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ACCIDENT INVESTIGATION COORDINATING COMMITTEE

**INCIDENT REPORT ON
8Q-VAS (ATR 72-212A)
Gan International Airport, Addu City, Maldives
On 21st May 2015**

Operator: Villa Air Private Limited
Manufacturer: Avions de transport régional (ATR)
Model: ATR 72-212A (600)

INTRODUCTION

Maldives is a signatory to Convention on International Civil Aviation (Chicago 1944) which established the International Civil Aviation Organisation. Article 26 of the Chicago Convention obligates the conduct of accident investigation of civil aircraft occurring in every member state. In the Republic of Maldives, the Accident Investigation Coordinating Committee is charged with this responsibility.

The Accident Investigation Coordinating Committee (AICC) conducted the investigation.

The AICC was assisted by technical staff of Maldives Civil Aviation Authority (MCAA).

In accordance with Annex 13 to Convention on International Civil Aviation, it is not the purpose of this investigation to apportion blame or liability. The sole objective of this investigation and the Final Report is to prevent accidents and incidents.

Unless otherwise stated, recommendations in this report are addressed to the MCAA. It is MCAA who shall decide on the implementation strategy for the recommendations.

All times in this report are in Local Time unless otherwise stated. Time Difference between Local and UTC is +5 hrs.

The report is released on the 5th November 2015.



Mr. Abdul Razzak Idris
Chairperson
Accident Investigation Coordinating Committee



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LIST OF ABBREVIATIONS

AICC	:	Accident Investigation Coordinating Committee
AEP	:	Airport Emergency Plan
ARC	:	Airworthiness Review Certificate
C of A	:	Certificate of Airworthiness
C of R	:	Certificate of renewal
MCAA	:	Maldives Civil Aviation Authority
CAR	:	Civil Aviation Regulation
CVR	:	Cockpit Voice Recorder
FDR	:	Flight Data Recorder
FOD	:	Foreign Object Damage
FVM	:	Fuamulah Domestic Airport (FVM)
GAN	:	Gan International Airport (GAN)
ICAO	:	International Civil Aviation Organization
IFR	:	Instrument Flight Rules
KDM	:	Kaadehdhoo Airport
LH	:	Left hand
LT	:	Local time
MAR	:	Maldivian Airworthiness Requirements
MCAR	:	Maldivian Civil Aviation Regulation
MEL	:	Minimum Equipment List
MTOW	:	Maximum take-off weight
PIC	:	Pilot in command
PROP	:	Propeller
QAR	:	Quick Access Record
RH	:	Right hand
SIC	:	Second in command
TWR	:	Tower
VFR	:	Visual Flight Rules

SYNOPSIS

Villa Air flight VP 661, an ATR 72-600, registration 8Q-VAS was on a flight from Fuamulah Domestic Airport (FVM) to Gan International Airport (GAN) with 58 passengers and 04 crew, The aircraft performed a GPS Approach to runway 28 in accordance with VRMG AD2-17 dated 1 May 2014. After touchdown, the aircraft had a runway excursion into the grass (past the runway shoulder) on the south side off the runway. The aircraft reentered the runway, stopped and then taxied to the apron.

There were no injuries to passengers or crew. The aircraft propellers sustained damage and the main landing gear wheels sustained minor damage. Grass and mud were seen lodged in the wheel wells of the aircraft. A visual inspection was conducted by the flight crew before the passengers were disembarked.

The investigation identified the following causal factors:

Loss of control after touchdown.

1. FACTUAL INFORMATION

1.0 General

Operator:	Villa Air Pvt Ltd
Aircraft Type:	ATR72-212A
Aircraft Manufacturer:	ATR
Aircraft Owner:	Celestial Aviation Trading Limited
Nationality:	Republic of Maldives
Registration:	8Q-VAS
Place of Accident:	Gan International Airport, Runway 28
Date and Time:	21 st May 2015, 2012 hr (Local time).

1.1 History of Flight.

On 21st May 2015 Villa Air aircraft 8Q-VAS-ATR 72-212A (600) departed FVM, Runway 11 at 19:59:37 LT on a scheduled flight to GAN, with 58 passengers and 04 crew on board. Taxi and take-off from FVM were uneventful. The Captain was designated as the PF. The First Officer was PNF or PM.

Once airborne from FVM the after take-off checklists were completed and FVM ATC cleared VP 661 to climb and maintain 4000FT. At 20:01:11LT, PM established contact with GAN TWR. GAN TWR passed weather information; winds at 250 Degrees at 15KTS, QNH 1012, TEMPERATURE 28, RUNWAY 28 IN USE and Moderate Rain over the field. The flight crew discussed the weather implications and with the unserviceable windshield wiper being on the Captain's side PF said that the (First Officer) PM might have to land. This was acknowledged and accepted by the PM.

The flight crew discussed the prevailing weather report and the intended missed approach procedure. Flight crew decided that if they had to execute a missed approach then they would climb on the right side of the airfield which was clear from the cell and climb straight to 2000FT and hold over ALGIB until the weather clears. Then the flight crew briefed the leading cabin crew of the situation at GAN and said that for the next 04mins it would be raining heavily at GAN.

The Captain voiced his concern operating the aircraft with the unserviceable windshield wiper as he said that he had already told OCC not to dispatch this aircraft while there was a perfectly good aircraft that could do the trip. At the descend point, the PF (Captain) prompted the PM ready for descent. PM called GAN ATC for clearance to descent. GAN ATC obliged with a clearance to descent to 1500FT and asked VP 661 to report on final for Runway 28.

As descend was initiated the PF requested for activation of approach speed and soon after GAN ATC came on the radio and said its heavy rain now. While completing the descent checklist the PM confirmed passing through 3470FT and leading cabin crew conformed that the cabin was secure for landing. When the cabin crew called with the conformation for landing the Captain told the cabin crew that they would not be leaving GAN for the next hour as it was raining heavily and maybe they cannot disembark the passengers.

On approach to GAN the crew discussed whether to divert to FVM or KDM and the fuel availability was also considered. It was decided that if they divert, the diversion would be to KDM.

On the final approach the PF had difficulty in seeing the runway and suggested that the PM to take over if he is able to see the runway. GAN QNH was checked as 1013, and the crew completed all checks for the landing. At 4 miles GAN tower cleared the aircraft to land. The surface conditions reported were winds at 270 degrees at 18 knots.

At very short finals (approximately 500 feet AGL) the crew decided to change controls even though the PF (Captain) could still see the runway. But just after the change over the captain (PM now) confirmed that the PM cannot see anything then. The aircraft landed 47 second later.

The FDM showed that the main landing gear touched down to the left of the centerline before the touchdown zone markings and skidded to the left leaving the runway and moved through grass for about 213 meters (702 feet) before coming back onto the runway.

The flight crew informed GAN TWR of the runway excursion before taxiing into the apron. The aircraft taxied into the apron via Taxiway B. A visual inspection was conducted by the flight crew before the passengers were disembarked.

1.2 Injury to persons

<i>Injuries</i>	<i>Crew</i>	<i>Passengers</i>	<i>Total in the aircraft</i>	<i>others</i>
Fatal	0	0	0	NIL
Serious	0	0	0	NIL
Minor	0	0	0	NIL
None	4	58	62	NIL
Total	4	58	62	NIL

1.3 Damages to aircraft

The damage assessments observed are as follows:

1. No. 2 main wheel found with FOD. (Something sharp has pierced into the tire, however no signs of air leakage from the wheel)
2. No.3 main tire found with a small damage on the sidewall. Piece of rubber of approx. 4 inches missing.
3. RH propeller total of 5 propeller blades damaged. (Propeller blades appeared to have hit the runway-Appendix 1)
4. Tail skid has evidence of touching the runway surface.

1.4 Other damage

One Runway Light (red filament)

1.5 Personnel information

1.5.1 Captain:-

Age:	29
Nationality:	Maldivian
Gender:	Male
Type of Licence:	Airline Transport Pilot Licence (Aeroplanes)
Medical issued on:	10 June 2014
Medical expires on:	30 June 2015
Type of medical:	Class 1
Licence issued on:	24 December 2014
Licence expires on:	23 December 2016
Types flown:	DHC-6, ATR42/72, DHC-8, DO228
Hours on type:	900 hrs
Ratings:	ATR42/72, DHC-6, DHC-8, DO228
Last Proficiency check:	08 Dec 2014
Total hours as PIC:	200 hrs (On type)
Total flight time:	4000 hrs

1.5.2 Co-pilot:-

Age:	36
Nationality:	Maldivian
Gender:	Male
Type of Licence:	Commercial Pilot Licence (Aeroplanes)
Medical issued on:	31 August 2014
Medical expires on:	31 August 2015
Type of medical:	Class 1
Licence issued on:	6 September 2010
Licence expires on:	5 September 2016
Types flown:	ATR 42/72
Hours on type:	1530 hrs
Ratings:	ATR 42/72
Last Proficiency check:	11 Nov 2014
Total hours as PIC:	00 hrs (On type)
Total flight time:	1780 hrs

1.5.3 Cabin Crew:-

Age:	31
Nationality:	Maldivian
Gender:	Male
Licence issued on:	18 Oct 2012
Licence expires on:	17 Oct 2017
Medical issued on:	18 Feb 2015
Medical expires on:	28 Feb 2017
Type of medical:	Class 3

1.5.4 Cabin Crew:-

Age: 25
Nationality: Maldivian
Gender: Male
Licence issued on: 30 Dec 2013
Licence expires on: 29 Dec 2018
Medical issued on: 22 Oct 2013
Medical expires on: 31 Oct 2015
Type of medical: Class 3

1.6 Aircraft information

1.6.1 General information:-

Aircraft manufacturer: Aerospatiale
Model: ATR72-212A
Serial number: 1069
Year of manufacture: 2013
Registration marks: 8Q-VAS
Validity of C of R: 01 Feb 2013
Validity of C of A: 01 Feb 2013 (Perpetual C of A Issued)
ARC Expiry: 02 March 2016
Name of owner: Celestial Aviation Trading 4 Limited.
Name of operator: Villa Air Pvt. Ltd.

1.6.2 Total flying hours of the aircraft since: -

Manufacture: 3343.4 hrs
Last periodic inspection: 3A Check (27 Jan 2015 @2999.7)
Last inspection carried out at
TAT: 2999.7
TAC: 5940
Date: 27 January 2015
Next inspection due at TAT: 3499.7 Hrs

1.6.3 Engines and propellers:-

Right engine:

Manufacturer: Pratt & Whitney (Canada)
Year of manufacture: 2012
Model: PW127M
Serial number: ED0618
Hours since New: 3343.4 Hrs
Last check carried out: Fuel Nozzle change 28 November 2014
(2722.9 hrs 5410Cyc)
Hours since last check: 620.5 Hrs

Left engine:

Manufacturer: Pratt & Whitney Canada
Year of manufacture: 2012
Model: PW127M
Serial number: ED0617
Hours since new: 3343.4 Hrs

Last check carried out: Fuel Nozzle change 28 November 2014
(2722.9 hrs 5410Cyc)
Hours since last check: 620.5 Hrs

Right Propeller

Manufacturer: Hamilton SunStrand
Year of manufacture: 2012
Model: 568F-1
Serial number: FR 20120955
Hours since last overhaul: N/A
Last check carried out: Propeller feathering system check 12 Feb
2015 (3035 hrs 6000 cyc)

Left Propeller

Manufacturer: Hamilton SunStrand
Year of manufacture: 2012
Model: 568F-1
Serial number: FR 20120954
Hours since last overhaul: N/A
Last check carried out: Propeller feathering system check 12 Feb
2015 (3035 hrs 6000 cyc)

1.6.4 Fuel:-

Type of fuel used: Jet A1
Total fuel on board: 1700 kg

1.6.5 Accessories:-

No Component failed.

1.6.6 Defects:-

- Left hand wiper of 8Q-VAS was found unserviceable on 12 May 2015. MEL invoked as category C having a due date till 22 May 2015. This was deferred under the following conditions:
 - *One or both may be inoperative, provided:*
 - (a) *No precipitation is forecasted during a period from one hour before until one hour after the estimated time of departure and arrival at the takeoff and destination aerodromes,*
 - (b) *Affected wipers are not part of the equipment required for the intended operation.*
- Evidence of vertical accelerometer malfunction.

1.6.7 Aircraft load:-

Certified take-off mass: 23,000 Kgs
Certified landing mass: 22,350 Kgs
Take-off mass as per load sheet/Manifest: 20,447 Kgs.

1.6.7.1 Load sheet: – Appendix 3

1.7 Meteorological information

As per the METAR information received from Gan International Airport for 21st May 2015 indicated:-

1. Time of observation: 1400 UTC (1900 LT).
2. Wind: From 170 degrees at 3 knots,
3. Visibility: 10km or more
4. Condition: Moderate to heavy Showers of rain
5. Cloud: Few 1800ft Towering Cumulus, Scattered 27,000ft, CB N, NE, S, SW
6. Temporary: Winds from 210 degrees at 9 knots, gusting at 19 knots, visibility 1000 metres.

1.8 Aids to navigation

The aircraft was operating under IFR condition.
Aerodrome is equipped with VOR, NDB, full PAPI runway lights and taxi lights.

1.9 Communications

Two VHF sets COM1 and COM2 were both serviceable at the time of approach into GAN. No communication problem was reported with GAN TWR or Company Dispatch

1.10 Aerodrome information

The GAN Aerodrome is under the impact area of the GAN Airport Emergency Plan (AEP) – Edition 1 dated: 16.04.2011.

Runway length of 2650 meters and 45 meters width, concrete runway with grass on the edges along the runway without a runway shoulder.

At the time of the incident there was heavy rain and standing water on the runway.

1.11 Flight Recorders

The aircraft was fitted with flight recorders.
CVR Type: L3-Communications Co – P/No: 2100-1020-2
FDR Type: L3-Communications Co – P/No: 2100-4045-00

1.12 Aircraft damage and impact information

See attached Appendices to the report.

1.13 Medical and pathological information

After the incident, the pilots and cabin crew underwent an in-house substance use check-up and a urine was tested for narcotics with the results being negative.

1.14 Fire

There was no evidence of fire.

1.15 Survival Aspect

The aircraft did a normal taxi after the runway excursion once it was back on the runway. Passengers were disembarked normally using the aircraft steps. There were no reported injuries to any passengers or crew.

1.16 Tests and research

No tests or research were carried out.

1.17 Organizational and management information

The company is a Maldives Civil Aviation Authority (MCAA) approved Air Operator Certificate holder. Regular inspections and periodical flight checks were conducted on the company and crew respectively by MCAA to verify compliance and competency.

The company also hold MCAR-145 approval and annual audits are being carried out by MCAA inspectors in addition to random spot checks and regular Airworthiness Review inspection of Villa Air fleet.

1.18 Additional Information

None.

1.19 Useful or Effective Investigation Techniques

Flight Data Monitoring (FDM) data.
CVR recordings.
Interviews with Captain and First Officer.
ATC tape recordings and reports.

2. ANALYSIS

The analysis is based on the following reports and testimonials:

- *QAR data from ATR (appendix 4)*
- *CVR data.*
- *Flight crew testimonials*
- *SARA FDM analysis*

3. CONCLUSIONS

(a) Findings

- Flight crew were in compliance with the regulations, with regards to licensing and qualifications,
- Flight and duty time limitations of the flight crew were in accordance with *MCAR OPS-1, Subpart Q.*
- None of the flight crew previously had a record of a similar incident/accident.

- The aircraft was within the certified weight limitations for both take-off and landing.
- The aircraft was released serviceable.
- The LH windshield wiper was unserviceable and deferred under MEL (65-1 Windshield wipers).
- Aircraft approached and landed in heavy rain. The approach was made in violation of *MCAR-OPS 1.645 Windshield wipers*.
- Descending through the minimum descent altitude, the airplane was below a 3° descent gradient path at an airspeed 22 kt higher than the recommended VAPP.
- The drop in Engine #2 parameters occurred after the airplane started to skid and veer off the runway.

(b) Causal Factors

- Loss of control after touch down due to aquaplaning effect.

(c) Contributing factors

- LH wiper inoperative and deferred under the following conditions:
 - One or both may be inoperative, provided:
 - (a) No precipitation is forecasted during a period from one hour before until one hour after the estimated time of departure and arrival at the takeoff and destination aerodromes,
 - (b) Affected wipers are not part of the equipment required for the intended operation.
- Heavy rain at the time of landing with limited visibility;
- Aircraft approached the runway at a heading of 299 degrees however the flight path indicated an angle to the left of the runway centre line. Aircraft landed 8.5 metres left of centreline of the runway;
- Standing water on the runway;
- Aquaplaning of the aircraft;
- Aircraft touchdown zone was partly covered with moss growth;

4. SAFETY RECOMMENDATIONS

4.1 Recommendation

1. Villa Air crew training to emphasise on:-
 - runway excursions: aircraft handling during landing roll in various situation such as crosswind conditions, runway contamination;
 - approaches in low visibility conditions;
 - effects of aquaplaning;
 - regulatory requirements on deferrals; and
 - effects on nose wheel steering at high speed (above 70kts)
2. ATC to advice the runway condition to the approaching aircraft.

3. CAA to evaluate the 8Q-VAS SARA FDM reports in conjunction with this incident and advise Villa Air on further corrective actions as required.
4. CAA to evaluate GAN runway surface conditions due to reports of moss and standing water and recommend corrective actions.

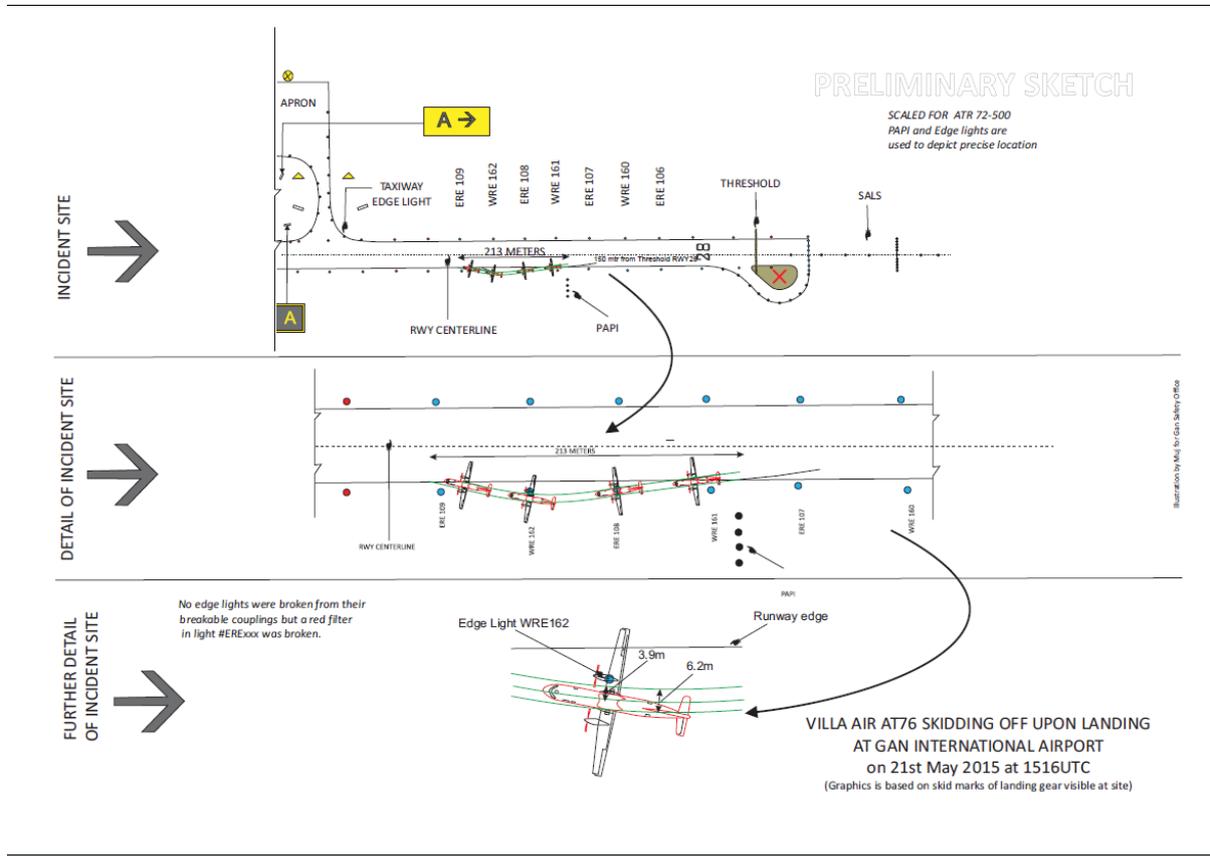
Report compiled by:
Accident Investigation Coordinating Committee
Date: 5th November 2015

5. APPENDICES

Appendix 1 -Damages to Propeller Blades



Appendix 2 – Incident Site



Appendix 3 - Load and Trim Sheet

Weight & Balance Sheet

Date: May 21, 2015 A/C Reg No: 8Q-VAS A/C Type: ATR 72-212A A/C Config: 2/2 Crew + Catering

Total Pax: 0 Flight No: VP661 From: FVM To: GAN

Alternate: PIC: SIC: Comments: 57+1

Fuel Onboard (Wt - kg): 1700 Trip Fuel (Wt - kg): 200 CG Envelope

	Weight (kg)	FWD Limit	C.G. % MAC	AFT Limit
Operating Weight	13936		22.4	
Payload	4861			
Zero Fuel	18797	15.1	27.2	37
(Max 21000 kg) 2203 kg Under Load				
Fuel	1700			
Ramp	20497			
(Max 23170 kg)				
Taxi Fuel	50			
Take-Off	20447	17.4	27.9	37
(Max 20700 kg) 253 kg Under Load				
Trip Fuel	200			
Landing	20247	17.1	27.8	37
(Max 22350 kg) 2103 kg Under Load				

Fuselage Stations (Wt - kg)	
LH Cargo	263 393 RH Cargo
A (20 Pax)	1051
B (28 Pax)	1645
C (18 Pax)	1152
	357 AFT Cargo

Longitudinal CG - %MAC

Weight / 1000 kg

Prepared By: _____ PIC Signature: _____

I certify the aircraft weight and center of gravity are within airplane flight manual

Appendix 4-Event Analysis by ATR

V-3012/15
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1. CONTEXT

Flight	VP-661 from Fuvahmulah airport (VRMR) to Gan airport (VRMG/GAN)
Airplane	LDW ~ 20.2t MACLDW ~ 28 % VmHB=106kt VAPP=112kt (recommended)
Weather	Ground temp. 28°C (ISA+13) CAPT reported "moderate rain over the field and the flight visibility was more than 2000 meters" SPECI reported: Visibility 1000 m Heavy rains (+SHRA) Clouds: scattered (base at 1700ft AAL) and few CB (base at 1800ft AAL)
Wind	CAPT reported "on the final reported wind was 270/18kts", SPECI reported 9kt, gust 19kt, LH crosswind (210°)
Airport	Elevation 6 ft RWY 28 in use, 2558 x 45 m, paved, PAPI-L (3°), wet and possibly contaminated with water

The CAPT was initially PF. He reported that "I had the runway insight without my windshield wiper until the touchdown. On final I handed over the control to my first officer since he had the windshield wiper working. I handed the control to my first officer at an altitude before 1000 feet".

The F/O was finally PF during the final approach.

2. ANALYSIS

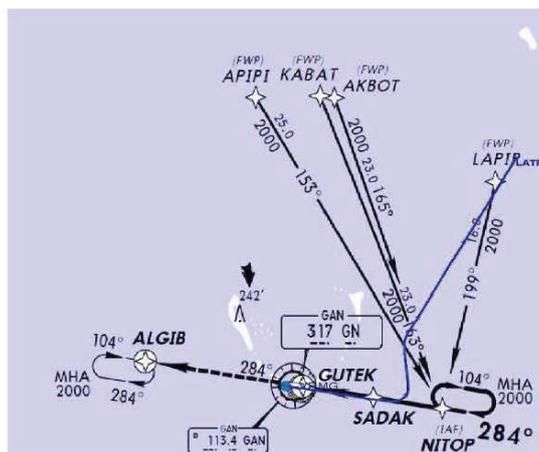


Figure 2 : Trajectory of the airplane over plotted on the GPS Rwy 28 approach chart

The airplane approached the destination airport from the north.

The approach and final approach were performed with AP engaged in LNAV and VS modes.

According to the trajectory of the airplane, the crew seemed to directly point SADAK, navigation aid published as the Final Approach Fix of GPS Rwy 28 approach chart.

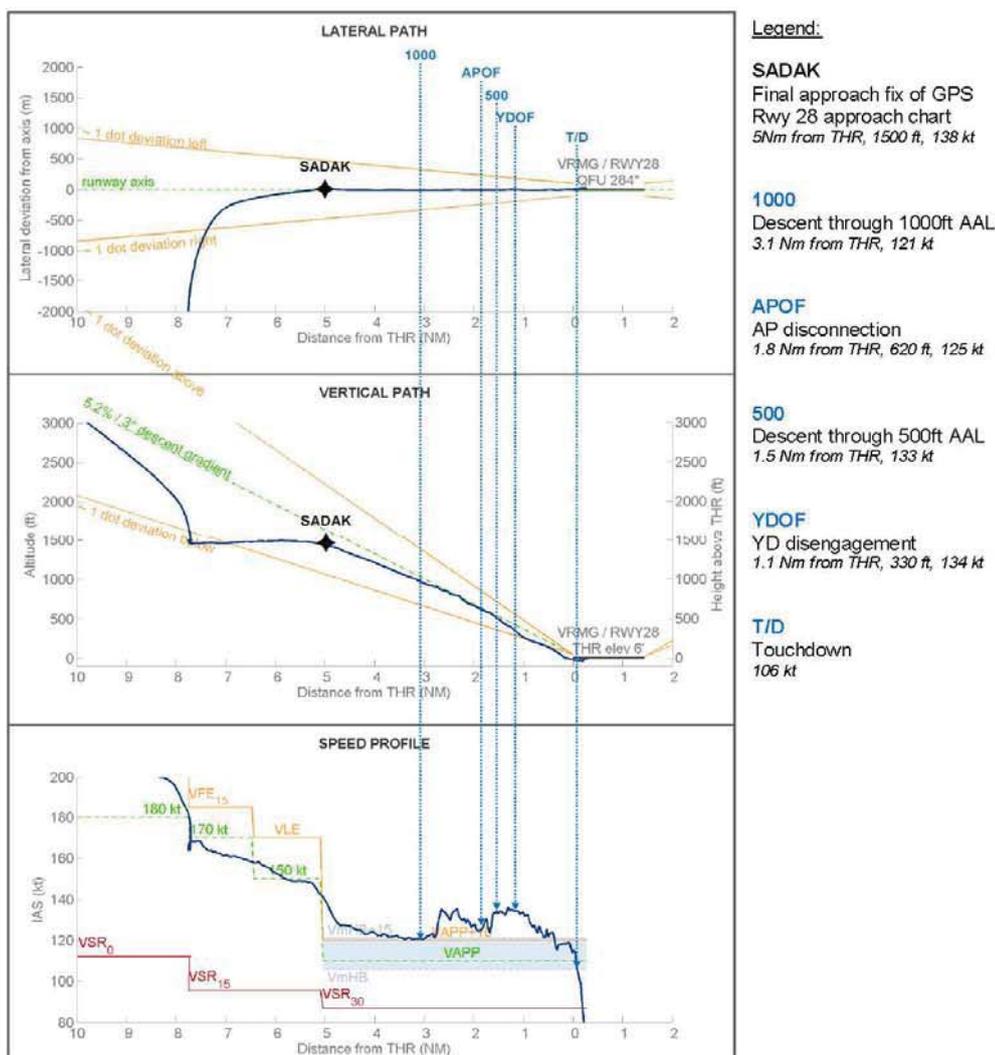


Figure 3 : Reconstructed approach plot based on QAR read out

The airplane flew towards the runway axis with a 90° path from the north with AP engaged in LNAV and ALT modes. It was fully configured for landing just before reaching SADAK (FAF of GPS Rwy 28 approach) at 1500ft and 5 miles away from runway 28 threshold. From there, the airplane remained on lateral path until the touchdown.

The final approach was initiated when ALT mode was replaced by VS mode initially set at -700 ft/min and quickly changed to -600 ft/min. Lateral mode remained LNAV mode (LNAV switched to LNAV LO descending through 930ft).

Down to 900ft, the IAS was stabilized to around 121 kt. Afterwards, IAS increased by 10 kt without any engine power input and started varying between 120 and 130 kt until the landing. The IAS augmentation was due to wind direction varying from LH tailwind to LH headwind (GS remained constantly decreasing).

On short final, the AP was disconnected descending through 630ft and, as reported by the CAPT, the F/O took manual command of the airplane (recorded loads on RH pitch control column). From there, the manual control led the airplane to descend below a 3° descent gradient and to roll at +/- 5°. Passing 550ft, VS mode was increased to -1000 ft/min. The airplane was at 1.5 Nm from the runway threshold. The YD was disengaged descending through 340 ft. The IAS was 134 kt. Power levers were at a position slightly above F1.

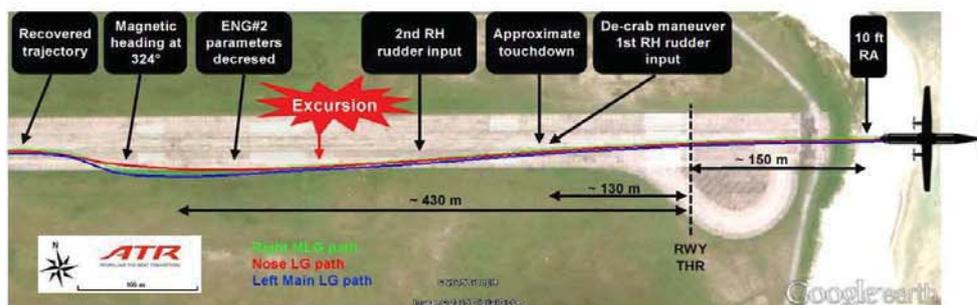


Figure 4 : Reconstructed landing path based on QAR read out

A flare was commanded when the airplane was at around 10 ft RA and at 150 m from the runway threshold. The F/O pitch control input average was around 10 daN. A peak of force at 20 daN allowed the airplane to flare over the beach in front of the runway and the displaced threshold. The airplane flew over the runway threshold at around 4 ft RA. The power levers were retarded to F1 position.

The magnetic heading of the airplane was 280° (runway QFU was 284°). A de-crab manoeuvre (1st significant RH rudder pedal effort) was performed just prior or while the MLG touched the ground.

The touchdown could not be evaluated with precision as aircraft accelerations were not available in the QAR. The MLG of the airplane might have touched the ground at around 130 m after the runway threshold, at around 106 kt with a pitch attitude of about 1.4° and a left roll angle (around 3°). The power levers remained in F1 position (TQs decreased to 0%) until the nose gear touched the ground. The CAPT reported the "touchdown was smooth".

The 1st RH rudder pedal input reached 28 daN (rudder deflected at 8°, IAS was 102 kt), which led the airplane to nose right (the magnetic heading reached 282°) and then it was released.

During the landing roll, the power levers were retarded to G1 position and a 2nd RH rudder pedal input was performed. It reached 60 daN (rudder surface deflected at 25°, IAS was 83 kt). As a response, the airplane nosed right (magnetic heading rapidly increased towards 300° and kept increasing). The airplane might have skidded at this moment. The CAPT reported "at a sudden I noticed that we were skidding from the runway and took the control in-order to bring the aircraft under control".

A 3rd rudder pedal input on the LH side was recorded (it reached 90 daN and was maintained, the rudder surface deflected at 28°, IAS was around 70 kt). At this time, just prior the landing gears exited the runway, an asymmetrical reverse was commanded: PL#1 was retarded to full REV position whereas PL#2 was retarded to half REV position. At this moment, ENG#2 parameters (TQ, NP, NH, NL, FF) suddenly decreased from nominal values associated with a drop of ENG#2 oil pressure. A MASTER WARNING was triggered and ENG 2 FLAME OUT ON GROUND check-list was displayed on the Engine Warning Display. The CAPT reported "I think I saw No.2 Engine was out but primary indications shows that it was not completely out."

Until then, no brake input was detected either LH side pedals or RH side pedals. The maximum magnetic heading reached by the airplane was finally 324°.

Despite RH rudder pedals input and commanded reverse on engines, the airplane left the runway and "both wheels were out on the grass", as reported by the CAPT. Maximum excursion was at around 430 m from the runway threshold.

The CAPT reported "it took probably 3 seconds to a complete stop back on the runway. (...) After we brought the aircraft under control I noticed that No.2 engine parameters were back to normal", as ENG#2 oil pressure that increased back to nominal value. Then, previous displayed check-list was replaced by AFTER LANDING check-list.

The CAPT reported the airplane was "taxied back to the apron. While taxiing I noticed that was a problem in braking the aircraft since when brakes are being applied there was a noise but I continued taxiing the aircraft to the apron".

3. CONCLUSION

The airplane was fully configured for landing when it flew over the FAF and it remained on lateral path until the touchdown.

Down to 900 ft, the airplane remained stabilized with an airspeed corresponding at the recommended VAPP + 10 kt.

From the AP disconnection (~ 650 ft), the airplane descended below a 3° gradient path and rolled between +/- 5°.

Descending through the minimum descent altitude (360 ft regarding the GPS Rwy 28 approach), the airplane was still below a 3° descent gradient path at an airspeed 22 kt higher than the recommended VAPP.

The airplane finally flew over the runway threshold at 4 ft RA at an airspeed corresponding to VAPP.

During the landing roll, the skidding reported by the CAPT could not be confirmed as aircraft accelerations were not available in the QAR. Nevertheless, the runway was wet and reported weather cannot exclude the runway was contaminated with water. The crew actions to counter the reported skidding were not sufficient. Both MLG were out on the grass and the airplane reached a magnetic heading higher than QFU runway by 40°. The analysis confirmed a sudden drop of TQ2, NP2, NH2, NL2 and FF2 associated with a drop of oil pressure, as reported "ENG#2 out parameters" by the CAPT. The airplane finally went back on the runway and taxied out to the apron.