



**FINAL REPORT**

**AIC 20 -1005**



**VH-TSI**

**Cessna 402C**

**Collision with trees**

**16 nm north-west of Jacksons airport, Port Moresby**

**Papua New Guinea**

**26 July 2020**

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## ABOUT THE AIC

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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)*, and the *Commissions of Inquiry Act 1951*, and in accordance with *Annex 13* to the *Convention on International Civil Aviation*.

The objective 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.

It is not a function of the AIC to apportion blame or determine liability. At the same time, an investigation report must include relevant 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.

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## ABOUT THE REPORT

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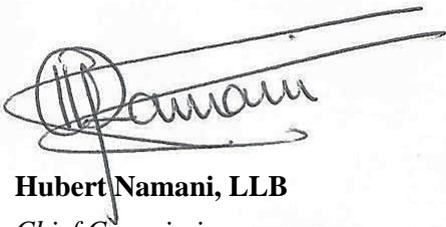
At around 18:00 Local (08:00 UTC) on 26 July 2020, the Papua New Guinea Accident Investigation Commission (AIC) became aware of an alleged aircraft occurrence near Papa-Lealea, Central Province. The AIC subsequently contacted Papua New Guinea Air Services Limited (ASL) and was informed by ASL that all PNG registered aircraft were accounted for. However, ASL advised AIC that they received an Emergency Locator Transmitter (ELT) distress signal and provided the ELT distress coordinates to the AIC. The AIC determined that the location of the alleged aircraft occurrence site was about 16nm North West of Port Moresby.

A team of investigators was dispatched to the area and the crash site was located on the morning of 27 July 2020. The Royal Papua New Guinea Constabulary (RPNGC) police along with Australian Federal Police (AFP) were already at the site conducting their investigations when the investigators arrived. The AIC investigators subsequently commenced an onsite investigation.

This *Final Aircraft Accident Investigation Report* was produced by the AIC, PO Box 1709, Boroko 111, NCD, Papua New Guinea.

The report is based on the investigation carried out by the AIC in accordance with Papua New Guinea *Civil Aviation Act 2000 (As Amended)*, *Chapter 31 of the Commissions of Inquiry Act*, *Annex 13 to the Convention on International Civil Aviation*, and the *PNG AIC Investigation Policy and Procedures Manual*. It has been prepared independent of any other State authority or aviation stakeholder.

AIC reports are confined to matters of safety significance and may be misleading if used for any other purpose.

A handwritten signature in black ink, appearing to read 'Hubert Namani', is written over a faint, circular stamp or watermark.

**Hubert Namani, LLB**

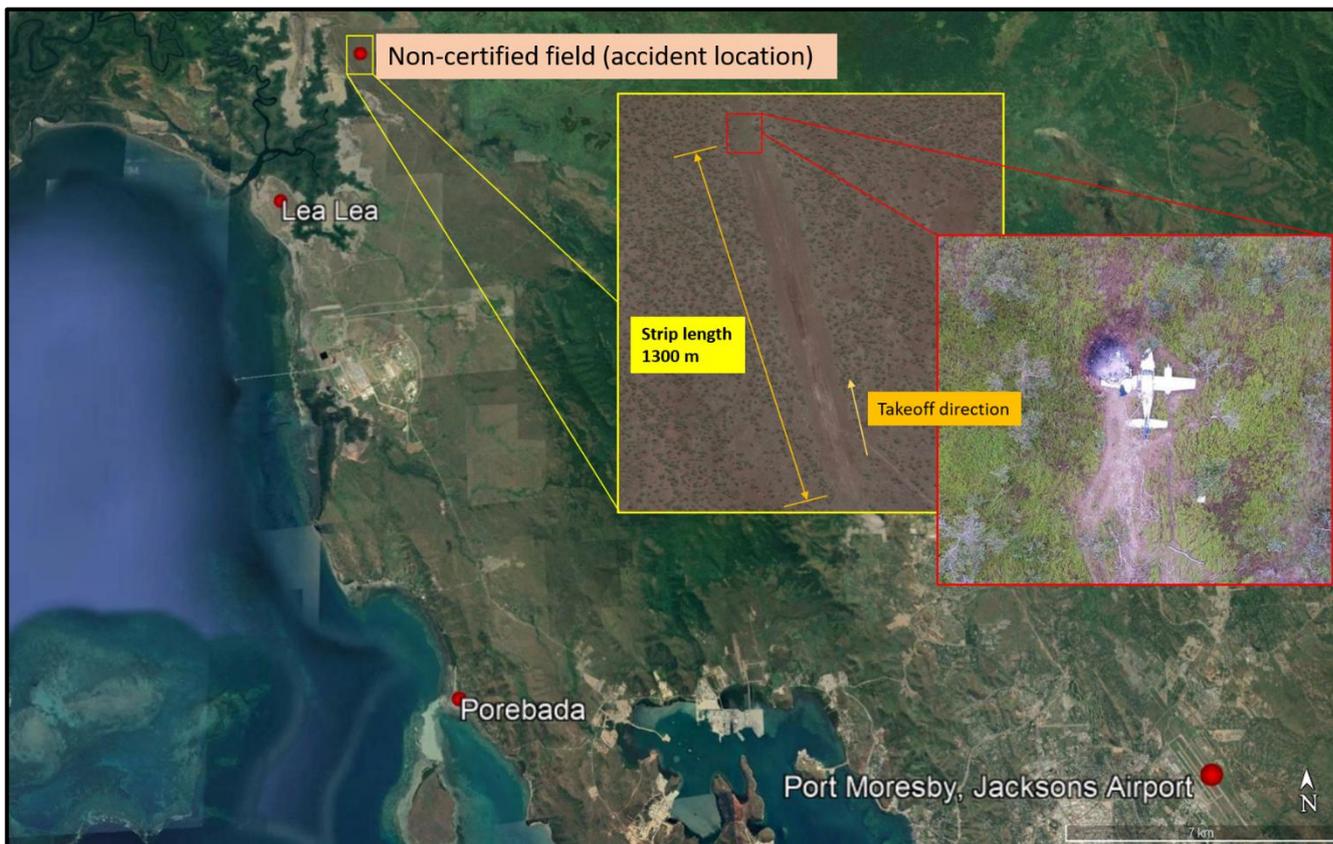
*Chief Commissioner*

31 December 2020

# Cessna 402C overran a non-certified field and collided with trees near Papa Lealea, about 16nm North – West of Port Moresby, Papua New Guinea

## Occurrence details

On 26 July 2020, at 12:46 local time (02:46 UTC<sup>1</sup>), a Cessna 402C aircraft, registered VH-TSI collided with trees during an aborted take-off at an uncommissioned field near Papa-Lealea, about 16 nm North-West of Port Moresby, Papua New Guinea (see Figure 1).



**Figure 1: Depiction of accident location in relation to Jackson’s International Airport, Port Moresby.**

The pilot, during interview with the AIC, stated that he departed at 09:30 that day from Mareeba Airport, Queensland Australia and tracked towards the North North-East with a planned track set slightly left of Jacksons International Airport, Port Moresby, National Capital District, Papua New Guinea. As the aircraft neared the Southern shoreline (within the Caution Bay area), he diverted left and began tracking towards the North West (see Figure 2) along the coast in order to avoid flying over villages in the area. He subsequently crossed over land before turning back to approach the intended landing field. As the aircraft approached to land, the outboard section of the left wing was clipped by a tree and separated from the aircraft. According to the pilot, he continued on with the approach and landed on the field at about 12:20.

The pilot reported that he had flown to and within Papua New Guinea in the past and was familiar with the area and airspace. He confirmed that after departing Mareeba, he switched off the transponder<sup>2</sup>.

<sup>1</sup> 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, Pacific/Port Moresby Time is UTC + 10 hours.

<sup>2</sup> Radio device which when triggered by correct received signal sends out precoded reply on same (rarely different) wavelength (Source: Cambridge Aerospace dictionary)



**Figure 2: VH-TSI final part of the track into Papua New Guinea (as described by the pilot).**

After shutting down the aircraft, the aircraft was refuelled with jerrycans full of fuel (AvGas) and loaded with cargo by persons waiting on the ground. The pilot reported that he estimated that a distance of 800 m would be required for the take-off.

According to the pilot, at about 12:40, he lined up and commenced his take-off roll from the Southern end of the field. As the aircraft lifted off, he noticed that the airspeed indicator (ASI) was not working. He also observed that the aircraft was not achieving a positive rate of climb. He subsequently pulled the throttles back and manoeuvred the aircraft back towards the ground. The aircraft touched down with a speed that the pilot described as higher than normal, with about 400 m of usable field remaining. The aircraft continued off the end of the field and into the bushes clipping trees along the way until it came to rest.

The pilot informed the AIC that he was the sole occupant of the aircraft, and sustained minor injuries as a result of the occurrence.

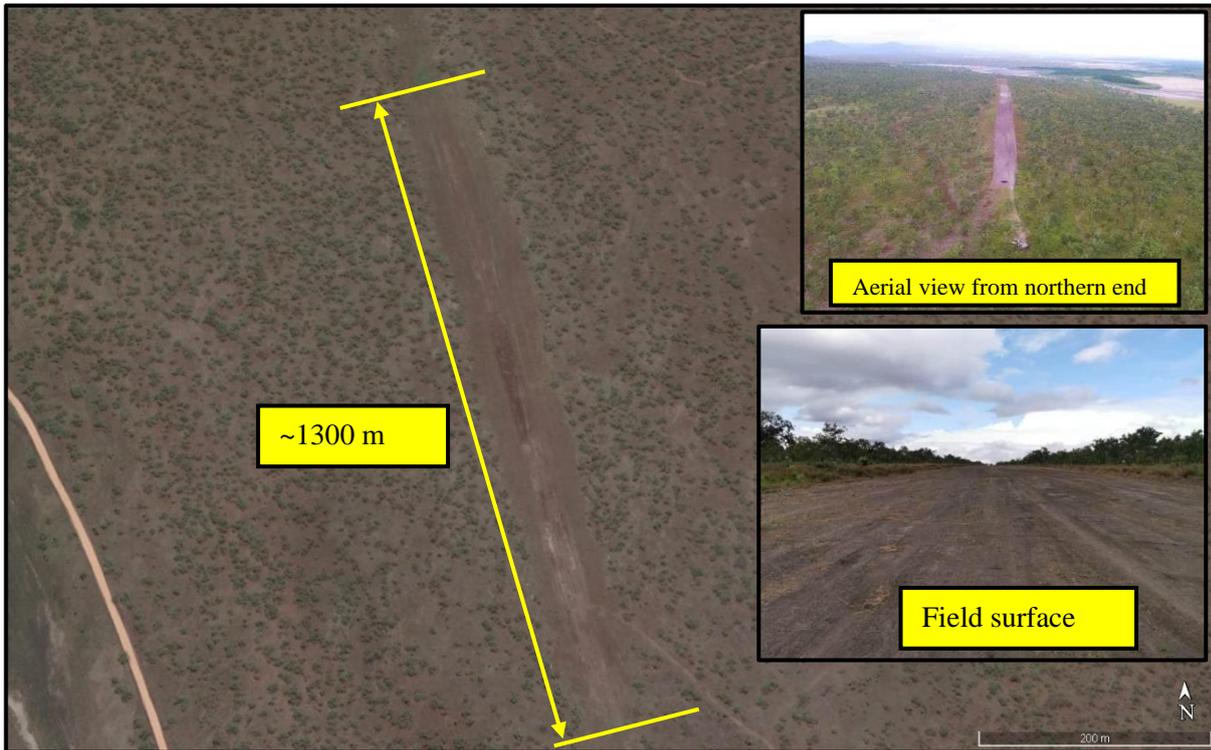
The aircraft was substantially damaged. The investigation confirmed that the fire to the left wing and engine was a post-accident event and was deliberate.

**Uncommissioned field used for the operation.**

The field used for the operation was found to be an uncertified field built for to cater for aircraft landing and take-off. Locals from the surrounding villages informed the AIC that they were unaware that the land was being developed into a landing/take-off strip and that they were informed by person(s) building it that they were constructing a road.

The government authorities responsible for commissioning and certifying airfields or airstrips stated that they were unaware of the field and had not received and were not in possession of any application for inspection, certification or commissioning of the field.

The strip was approximately 1,300 m long and about 15 m wide, oriented in a North Northwest-South Southeast direction (see Figure 3).



**Figure 3: Uncommissioned field used for the operation of the aircraft.**

## **Meteorological conditions**

### **Weather summary for Papa-Lealea area**

The Weather Forecast for Port Moresby that was provided by the National Weather Service was valid from 10:00 on 26 July 2020 to 10:00 on 27 July 2020, and was as follows:

*Wind* : blowing in 160° direction at 15 kt  
*Weather* : Good visibility  
*Cloud* : 1,800 ft – broken clouds

From 15:00 on 26 July 2020, there is a change in weather forecast as follows:

*Wind* : blowing in 160° direction at a steady speed of 15 kt, and gusting at 25 kt  
*Weather* : Good visibility  
*Cloud* : 1,800 ft – scattered clouds  
 3,500 ft – broken clouds

*Temperature* : 29°C, 30°C, 29°C and 27°C (six-hourly interval between 10:00 on 26 July 2020 to 10:00 on 27 July 2020)

*QNH* : 1010 hPa, 1009 hPa, 1007 hPa and 1008 hPa (six-hourly interval between 10:00 on 26 July 2020 to 10:00 on 27 July 2020)

The National Weather Service also provided a summary of the weather experienced in the Papa-Lealea area on 26 July 2020. Weather conditions for the time between 12:00 and 15:00 is as follows:

|                    |  |
|--------------------|--|
| <i>Weather</i>     | <i>: Torrential rain</i>                 |
| <i>Temperature</i> | <i>: 26°C</i>                            |
| <i>Wind</i>        | <i>: 10km/hr, and gusting at 12km/hr</i> |
| <i>Cloud cover</i> | <i>: 70%</i>                             |
| <i>Humidity</i>    | <i>: 90%</i>                             |
| <i>Pressure</i>    | <i>: 1008 hPa</i>                        |

## **Aircraft Owner and Operator**

The aircraft records showed that at the time of the occurrence, the owner of the aircraft was a PNG based company called Ravenpol No.69 Limited. The ownership had been transferred from an Australian company known as Texrio Pty Ltd in August 2018.

Registration holders under *Australia CASR 1988, Vol 2, Subpart 47* are required to be a legal entity. A legal entity is one of the following:

- *A corporation incorporated under the Corporations Act 2001;*
- *A body incorporated under a law (other than the Corporations Act 2001) in force in Australia;*
- *The Commonwealth, a State or a Territory;*
- *An agency of the Commonwealth, a State or a Territory able to own property in their own right;*
- *A foreign corporation capable of providing some evidence of incorporation to establish that it exists as a legal entity.*

*Australia CASR 1988, Vol 2, Subpart 47.110(5)(6)* states:

*(5) Within 28 days after the transfer, the new owner must apply to become the registration holder.*

***Note: If the aircraft's new owner does not apply to be the new registration holder within 28 days after the day of the transfer, CASA (Australia) must suspend the aircraft's registration: see regulation 47.131.***

*(6) An application must:*

*(a) be in an approved form; and*

*(c) either:*

*(i) be signed by the new owner; or*

*(ii) if the application is made by a person on behalf of the new owner—include the name, address and signature of the person making the application.*

According to the information gathered during the investigation, Ravenpol did not apply, as the new owner, to become the registration holder within 28 days after the day of the transfer. On 27 November 2018, the aircraft's registration was suspended pursuant to the *Australian CASR Part 47.131(2)* which states:

*(2) The suspension:*

*(a) takes effect on the day the notice is given to the registration holder; and*

*(b) ends at the earlier of the following times:*

*(i) when the Australian Civil Aircraft Register is amended, in accordance with subregulation 47.100(8), to show the name and address of a new registered operator;*

*(ii) when CASA cancels the registration.*

As Ravenpol did not make an application in compliance with *Australia CASR Part 47.110(6)*, on 18 March 2019, the registration of VH-TSI was cancelled in accordance with *Australia CASR, Vol 2, Subpart 47.131(4)* which states:

*If the new owner does not, within 3 months after the day the aircraft's registration was suspended, make an application that complies with subregulation 47.110(6) to be the aircraft's registration holder, CASA must, by written notice given to the new owner, cancel the registration.*

According to CASA Australia, an application for re-registration of the aircraft was made by Avcharter Pty Ltd under the authorization of Ravenpol on 26 May 2019. Avcharter held an existing Air Operator Certificate and applied to be registered as the Operator. However, the application document was not certified (signed) and could not be processed by CASA. The application was re-submitted with the appropriate signatory on 20 January 2020.

On 29 January 2020, an email was sent by CASA to Ravenpol issuing the certificate of registration for VH-TSI as well as a letter confirming Avlease Pty Ltd (a subsidiary of Avcharter Pty Ltd) as the registered Operator of the aircraft.

The letter specified conditions for responsibility of the operation and maintenance of the aircraft. Avlease was listed as the organization responsible for maintaining the aircraft in an airworthy and serviceable condition for operation. Additionally, Avlease was required to have the aircraft maintained in accordance with procedures compliant with the appropriate State's civil aviation regulations.

According to CASA Australia, Avlease deregistered as the Operator on 28 July 2020 (two days after the accident). However, the CASA Australia online Civil Aircraft Register at the time of release of this report lists Avlease as the Registered Operator of VH-TSI.

*Note: Avlease have publicly maintained that they had no knowledge about operating the aircraft.*

## **Pilot information**

The pilot stated that he was unemployed since 2018. Records from CASA Australia showed that the pilot was affiliated with Amber Aviation Academy Pty Ltd (AOC holder, not authorised for Cessna 402 aircraft) as the Chief Pilot, Chief Flying Instructor and Head of Aircraft Airworthiness and Maintenance Control. Those records did not include dates or timeframe with regard to the pilot's affiliation. Moreover, Amber Aviation Academy Pty Ltd was also affiliated to other companies, although no other associated AOC's could be identified.

## **Aircraft Information**

### **Aircraft maintenance and airworthiness**

According to the maintenance information gathered, the last entry in the maintenance logbook was on 30 January 2020. The entry constituted a loose-leaf attached to the maintenance logbook as final certification by Tableland Aircraft Maintenance with a job number 453.

The maintenance entry showed that the aircraft had been ferried to and had been in long term un-prepared storage at Mareeba Airport. The entry also indicated that the aircraft's Certificate of Airworthiness (CoA) had been revoked by CASA Australia and that the maintenance for which that entry was made was to prepare the aircraft for a new application for the reissue of the CoA.

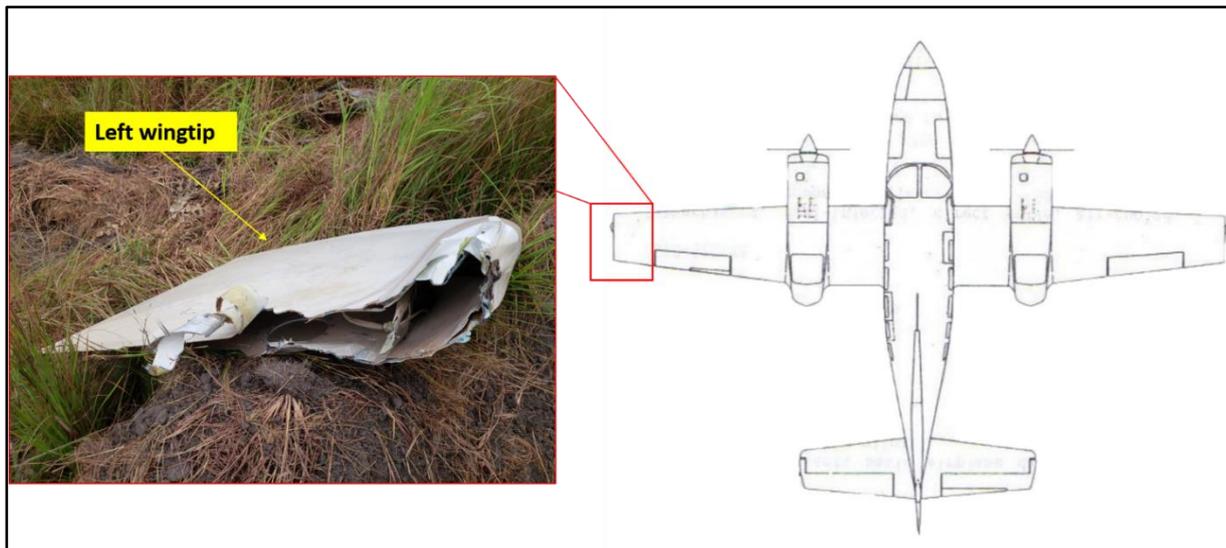
The maintenance information indicated that the aircraft was not airworthy at the time of the accident. Furthermore, the pilot stated during the investigation interview that there were issues with the calibration of the airspeed indicator (ASI) and the altimeter and that the aircraft recently had a propeller change.

## **Fuel**

According to the pilot, the aircraft refuelled at Mareeba prior to departing for the Papa-Lealea area. He also informed the AIC that the aircraft was refuelled by person(s) on the ground after he landed at the field near Papa-Lealea. The investigation could not conclusively determine the quantity of fuel obtained. However, investigators

found 15 empty jerry cans (20 litres each) near the crash site that most likely were used to refuel the aircraft prior to departure.

### Damage to aircraft



**Figure 3: Damage to left wingtip**

The outboard section of the left wing was clipped off by a protruding tree as the aircraft approached to land.



**Figure 4: Damage to left wing**

The investigation determined that there was no pre- or post-impact fire related to the occurrence. However, the left wing was set ablaze by third persons on the ground, after the aircraft over-ran the strip and collided with trees.



**Figure 5: Damage on the right wing**

## Other information

### Emergency Locator Transmitter (ELT) activation

The force of the impact activated the ELT at exactly 12:46 (02:46 UTC). The ELT message was received by ATC between 12:46pm and 1pm on the same day. However, during the investigation interview, the on-duty ATC Centre Supervisor (CS) stated that upon receiving the ELT signal, a check was conducted on Papua New Guinean aircraft flying around at the time. After confirming that local aircraft were on the ground, the message was disregarded.

The CS also informed the AIC that during that time, the National Maritime Safety Authority (NMSA) advised ATC through an email informing them of the same distress signal. NMSA stated in the email that the aircraft had an Australian registration and that they could not identify the operator and owner of the aircraft.

The investigation also found that ATS staff were not adequately trained in interpreting distress signals from aircraft in distress. Although not directly involved in the occurrence, interpretation of a distress signal can ensure timely coordination of SAR activities if managed efficiently.

The AIC was informed at around 18:00 on the day of the accident, and immediately made enquiries with ATC. The AIC was advised by ATC that following the receipt of the distress signal, they checked and accounted for all known aircraft operating at the time and subsequently disregarded the message.

The AIC obtained the ELT distress message and confirmed that the ELT belonged to a non-PNG registered aircraft. The AIC reviewed the ELT message and determined that the message contained sufficient information to determine that the beacon was for an Australian aircraft serial number. The AIC used the coordinates from the message to locate the accident area when travelling to the crash site.

## **AIC comments**

### **Flight operations**

The investigation determined that the separation of the outboard section of the left wing, clipped by a tree during the approach to land phase, affected the ability of the left wing to produce lift.

The investigation could not conclusively determine the actual weight and balance of the aircraft as it was not possible to determine the quantity and quality of fuel on board, nor the weight and distribution of the cargo that was on board. The evidence gathered during the investigation did not allow the AIC to discard overweight, balance or centre of gravity issues due to improper loading or restraint of the cargo as factors contributing to the inability of the aircraft to obtain a positive rate of climb during take-off.

The evidence of tire marks found by the investigators on the uncommissioned field indicated that the aircraft touched down about 400 m before the end of the field, distance that was not enough for the aircraft to come to a stop, continuing its landing roll into the bushes and impacting trees until it got to its final position.

### **Maintenance**

The investigation determined that the aircraft was not airworthy at the time of the accident and was unserviceable for the conduct of the flight. The investigation also determined that there was no proper document control to conduct timely scheduled maintenance and that there was no record of a certificate of airworthiness (CoA) at the time of the accident.

## Recommendations

**Recommendation number AIC 20-R35/20-1005 to NiuSky Pacific Limited (formerly PNG Air Services Limited).**

*Date Issued: 01 October 2020*

The PNG Accident Investigation Commission (AIC) recommends that NiuSky Pacific Limited should implement effective procedures to ensure the effective management of signals transmitted by aircraft in distress including but not limited to ELT and, when appropriate, the effective coordination of Search and Rescue operations, in accordance with applicable international standards and national regulations.

### Action requested

The Accident Investigation Commission requests that NiuSky Pacific Limited note recommendation *AIC 20-R35/20-1005*, and provide a response to the PNG AIC within 90 days, but no later than **23 December 2020**, and explain including with evidence how NiuSky Pacific Limited has addressed the safety deficiency identified in Safety Recommendation *AIC 20-R35/20-1005*.

### Closing statement

On 6 October 2020, NiuSky Pacific Limited provided a response to AIC safety recommendation *AIC 20-R35/20-1005*, explaining that Air Traffic Services (ATS) and Rescue Co-ordination Centre (RCC) manuals already *contained adequate procedures in terms of managing signals transmitted by aircraft in distress*. NiuSky Pacific Limited also stated that *Senior ATS staff, who generally man positions at which the SARSAT alerts are received, are very familiar with them and well versed in their management*.

The response from NiuSky Pacific Limited finalized with a paragraph indicating that *commensurate with the significant upgrades to Air Traffic Management and related systems, the operational procedures are in the process of a full review and rewrite as appropriate. The RCC section will also be included in this process with the view to ensuring future management of these events is in line with the capabilities of the new systems*.

The response did not include information or evidence of safety actions adopted as a result of the safety recommendation *AIC 20-R35/20-1005*. It was noticed that the process of review and rewrite of the operational procedures they referred is in the context of a planned upgrade of organisational capabilities, not oriented to adopt safety actions resulting from the safety deficiencies identified in AIC safety recommendation.

According to AIC assessment, NiuSky Pacific Limited response does not address the safety issues identified during the investigation and the safety deficiencies identified will remain until other effective safety actions are developed in the future. The AIC may re-assess the safety recommendation in the future if evidence of implementation of effective safety actions adopted as a result of safety recommendation *AIC 20-R35/20-1005* is provided by NiuSky Pacific Limited.

Therefore, the AIC assigned NiuSky Pacific Limited response as *unsatisfactory* and recorded the **Status of the AIC recommendation: CLOSED RESPONSE NOT ACCEPTED**

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**Recommendation number AIC 20-R36/20-1005 to CASA PNG.**

*Date Issued: 01 October 2020*

The PNG Accident Investigation Commission (AIC) recommends that the Civil Aviation Safety Authority of PNG (CASA PNG) should ensure effective oversight to the aviation service providers performing functions of Search and Rescue coordination and operation.

**Action requested**

The Accident Investigation Commission requests that CASA PNG note recommendation *AIC 20-R36/20-1005*, and provide a response to the PNG AIC within 90 days, but no later than **23 December 2020**, and explain including with evidence how CASA PNG has addressed the safety deficiency identified in Safety Recommendation *AIC 20-R36/20-1005*.

**Status: Active**

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## General Details

|                        |   |                          |
|------------------------|---|--------------------------|
| Date and time:         | 26 July 2020, 12:46 Local time (02:46 UTC)                |                          |
| Occurrence class:      | Accident  |                          |
| Occurrence categories: | Collision with obstacles during takeoff or landing (CTOL) |                          |
| Location:              | 16 nm north west of Port Moresby, NCD, PNG                |                          |
|                        | Latitude: 9°14'49.78"S                                    | Longitude: 147°0'57.84"E |

## Pilot details

|                         |            |
|-------------------------|------------|
| Nationality:            | Australian |
| Licence type:           | NA         |
| Total hours:            | NA         |
| Total hours in Command: | NA         |
| Total hours on type:    | NA         |

## Aircraft Details

|                                  |             |
|----------------------------------|-------------|
| Aircraft manufacturer and model: | Cessna 402C |
| Registration:                    | VH-TSI      |
| Serial number:                   | 402C0492    |

## Type of operation, injury and damage details

|                    |                        |                 |
|--------------------|------------------------|-----------------|
| Type of operation: | NA                     |                 |
| Persons on board:  | Crew: 1 (Pilot)        | Passengers: Nil |
| Injuries:          | Crew: Nil              | Passengers: Nil |
| Damage             | Substantially damaged. |                 |

## Engine data

|                       |             |  |
|-----------------------|-------------|--|
| Engine type:          | TSIO-520    |  |
| Manufacturer:         | Continental |  |
| Model:                | NA          |  |
| Serial number:        | NA          |  |
| Total Time since new: | NA          |  |
| Cycles since new:     | NA          |  |

## Propeller data

|                                   |                               |
|-----------------------------------|-------------------------------|
| Propeller manufacturer and model: | MacCauley Propeller 3AF32C505 |
| Serial number:                    | NA                            |