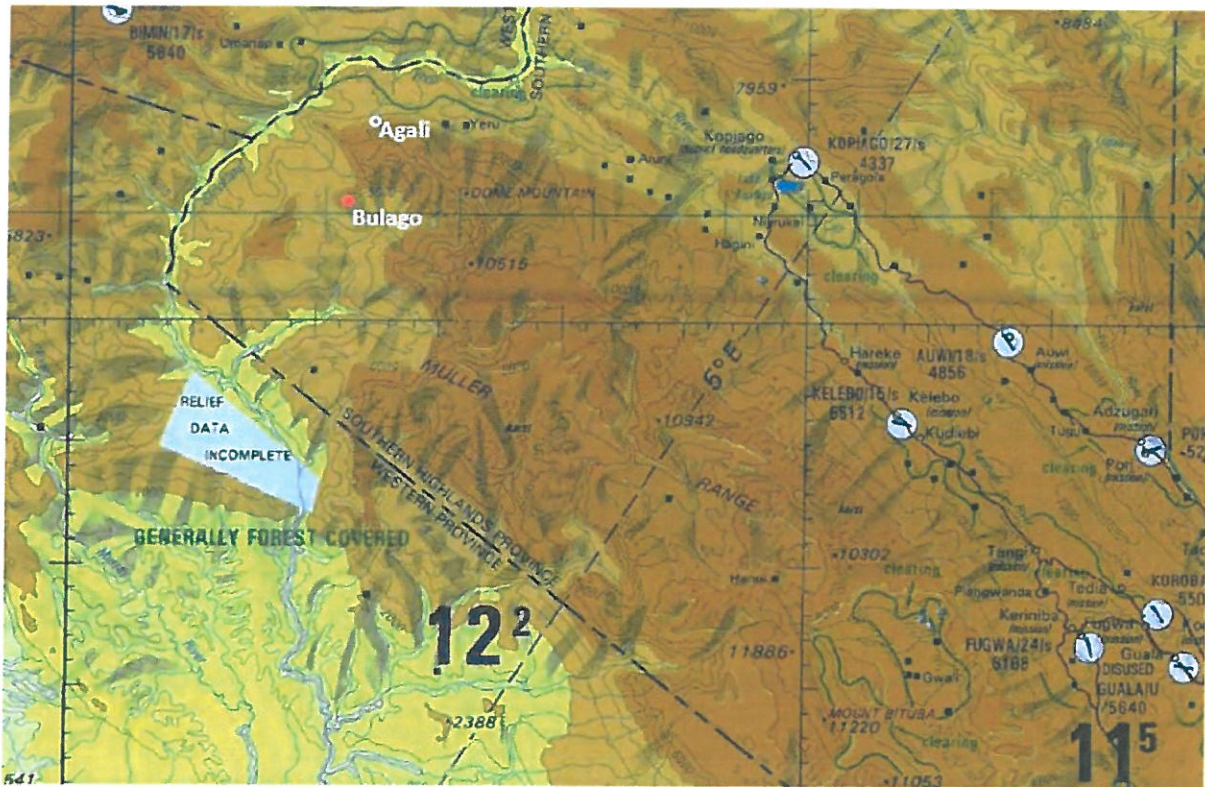


Figure 2: Map showing Bulago with reference to Agali

The strip was oriented 11/29 (110°M/290°M). Two days before the accident, the geologist measured the length of the undulating strip and estimated it to be about 480 m by counting his steps along the strip from end to end. He also estimated the slope to be an average of 6% up to the northwest. He conveyed this information to the pilot and also told him that the surface was of sufficient hardness for a landing.

The pilot stated that on 23 September, the day before the accident, he and his two colleagues had a lengthy discussion about the strip, and one of them who had overflown the strip at 200 ft that day, told him that it looked ready, and that if he had not been carrying any cargo he might have gone ahead and landed. He also showed photos that he had taken during his aerial inspection.



Figure 3: Aerial view of Bulago airstrip

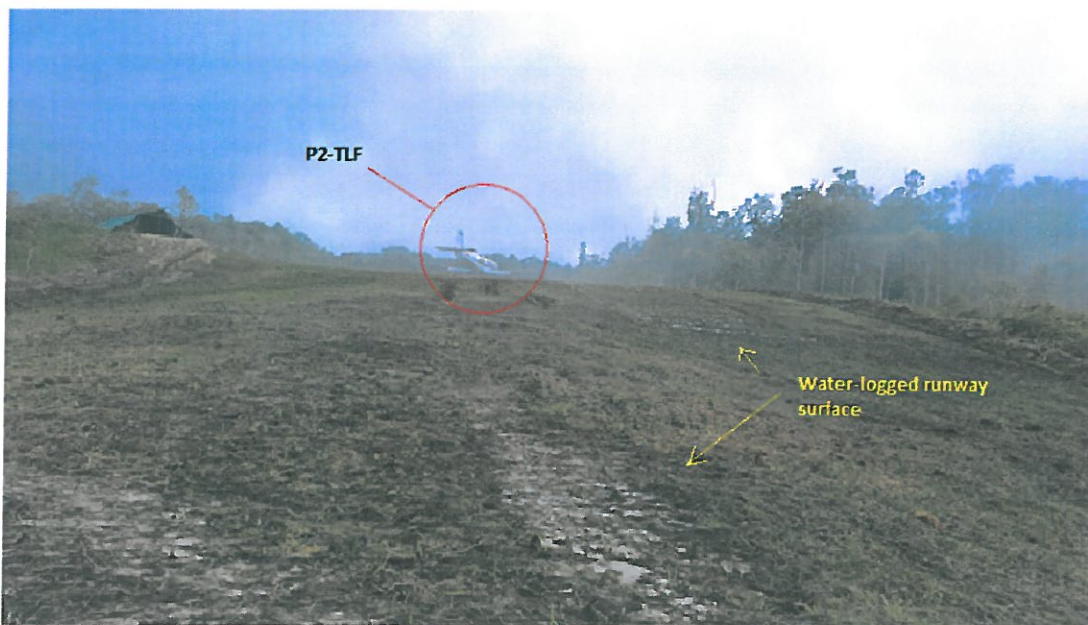


Figure 4: Bulago airstrip surface

The next day, at 2200 (0800 local time), the pilot was contacted via satellite telephone and was told by a strip worker at Bulago, who had no qualifications with respect to airstrip construction, that there had been no rain the previous day and the surface seemed suitable for a landing.

However, during the AIC inspection of the accident site, the strip was observed to be covered with a thin layer of limestone and gravel; thin enough that the underlying layer of clay and rocks beneath the gravel could be seen. Some large rocks were also embedded in the strip. The profile and drainage system of the strip prevented water from draining off the strip; the ground was waterlogged (See Figure 4). The investigators observed that when walking on the strip, their weight was sufficient to break through the gravel crust and sink into the clay beneath.

The operator

The owner of P2-TLF was based in Telefomin. The aircraft was operated by North Coast Aviation (NCA) and the pilots who operated this aircraft were all NCA employees. When NCA notified CASA (PNG) of the accident, in accordance with the Civil Aviation Act, Sections 60 and 61, the NCA Manager of Flight Operations stated that the pilot had landed at the strip without company authorisation. When the AIC was notified of the accident by CASA PNG in accordance with the Civil Aviation Act, Section 62, that information was provided to the AIC. The strip had not been inspected by a person qualified to assess the suitability of an airstrip for aircraft operations.

The geologist

The geologist was the Chairman and Managing Director of Frontier Resources Ltd, the mineral exploration company with a direct interest in having an airstrip at Bulago, to support their operations. On the day after the accident he provided a signed statement, which included:

When I evaluated the Bulago airstrip on Monday 22 September 2014 for the purpose of the initial fixed wing landing in the subsequent days, the surface was quite stable/firm, no standing water or mud pools, oversized rocks etc. and I believed that it would be possible and safe to land a 3 tonne aircraft (PAC 750) there.

I was satisfied the conditions were good enough to land the other half of my crew at Belago and the equipment. That is highly significant as I knew my son would do the first landing and subsequently move the other ½ of my team (the 10 of which I have known and mostly worked with for about 200 man years).

Pilot information

The pilot had flown into remote PNG strips many times before the accident and had a lot of experience flying in Papua New Guinea. However, he had no experience in assessing the suitability of newly constructed strips, particularly making such assessments from aerial observations. The investigation determined that the pilot misjudged the suitability of the strip and accepted the judgement of unqualified persons.

The pilot stated that he trusted his father's judgement, being a very experienced geologist. He also informed the AIC that he felt concerned for the people of the Bulago area who were without medical and education services and no ready access to air transport, particularly for medical emergencies.

Aircraft damage

The aircraft was substantially damaged during the accident. The nose landing gear fork and nose-wheel assembly were torn from the oleo when the nose wheel sank through the limestone and gravel strip surface into the clay beneath and struck a solid object, possibly a rock. All three propeller blades were significantly bent, indicating that the propeller may have been turning at a high RPM when the blades impacted the ground (See Figure 1). The front left lower engine mount frame was cracked during the impact; 3.6 mm crack. The lower skin of the left wing flap was punctured, most likely by a rock swept back by the propeller as it struck the ground (See Figure 5).



Figure 5: Puncture in the left flap skin

AIC comment

The investigation found that the strip was not suitable for a landing, but was deemed suitable by unqualified people working on the strip and from aerial observations by pilots who also were not qualified to assess the suitability of a newly constructed strip.

The integrity of the newly constructed strip was never assessed through physical contact by an appropriately qualified person in order to determine whether the strip was serviceable and/or suitable for a first landing.

The pilot's expressed concern for the welfare of the people of the Bulago area appears to have overridden his decision making ability and ultimately sound airmanship. His decision making appears to have been influenced by preconceived beliefs and self-assurance about his ability to assess the strip's suitability from the air, and his ability to make the first landing on the newly constructed strip. He may also have succumbed to peer pressure following the numerous discussions with his fellow company pilots.

The pilot's knowledge of his father's geological experience and the confidence his father expressed about the strip preparedness may have led him to incorrectly believe that his father was qualified to make a judgement regarding the suitability of the strip for aircraft operations. Meeting his father's expectations of getting the strip operational in order to facilitate his mineral exploration operations was an added undue pressure that may have adversely influenced his decision making.

General details

Date and time:	23 April 2014 0203 UTC	
Occurrence category:	Accident	
Primary occurrence type:	Aircraft bogged during landing roll – Nose-wheel assembly failed	
Damage	Substantial nose wheel and propeller damage	
Location:	Bulago Airstrip, Western Province	
	Latitude: 05° 27.83' S	Longitude: 142° 09.74' E
Type of operation:	Charter	
Persons on board:	Crew: 1	Passengers: 0
Injuries:	Crew: 0	Passengers: 0

Crew details

Nationality	Australian
Licence type	PNG CPL
Licence number	P2764
Total hours	4845.4
Total hours on type	2115.5
Total hours last 90 days	137.3
Total hours last 7 days	22.0

Aerodrome details

Aerodrome and code	Bulago (Unpublished)
Runway directions	11/29
Runway slope	Undulating 6% up to northwest
Runway surface and strength	Limestone and gravel covered clay / soft
Runway length	480 m (estimated as it was still under construction)
Runway elevation	4,500 ft

Aircraft details

Aircraft manufacturer and model:	Pacific Aerospace Ltd PAC 750XL
Registration:	P2-TLF
Serial number	166
Total time in service	2,691.2 hours
Engine	
Engine manufacturer and model	Pratt and Whitney Canada PT6A-34
Engine serial number	PCE-RB0486
Total time since overhaul	2,692 hours
Propeller	
Propeller manufacturer and model	Hartzell B3TN
Propeller serial number	BUA31431
Total time since overhaul	2,692 hours

Approved



David Inau
Chief Executive Officer

11 October 2015