ACCIDENT INVESTIGATION COMMISSION
OFFICE OF THE CHIEF COMMISSIONER

AIC Head Office,
Level 1, NAQIA Haus, Potion 81, Moera Tobo Rd, 6 Mile
PO Box 1709, Boroko **111**
National Capital District
Papua New Guinea

Telephone: (675) 323 2911
Facsimile: (675) 323 2139
Email: hnamani@aic.gov.pg

Safety recommendation: *AIC 19-R22/18-1002*

Addressed to: Air Vanuatu (Operations) Limited

Date issued: 27th July 2019

Investigation link: *AIC 18-1002*

Action status: Issued

Introduction

On 28th July 2018, at 23:37 UTC[1] (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 28th 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 29th 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*.

Occurrence

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.

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.

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.

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*[2] *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.

Recorded data showed that one second after touchdown, both power levers were set to maximum reverse thrust. They were subsequently advanced back to Ground Idle after one second then after a further ground roll of about 200 metres the power levers were returned to reverse thrust.

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.

Safety Deficiency description

When the PIC initially called the Senior Cabin Crew (SCC) to advise her of the engine problem, the SCC told the PIC that there was smoke in the cabin. However, the SCC did not inform the PIC, nor did the PIC ask about the colour and smell of the smoke. The cabin crew did not attempt to identify the source of smoke/fire in accordance with *ATR CCOM section 10.03.4*. These actions would have assisted the PIC's assessment of the situation.

During the investigation interviews, both cabin crew stated that the operator did not have a cabin smoke emergency procedure. However, they were trained to instruct passengers to keep their heads down and stay low during a smoke emergency. During the occurrence, the cabin crew continuously shouted; *"heads down, stay down!"*.

Some passengers asked the CC in the forward cabin crew seat for oxygen. He advised them to breathe through their clothing. The fact that the cabin crew did not hand out wet towels to the passengers increased the probability of passengers choking and suffocating. Although the PIC instructed the SCC to don *Protective Breathing Equipment*[3] *(PBE)* and carry out the smoke procedures, the SCC did not don her PBE, nor did she ensure that CC did so. Had they donned their PBE, they would have had 15 minutes of clean oxygen, which would have enabled them to move through the cabin and assist passengers.

Both cabin crew remained seated during the emergency phase. They were complying with what they believed was the company policy. Specifically, when the fasten seatbelt sign is on, cabin crew are to remain seated with their seatbelts fastened. Contrary to that belief, the *ATR CCOM Section 9.03* instructed cabin crew to carry out safety duties and responsibilities as required before taking up their seats, during emergency situations. These safety duties included the *ATR CCOM 'Cabin smoke contamination'* and *'Cabin preparation'*[4] procedures.

After the PIC declared a planned evacuation, the cabin crew did not carry out the *'Cabin preparation'* procedure. However, 3 minutes before impact, the SCC made a Public announcement (PA) for passengers to fasten their seatbelts.

The investigation determined that the Cabin Crew were not adequately trained on cabin safety duties in relation to smoke emergency procedures.

2 QRH: *Quick Reference Handbook* checklist

3 See Attachment 1: *ATR CCOM information on PBE.*

4 See Attachment 2and 3: *ATR CCOM Section 10.03.7 'Cabin smoke contamination'* and *'Cabin preparation'* procedures

Recommendation number *AIC 19-R22/18-1002* to Air Vanuatu Operations Limited

The PNG Accident Investigation Commission (AIC) recommends that Air Vanuatu Limited should ensure that the Cabin Crew are adequately trained on cabin safety duties in relation to smoke emergency procedures.

Action requested

The AIC requests that Air Vanuatu note recommendation *AIC 19-R22/18-1002*, and provide a response to the AIC within 90 days of the issue date, and explain (including with evidence) how Air Vanuatu has addressed the safety deficiency identified in the safety recommendation. Status **ACTIVE.**

ATTACHMENT 1: ***ATR CCOM, Section 7.02.6; Protective Breathing Equipment (PBE)***

7.02.6 PROTECTIVE BREATHING EQUIPMENT (PBE)

The PBE, "Puritan-Bennett BE Aerospace PN 119003", ensures protection of the eyes and respiratory system against heat, smoke and/or noxious gases.
The device supplies 15 minutes of oxygen and enables crew members being protected when performing relevant safety duties in case of smoke or fire.

DESCRIPTION:

The PBE is a device that completely encloses the head of the wearer and seals around the neck with an elastic membrane. The unit is vacuum sealed in a bag and installed in a protective stowage box within the aeroplane cabin.

The PBE can be worn with spectacles (eyeglasses).

F7.02_P8A: PBE stowage box

F7.02_P8B: PBE deployed

ATTACHMENT 2: ***ATR CCOM, Section 10.03.7; Cabin smoke contamination***

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Fire type	*Cabin Crew Action(s)*
Aft Cargo Compartment	PBE ..... DON CURTAIN ..... CLOSED HALON EXTINGUISHER ..... IN EXTINGUISHER CONNECTOR FLIGHT CREW ..... INFORMED

10.03.7 CABIN SMOKE CONTAMINATION

It is important that cabin crew are aware of any smoke indications and report it to the flight crew members immediately. The source of smoke should be immediately identified in order to take the appropriate actions.

R R Note: Cabin crew should not discharge the fire extinguisher randomly into an enclosed area if the source of fire has not been located.

Materials that are used in the cabin release toxic fumes when smouldering.

R The cabin crew action should be:

- Switch off the DC & ACW GND service bus located on the FAP (Flight Attendant Panel) refer to chapter 1.09 p1&2
- Report to flight crew member "Cabin smoke"

The cabin crew must protect themselves as well as the flight crew and passengers from the negative effects and consequences of smoke inhalation by:

- Donning the Protective Breathing Equipment (PBEs)
- Keeping the flight crew compartment door closed at all times
- Encouraging passengers to remain at a low level and breathe through their clothing
- Distributing wet towels and instructing passengers to breathe through it

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Fire type	*Cabin Crew Action(s)*
Smoke contamination	FLIGHT CREW ..... INFORMED DC & AC GND service BUS ..... SHED PBE ..... DON WET TOWELS ..... DISTRIBUTED

ATTACHMENT 3: ***ATR CCOM, Section 10.06.3.2; Cabin preparation procedure***

C.C.O.M	CABIN CREW OPERATING MANUAL	10.06
	EMERGENCY PROCEDURES	P 7
	EMERGENCY EVACUATION	JAN 12

10.06.3.2 CABIN PREPARATION

Public announcement

An emergency PA should be made to inform the passengers of the situation and obtain their complete attention (PA might vary according to different operators).

When reading the announcement, the cabin crew should speak slowly and distinctly.

Cabin crew will coordinate some of the following demonstrations with the announcement:

- Exits to use
- Brace positions to adopt

Cabin preparation

After the passenger has been briefed over the PA, cabin crew should ensure that the cabin is properly secured with:

- Seat belts fastened
- Seat backs in the upright position
- Tray tables closed and latched
- Armrests down
- Hand baggage stowed in the proper compartment
- Overhead compartments closed
- Exits and aisles clear of all obstructions
- Window blinds up (If available)
- Service items cleared
- Cabin doors and curtains opened and secured
- Lavatory vacated and locked
- Galley equipment secured
- Rear cargo compartment secured with safety net
- Video screens up (if applicable)

Additionally, high-heeled shoes and sharp objects must be removed (Ex: false teeth, eyeglasses, neck ties, pens…) since they may cause injuries during impact and/or during the evacuation process.

Cabin crew should also remove items such as pens, badges and wing pins from their uniforms.

Hubert Namani, LLB

Chief Commissioner

27th July 2019

Response from Air Vanuatu Operations Limited

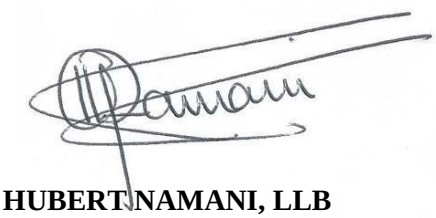
On 29th October 2019, Air Vanuatu Operations Limited wrote to the AIC stating:

> *The formal response and the corrective actions were both send to the CAAV and attached here for your review. The corrective action plan and corrective action taken was completed by August 2019. The corrective action plan was provided to the CAAV all completed by 15 Sept 2019, all within the deadlines time frame. Some of the corrective items will remain in progress until all cabin and flight crew have completed in the 2019/2020 training program time lines.*

Upon further request of proof of effective implementation of the Safety Actions, On 5th February 2020, Air Vanuatu Operations Limited sent Cabin Crew Smoke Procedures Training records to the AIC.

PNG Accident Investigation Commission (AIC) assessment of Air Vanuatu Operations Limited response

The AIC has reviewed the Air Vanuatu Operations Limited response addressing the recommendation AIC 19-23/18-1002 addressed to Air Vanuatu Operations Limited. The AIC assigned this response a satisfactory rating, and records the **Status of the AIC Recommendation: CLOSED RESPONSE ACCEPTED.**



HUBERT NAMANI, LLB
Chief Commissioner 28th February 2020.