



INTERIM STATEMENT

AIC 18-1002

Air Vanuatu Operations Limited

YJ-AV71

ATR 72-500

Loss of directional control during landing roll

Bauerfield International Airport, Port Vila

REPUBLIC OF VANUATU

28 July 2018

INTERIM STATEMENT

Delegation of investigation

On 28 July 2018, at 23:37 UTC¹ (10:37 local time) an Avions de Transport Regional, ATR72-500 registered YJ-AV71 (AV71), operated by Air Vanuatu Operations Limited was on a scheduled flight from Whitegrass Airport, Tanna to Bauerfield Airport, Port Vila. During its landing roll, the aircraft lost directional control and veered off, towards the left of runway 29, and collided with two unoccupied Brittan Norman Islander Aircraft. The ATR had 39 passengers and four crew; two pilots and two Cabin Crew. No injuries were reported.

This occurrence was formally notified to the PNG Accident Investigation Commission (AIC) on 28 July 2018 with the request from the Director Civil Aviation Authority of Vanuatu (CAAV) for the PNG AIC to conduct the investigation. The CAAV delegated the whole of the investigation to the PNG AIC in accordance with *Annex 13 Paragraph 5.1*.

The PNG Minister for Civil Aviation approved the Commission to accept the delegated investigation and dispatch a team of investigators to Vanuatu as soon as possible. Investigators arrived at the accident site on Sunday afternoon 29 July 2018 and immediately commenced the on-site investigation. The investigation was fully supported by AIC staff in Port Moresby including the resources of the AIC's flight recorder laboratory.

Both the States of Manufacture of the Aircraft and the Engine participated as accredited representatives to the investigation. The manufacturer of the aircraft, ATR, and the engine, Pratt & Whitney Canada (P&WC) were involved as advisors to their respective accredited representatives.

In the absence of an independent investigation authority, the Director of the CAAV, represented the State of Operator, Registry and Occurrence undertook to provide guidelines on applicable Republic of Vanuatu Civil Aviation Occurrence Investigation Legislation. However, where possible the conduct of the investigation was to be in accordance with the PNG legislation, the *AIC Policy and Procedures*, and at all times in accordance with *ICAO Annex 13*.

History of the Flight

While enroute at 16,000 ft and about 60 nm from Port Vila, the flight crew noticed the No. 2 engine (right engine) Interstage Turbine Temperature (ITT) gauge increase rapidly and subsequently exceed its normal operating limits with the Master Caution visual and aural warnings being triggered.

Both the crew and passengers reported hearing loud banging noises from the right side of the aircraft. Some passengers reported seeing white flashes in the cabin. The investigation determined that the noises were as a result of the No. 2 engine compressor stalling.

The copilot was the pilot flying and the pilot in command (PIC) was the support monitoring pilot for the sector. The PIC immediately took over control of the aircraft from the copilot. When he retarded (pulled back) the power levers the engine temperature stabilised. The PIC then, instructed the copilot to refer to the '*ATR Quick Reference Handbook (QRH) Abnormal Engine Parameters In Flight checklist*'

At 23:20:54, the Senior Cabin Crew (SCC) was notified of the engine abnormality by the PIC via the crew interphone system. The SCC subsequently notified the flight crew that there was smoke entering the cabin from the right side of the cabin. The PIC broadcasted a *MAYDAY* and notified Vila Air Traffic Control (ATC) of their descent intentions. The pilots commenced the descent and proceeded to complete their checklist.

The smoke intensified in the cabin and travelled through other compartments including the flight deck, causing the pilots to don their oxygen masks.

About 2 minutes after the *MAYDAY* broadcast, the electrical smoke warning, accompanied by the *Master Warning* alert, were indicated in the cockpit. The PIC instructed the copilot to '*skip*' to the '*Electrical Smoke Emergency*' checklist.

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, Vanuatu Time (VUT) is UTC + 11 hours.

The pilots made several attempts to advance the engines' power to the cruise setting after the temperature stabilised at flight idle. However, the No. 2 engine ITT reading increased rapidly every time the power levers were advanced.

About 6 minutes after the first abnormal engine event, the No. 2 engine *oil low pressure warning* alert activated on the *Crew Alert Panel*. The pilots referred to the '*QRH Engine Oil Low pressure checklist*' and subsequently shut down the No. 2 engine. The rest of the descent and the landing was conducted with the No. 2 engine inoperative.

During the landing flare, the aircraft entered an un-commanded pitch up, forcing the PIC to release control of the power levers, and using both hands he pushed the control column forward in order to regain control of the pitch and therefore lowered the nose of the aircraft. The copilot subsequently placed his hands on the power lever controls as the aircraft landed. Flight data analysis showed that one second after touchdown, both power levers were recorded to have been set to max reverse.

The aircraft did not have hydraulically powered nosewheel steering and main-wheel brakes. Rudder authority, for ground aerodynamic steering was substantially limited because the switch for manual operation was not set to the appropriate setting. Reverse thrust was applied during the landing roll, which induced a significant left yaw resulting in the subsequent runway excursion.

The crew reported that they could neither control, nor stop the aircraft during the landing roll. The aircraft diverged off the left side of the runway and crossed a taxiway before colliding with two stationary, unoccupied Britten-Norman Islander aircraft, about 320 metres from where it left the runway.

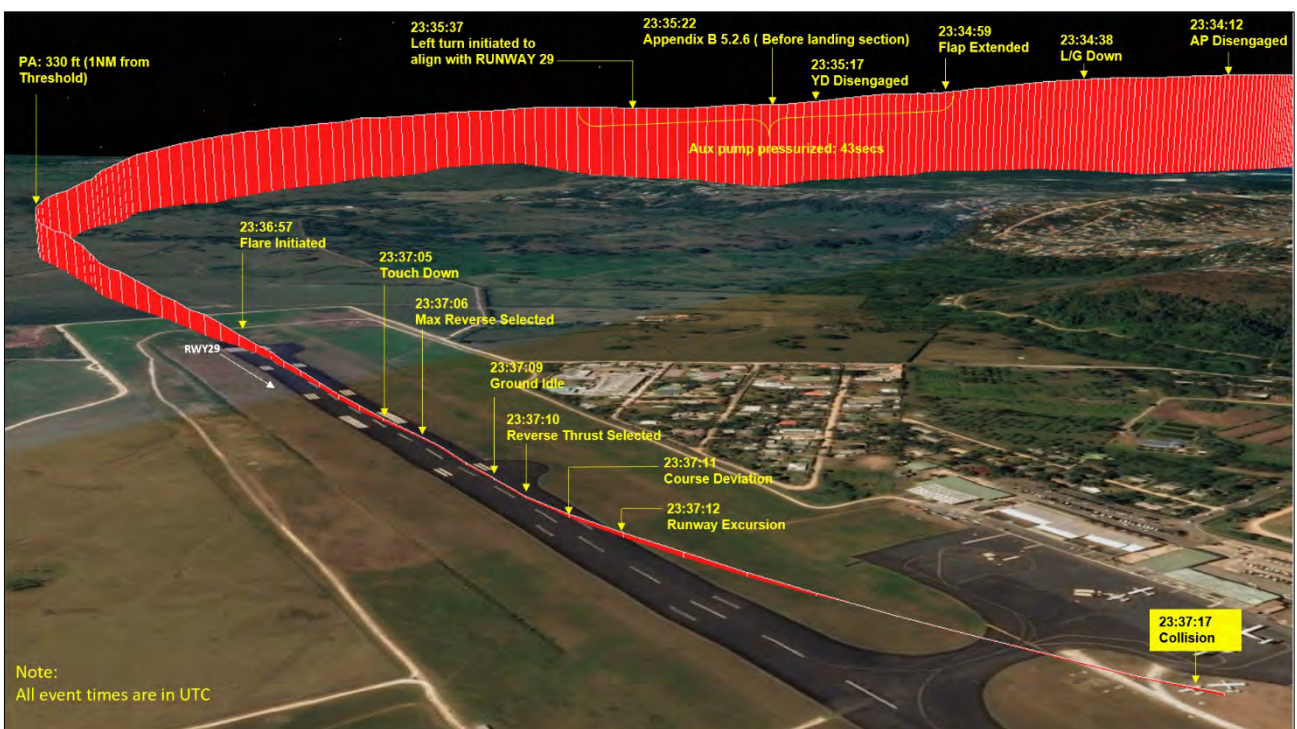


Figure 1: YJ-AV71 approach and landing

After the aircraft came to a stop, the PIC issued the evacuation command and the cabin crew conducted an orderly expedited evacuation of the passengers. None of the passengers and crew were injured.

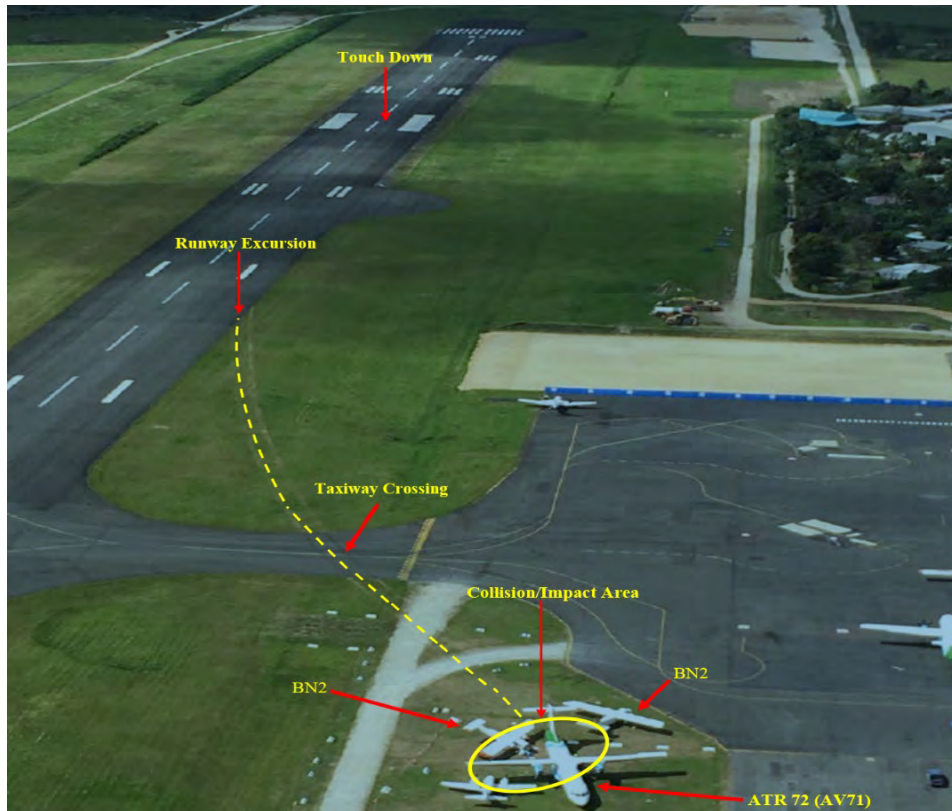


Figure 2: YJ-AV71 Runway Excursion



Figure 3: AV71 Right-side fuselage post impact damage



Figures 4 and 5: Damaged Britten-Norman Islander

Investigation to date

The failed engine was sent to the Pratt and Whitney Canada (P&WC) facility in St-Hubert, Quebec, Canada for disassembly and detailed examination under the supervision of an Accredited Representative from the Transportation Safety Board of Canada, the engine's State of Manufacturer.

The French Bureau of Enquiry and Analysis for Civil Aviation Safety, as the State of Manufacture for the aircraft, appointed an Accredited Representative and also Advisers from the aircraft manufacturer ATR. The Quick Access Recorder (QAR) data storage device was sent to the manufacturer for analysis.

The AIC investigation has analysed data from the Flight Data Recorder (FDR) and the Cockpit Voice Recorder (CVR)

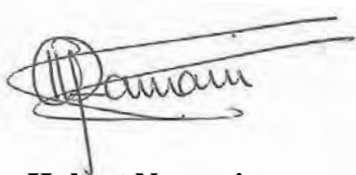
Interviews were conducted with a number of key personnel including the pilots, cabin crew, and aircraft maintenance engineers. Engineering and flight operations documents from the CAAV and Air Vanuatu were also examined.

The engine disassembly and examination report from P&WC provided detailed information about the root cause of the engine failure. However, the investigation found that the engine failure was not directly causal to the accident.

History has shown that in any accident there is never a single factor that cause accidents. Therefore, the AIC undertook further research and analysis in consultation with the operator and ATR to establish the circumstances that led to the significant runway excursion.

The investigation found a number of non-contributory safety deficiencies that are being addressed with the issue of *Safety Recommendations* to those persons or organisations best placed to ensure they are appropriately addressed and result in safety improvement.

The *Draft Final Report* is expected to be issued to the States of Registry, Operator, Design and Manufacture, and also the aircraft operator shortly after the anniversary date of the accident. In accordance with *Annex 13 Paragraph 6.3*, those States will be invited to review the *Draft Final Report* and provide significant and substantiated comments on the report as soon as possible within 60 days. On completion of the review period, the AIC will make the report publicly available in accordance with *Annex 13 Paragraph 6.5*.

A handwritten signature in black ink, appearing to read 'Hubert Namani', with a stylized flourish extending from the end of the name.

Hubert Namani

Chief Commissioner

Accident Investigation Commission

27th July 2019