CIVIL AVIATION AUTHORITY OF VIETNAM

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FINAL REPORT[1]

INVESTIGATION RESULT OF SERIOUS INCIDENT

HARD LANDING ON NOSE LANDING GEAR

AIRBUS A321 MSN 8199 (VN-A653)

FLIGHT VJ356 ON NOVEMBER 29TH 2018

[1] This report was implemented based on the sub Convention 13 of International Civil Aviation Organization and decree 75/2007/ND-CP in aircraft incident and accident investigation. The reported results are consulting from the State of Manufacture (France) based on the requirements of ICAO in serious incident.

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I. Incident information

1.1 General information

- Flight number: VJ356;
- Date of event: 29/11/2018;
- Place of occurrence: BMV airport (Buon Ma Thuot – South of Vietnam).
- Operator: Vietjet Aviation Joint Stock Company (VJC);
- Type of operation: Commercial air transport;
- Departure at TSN airport (Hochiminh city – South of Vietnam);
- Arrival at BMV airport (Buon Ma Thuot – South of Vietnam).
- Aircraft model: Airbus A321-271N;
- Aircraft registration: VN-A653.

1.2 History of the flight

The history of the flight is based on the results of analysis of flight data recorder's parameter (Appendix I), cockpit voice recorder, voice communications between air traffic controller and flight crew (Appendix II) and flight crew interview results, using UTC (UTC - international time, Vietnam time is UTC + 7) as follows:

Flight VJ356 departed from Tan Son Nhat International Airport (Ho Chi Minh City) at 15:28 on November 29, 2018. The flight crew consisted of two people, of whom captain was the person who directly controlled the aircraft (pilot flying) and the first officer was in charge of monitoring (pilot monitoring).

At 15:36, flight crews established contact with ATC at BMV airport and received the advice to continue precision approach on ILS-Y - RWY 09.

At 15:57, flight crew was informed about wind direction 080^{o}, wind speed 10kt and approval to land on runway 09.

At 16:02, the aircraft landed on RWY 09 at BMV airport, Buon Me Thuat city. In touch-down and deceleration process, 02 nose wheels fractured and separated from the nose landing gear. After completely stopped on the runway, the aircraft was incapable to move (see *Picture 01*). Flight crews carried out emergency procedure and evacuated passengers based on operation procedure. The total of 207 passengers were safely evacuated (see *Picture 02*).

The emergency rescue was deployed right after the incident to ensure safety for passengers under the direction of CAAV and the coordinated implementation of relevant organizations including Vietjet Air, Vietnam Air Traffic Management Corporation, Southern Airport Authority, Airport Corporation of Vietnam (ACV) and Buon Ma Thuot Airport facility.

Picture 01.

Picture 02.

1.3 Flight crew's information

1.3.1 Captain:

+ Date of Birth: 1975; Nationality: Philippine;
+ Flight Time / On A321: 8953h/ 7275h (Until 11/2018);
+ Licenses and certificates:
    - License type: ATPL;
    - Expiration date: 31/5/2023;
    - Expiration date of A321 type rating: 31/3/2019;
    - Expiration date of medical certificate: 31/3/2019.

1.3.2 First officer:

+ Date of Birth: 1991; Nationality: Spain;
+ Flight Time / On A321: 718h/ 501h (Until 11/2018);
+ Licenses and certificates:
    - License type: CPL;
    - Expiration date: 30/9/2022;
    - Expiration date of A321 type rating: 31/12/2019;
    - Expiration date of medical certificate: 31/3/2019.

1.4 Aircraft information

- Aircraft model: A321-271N
- Manufacturer Serial Number (MSN): 08199
- Production Delivery: 14/11/2018
- Aircraft registration: VN-A653
- Expiration date of Airworthiness certificate: 28/5/2019;
- Total flight time/ total flight cycles: 157FH/ 112FC.

The aircraft VN-A653 was in good technical condition without any damage relating to flight operation before the flight VJ356 on 29/11/2019.

1.5 Meteorological information

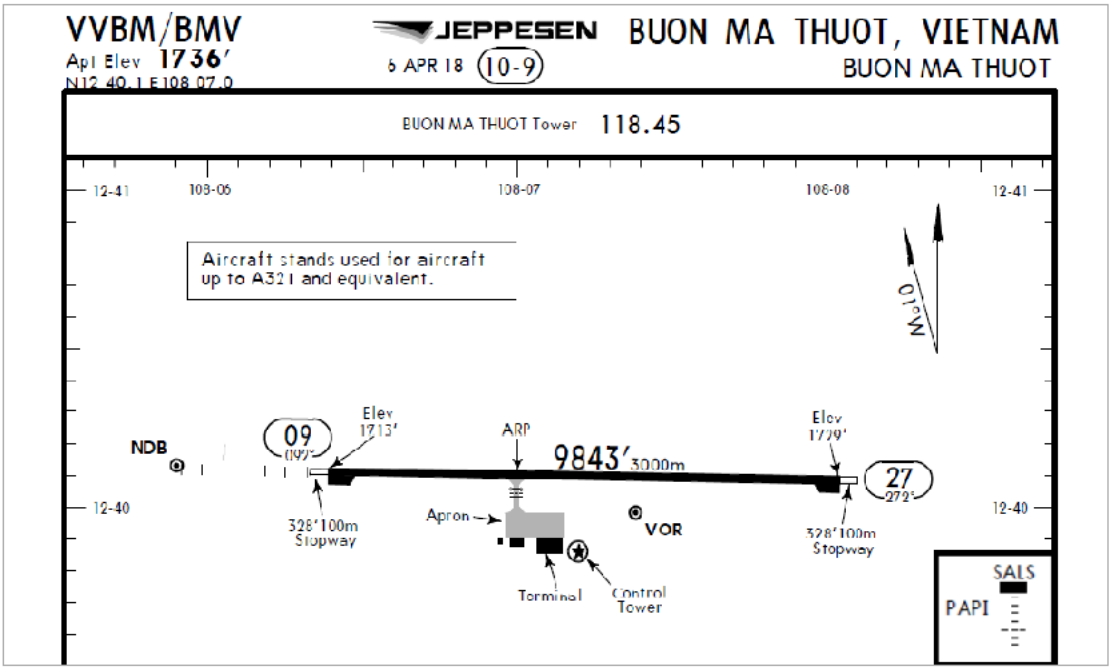
Based on the Meteorological Aerodrome Report (METAR) at BMV airport, at the time the flight VJ356 landing, there was no rain, wind velocity 10kts, wind direction 90^0, visibility 10km or more, meteorological condition was in the operation standard to land at BMV airport:

METAR VVBM 291600Z 09010KT 9999 22/20 Q1017 NOSIG=

1.6 Runway information and aids to navigation

The precision approach of Runway 09 - BMV airport is classified as CAT I, 3000m long, 45m wide, track 093^0 with ILS, VOR, DME and NDB system.

The runway has a curvature of 23ft along its length. The threshold of runway 09 is at an elevation of 1713ft. This rises to 1736ft at the taxiway exit (approx. 1/3 along runway length) and then drops away to 1729ft at the end of the runway (See *Picture 03*).



Picture 03.

1.7 Flight data recorder

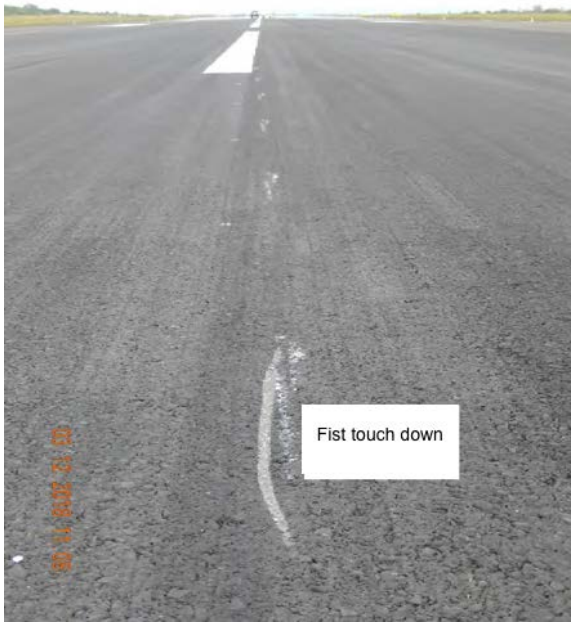
The aircraft VN-A653 was equipped with flight data recorder (FDR) and cockpit voice recorder (CVR) - FA2100 type of L3 Communications Corporation. Both devices were under good technical condition, removed from the aircraft and sent to CAAV to decode and analyze.

1.8 On-site mapping

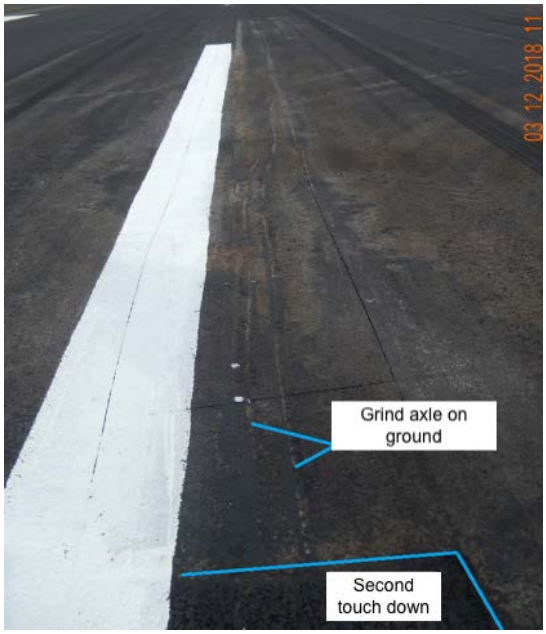
The first touch-down mark of nose landing gear on RWY 09 was found at 659m from the beginning of the runway (see *Picture 04*).

The second mark was found at 17m after the first one and at 676m from the threshold of the runway (see *Picture 05* and *Picture 06*). This mark prolonged to the

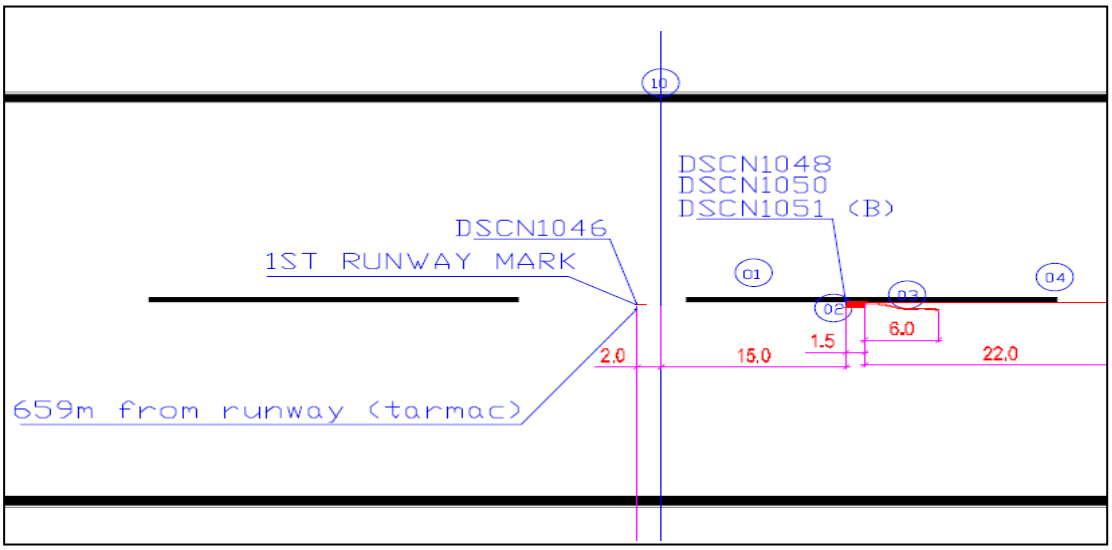
point where the aircraft was completely stopped. It was 1116m from the threshold of the runway and 3m to the right of the center line of the runway (see *Picture 07*).



Picture 04.

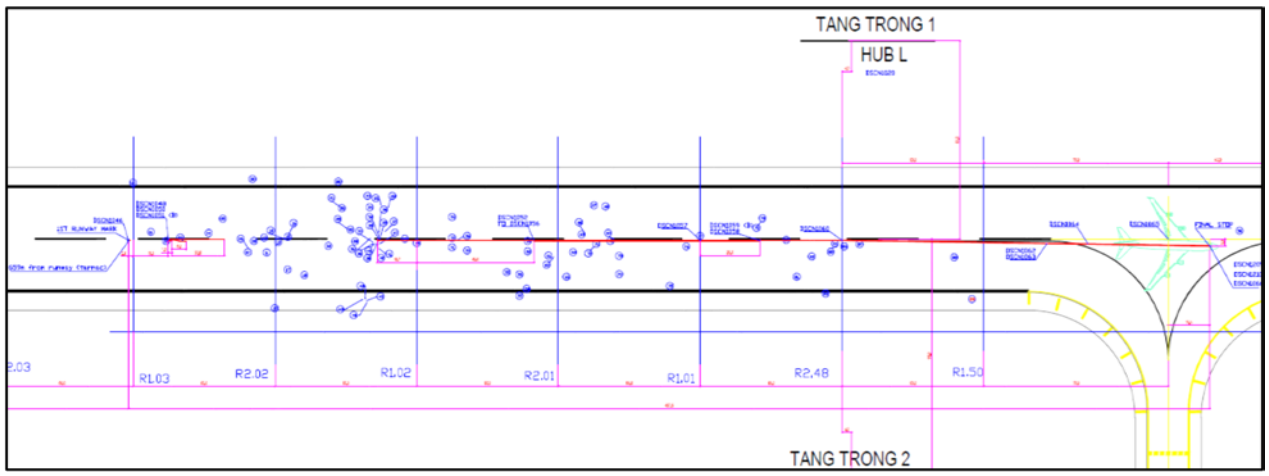


Picture 05.



Picture 06.

Diagram shows the position of found broken pieces of wheels and nose landing gear (see *Picture 06*).



Picture 07.

1.9 Injuries to persons

During evacuation, there was 06 injured passengers who were taken to the hospital for health check. 04 of them were discharged from the hospital on the same day of the event (29/11/2018). The other 02 were discharged from the hospital on the next day (30/11/2018) with normal health condition.

1.10 Damage to aircraft

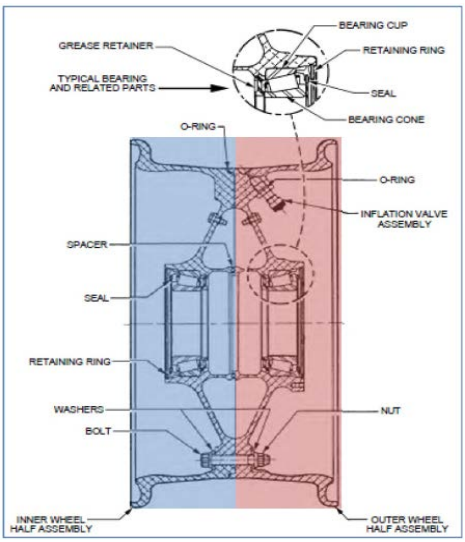
Some damages were found during on-site aircraft inspection as follow:

- 02 separated nose landing gear wheels were found with condition as follow (see *Picture 08* – diagram of nose wheel assembly)

+ There was no damage on the tires (no tear, no blow-out);

+ The outer wheel half & tyre were separated and the bearing hub was separately broken from the inner wheel half (see *Picture 09*);

+ Some tie bolts were found broken (see *Picture 10*).

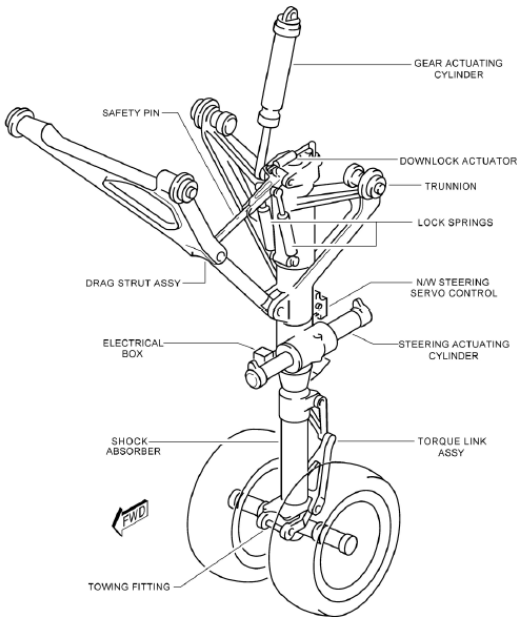


Picture 08.

Picture 09.

Picture 10.

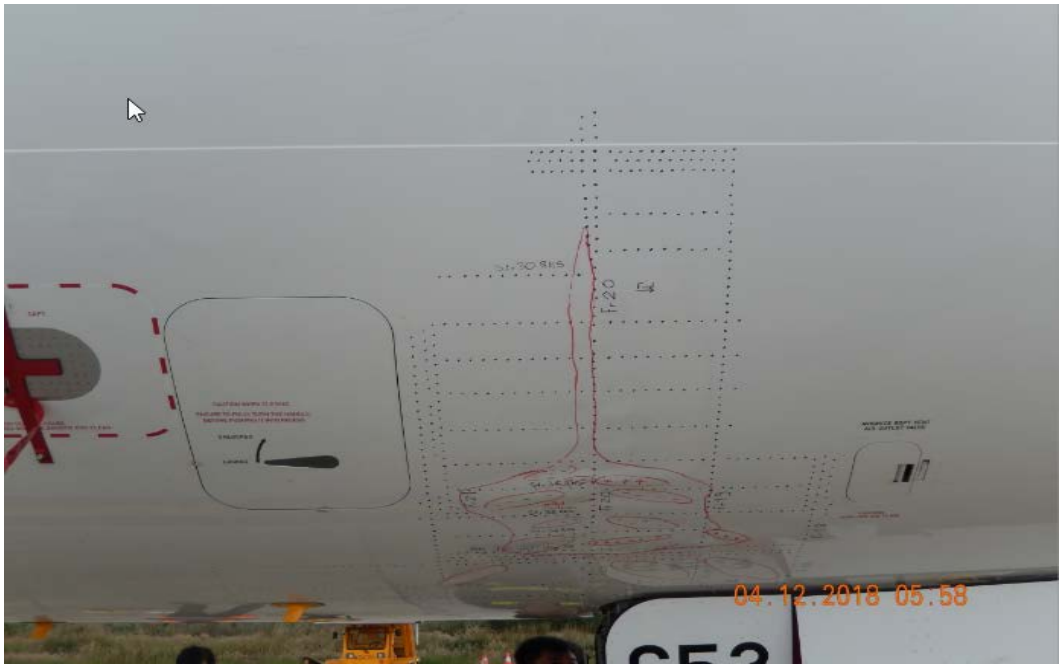
- Nose landing gear (NGL) was severely damaged with grinded NGL axle (see *Picture 12*). After inspecting nitrogen pressure of nose landing gear and NLG shock absorber, the extension of NLG shock absorber was 20.4cm (normal extension is 44.9cm) (see *Picture 11* - NLG structure diagram).



Picture 11.

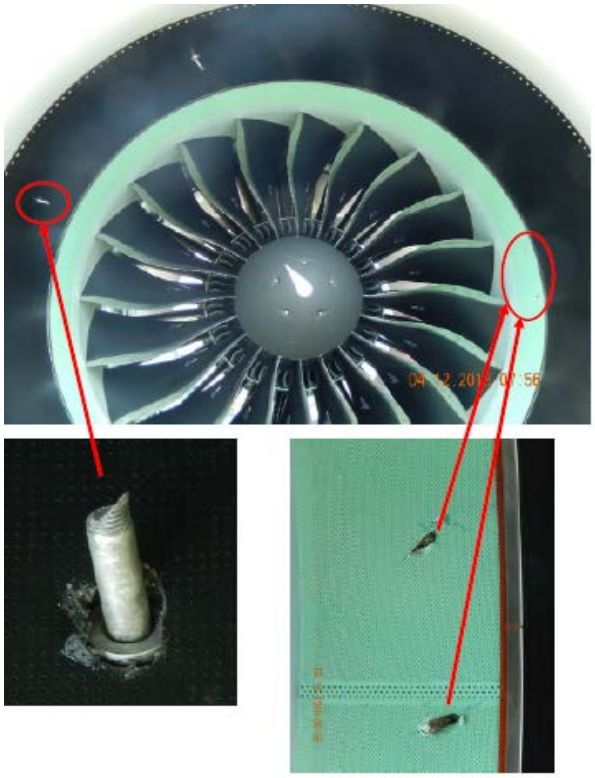
Picture 12.

- Fuselage: There was some dents at frame number 20 area at the bottom right of the fuselage (*Picture 13*).

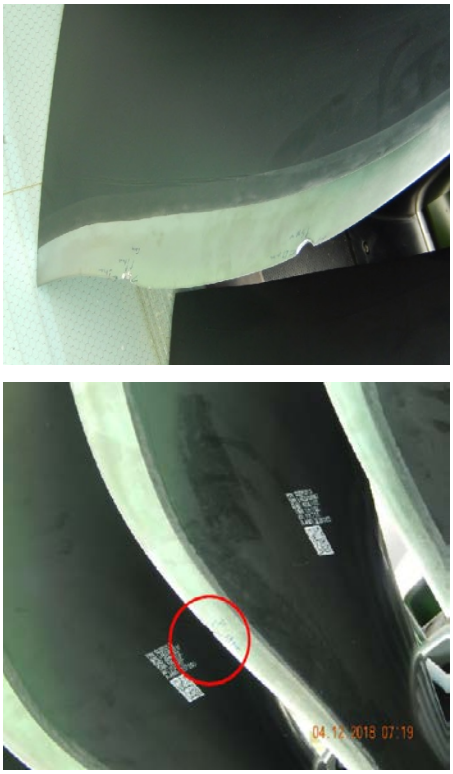


Picture 13.

- Left engine: 03 damages at the inner surface of the air inlet (see *Picture 14*), 02 fan blade (see *Picture 15*) and fan case.

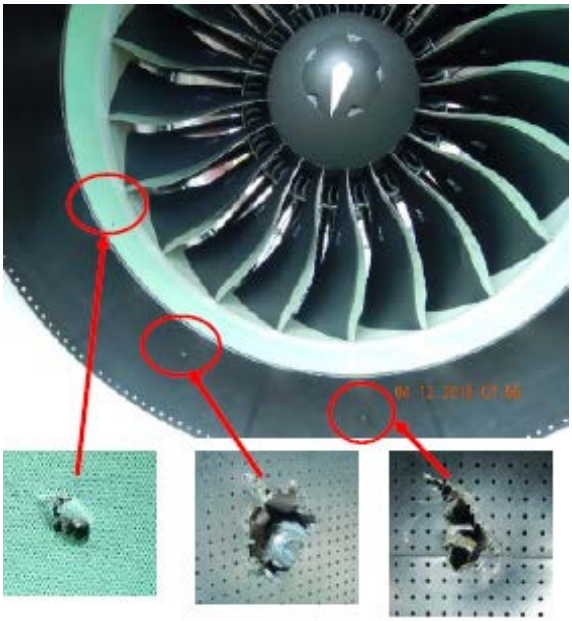


Picture 14.

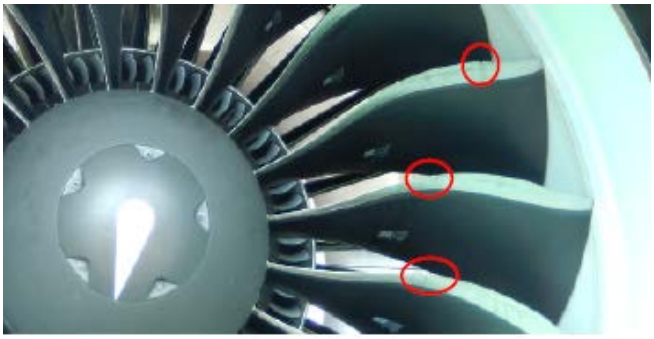


Picture 15.

- Right engine: 03 damages at the inner surface of the air inlet (see *Picture 16*) and 03 fan blade (see *Picture 17*).



Picture 16.



Picture 17.

II. Analysis

2.1 Implemented investigation

Based on the occurrence, CAAV has classified this event as serious incident (class B). Moreover, CAAV's General Director established an incident investigation team according to decision number 2265/QĐ-CHK on 30/11/2018 and decision number 2307/QĐ-CHK on 05/12/2018. The investigation team implemented as follow:

- Suspended pilot license of VJ356's flight crews according to item 1.015 (d) of Vietnam Aviation Regulation;
- Initially notified of the serious incident - flight VJ356 on 29/11/2018 to International Civil Aviation Organization (ICAO) and Le Bureau d'Enquêtes et d'Analyses pour la sécurité de l'aviation civile (BEA) as state of manufacture according to Annex 13 of Chicago Convention;
- Collected and analyzed related information including: flight documents, training documents of flight crews, aircraft documents, communication between flight crews and ATC, and flight crews interview;
- Analyzed the data downloaded from CVR and FDR;
- Component expertise of nose wheels, tyres and tie bolts at Collins Aerospace.

2.2 Component Expertise at Collins Aerospace

The recovered wheels, tyres and tie bolts were analyzed at Collins Aerospace in Dayton – US with the presence of an investigation team during 13/5-15/5/2019.

The wheel halves and tie bolts were tested for hardness, microstructure and fracture surface examination. The results indicated that the materials were in accordance to production requirements and the fracture surfaces were consistent with failure due to overload.

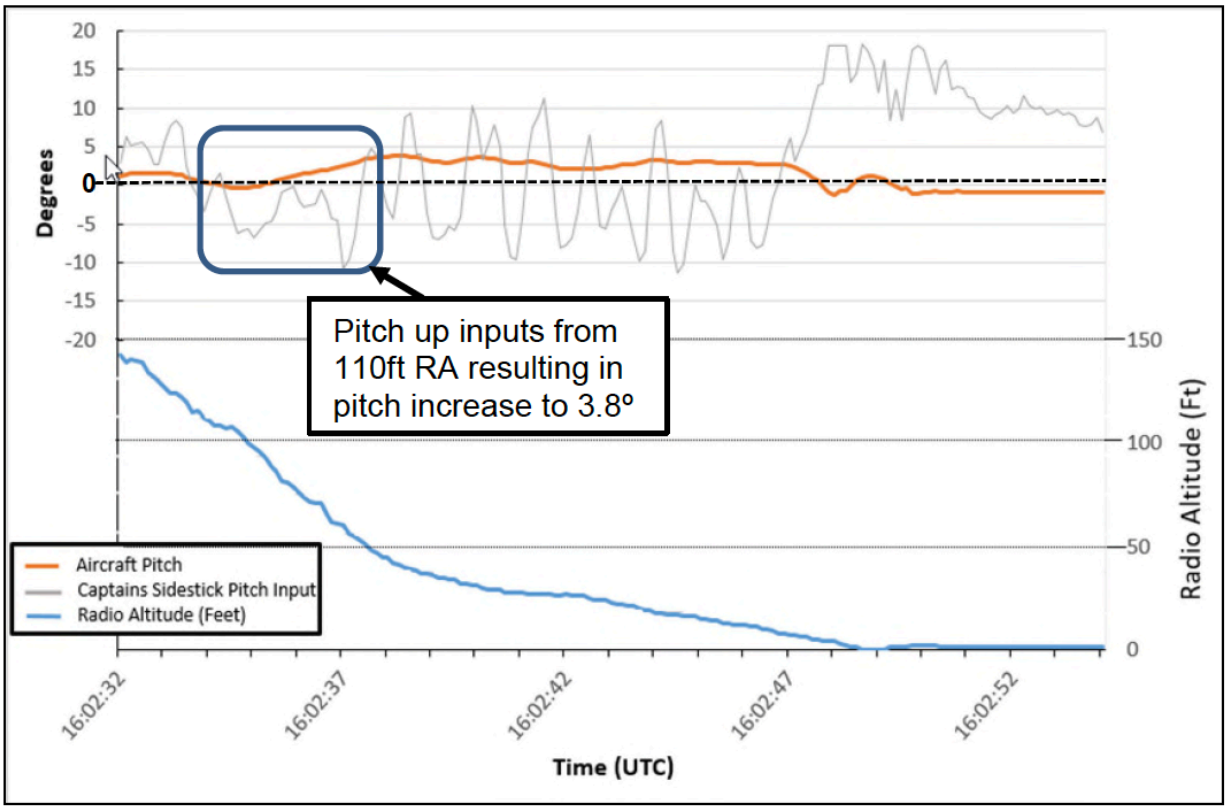
2.3 FDR analysis result

The result of FDR data analysis is described in UTC as follow:

Take-off and cruise were taken place as normal. When the aircraft started to approach to BMV airport, between AP disconnection (at 940ft) and 110ft, the approach remained stable and within half dot deviation from the glide slope.

At 16:02:34, from 110ft RA, pitch up inputs were continuously applied to the captain sidestick, up to 10^0 (about 2/3 of full back stick) caused aircraft pitch increased from 0.2^0 nose down to 3.8^0 nose up. Descent rate started to decrease from -640fpm, and CAS reduced from 139kts to 131kts (the approach speed target was 134 kts).

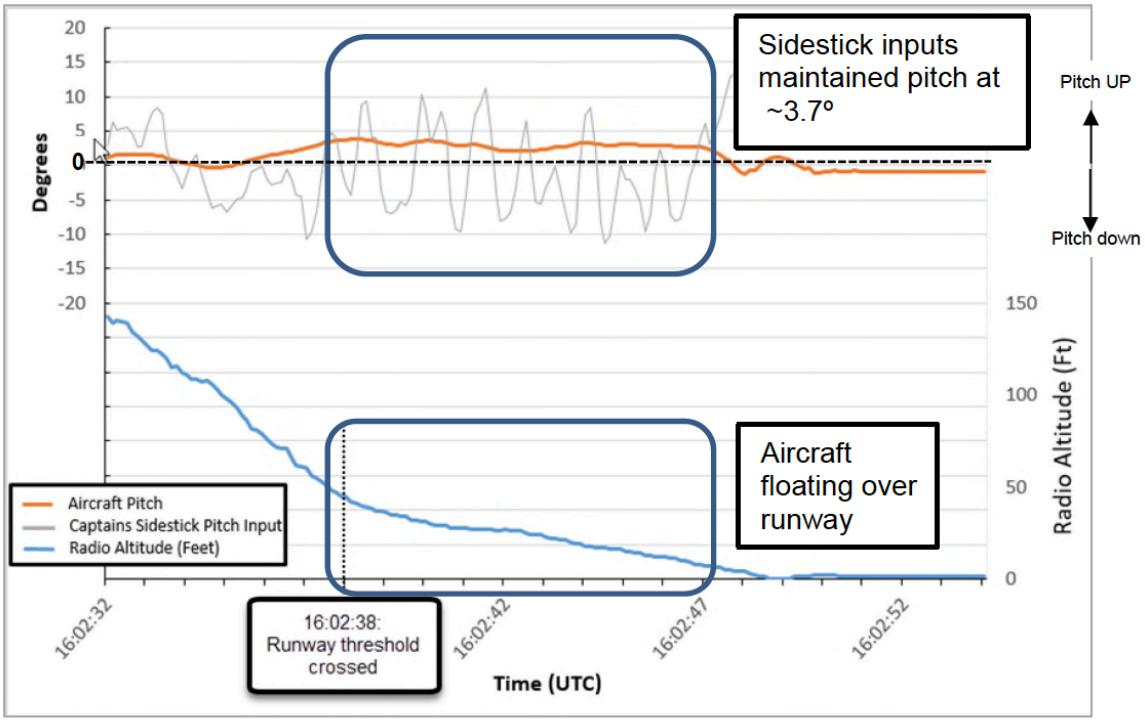
Analysis: The continuously applied sidestick input caused the aircraft pitch up to 3.8^0. Thus descent rate and aircraft descent rate reduced and aircraft speed decreased below its target. Consequently, the engaged autothrust had to increase engine thrust to maintain target speed (see *Picture 18*).



Picture 18.

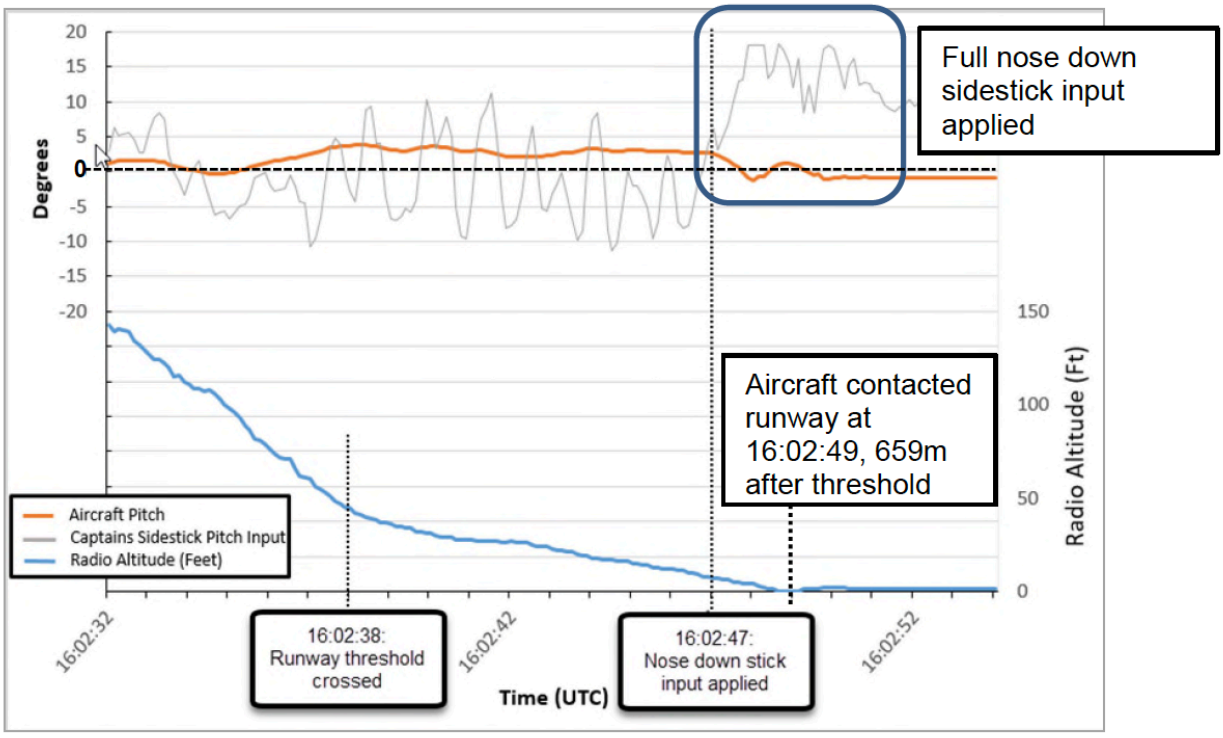
At 16:02:38, aircraft was crossing RWY 09 threshold.

From 16:02:39 to 16:02:47, aircraft floated over runway with 3.7^o pitch-up (see *Picture 19*).



Picture 19.

At 16:02:47, The aircraft was at 9ft RA with a pitch of 2.80 nose up and a rate of descent of 320 fpm (see Picture 20). At this value, the aircraft would normally touchdown within the next few seconds. Captain pushed the sidestick full forward.



Picture 20.

At 16:02:49, aircraft touched down with nose landing gear first at the position of 659m after runway threshold. The aircraft pitch decreased to 1.3º nose down with vertical acceleration of 1.668g.

At 16:03:05, aircraft stopped at 1050m after runway threshold.

Recording Time	UTC Time	Radio Height	Vertical Acceleration	Pitch Angle	Computed Airspeed	Vertical Speed	Nose Gear WOW	Left Gear WOW	Right Gear WOW
Unit	(hh:mm:ss)	(feet)	(g)	(deg)	(kts)	(feet/ min)	(AIR/ GROUND)	(AIR/ GROUND)	(AIR/ GROUND)
324318				-1.32					
324318	16:02:48	3							
324318									
324318			0.832						
324318						-560			
324318.1				-0.7					
324318.1									
324318.1		2							
324318.1								AIR	AIR
324318.1							GND		
324318.1									
324318.1			0.785						
324318.2				-0.62					
324318.2		1							
324318.3									
324318.3			0.93						
324318.3					130.1				
324318.3						144			
324318.3				-0.18					
324318.4		0							
324318.4								GND	GND
324318.4							GND		
324318.4									
324318.4			1.668						
324318.5				0.7					
324318.5		-1							
324318.5									
324318.5			1.102						

Table 01.

According to FCTM document –Flare and Touchdown, flight crews shall not push the sidestick forward once flare initiated (see the summarized FCTM below).

In stabilized approach conditions, the flare height is approximately 30 feet:

FLARE..... PERFORM

- Start the flare with a positive (or "prompt") backpressure on sidestick and holding as necessary
- Avoid forward stick movement once flare initiated

ATTITUDE..... MONITOR

THRUST levers..... IDLE

- Rapidly retard thrust levers at 'RETARD'
- Fly the nosewheel smoothly, but without delay, on to the runway

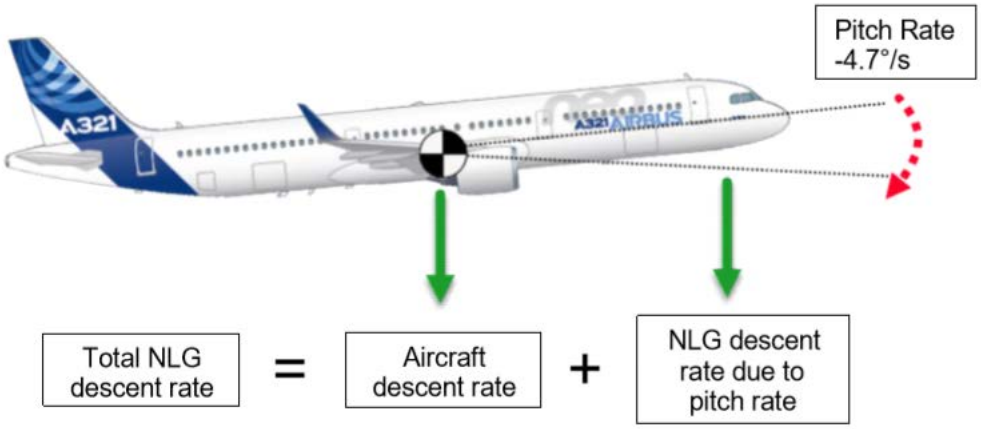
2.4 NLG load analysis

According to the DFDR, the maximum vertical acceleration was +1.7g (recorded at the aircraft's center of gravity) at the touch-down moment, which is below the threshold for a hard-landing classification of 2.6g. This value was only applies in case of MLG touching first.

However, flight VJ356 landed with NLG first, so the load at the NLG were substantially higher than the load at aircraft CG.

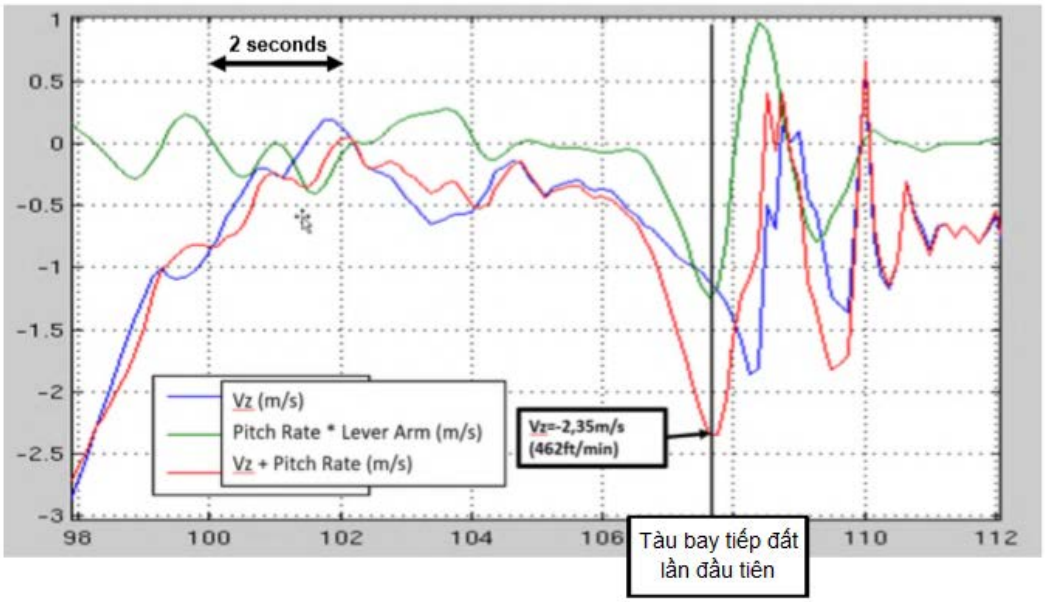
2.4.1 Total NLG descent rate

The total NLG Descent Rate is a combination of aircraft descent rate and NLG descent rate due to pitch rate (see *Picture 21*).



Picture 21.

At touch down moment, aircraft descent rate and NLG descent rate due to pitch rate had the same magnitude. Therefore, pitch down command effectively doubled the descent rate of NLG, resulting in a higher load on NLG at touch down (see *Picture 22*).

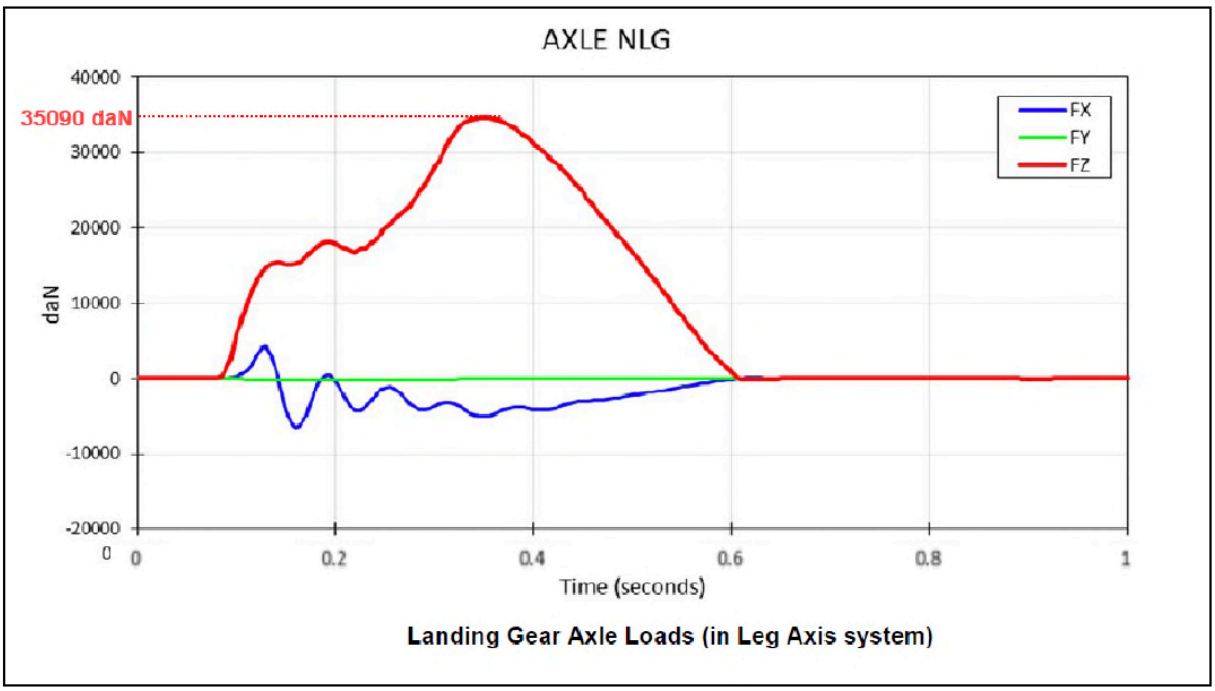


Picture 22.

2.4.2 NLG loads

The load simulation was performed using Airbus loads simulation tool which is primarily used for design and certification purposes and hard landing assessments.

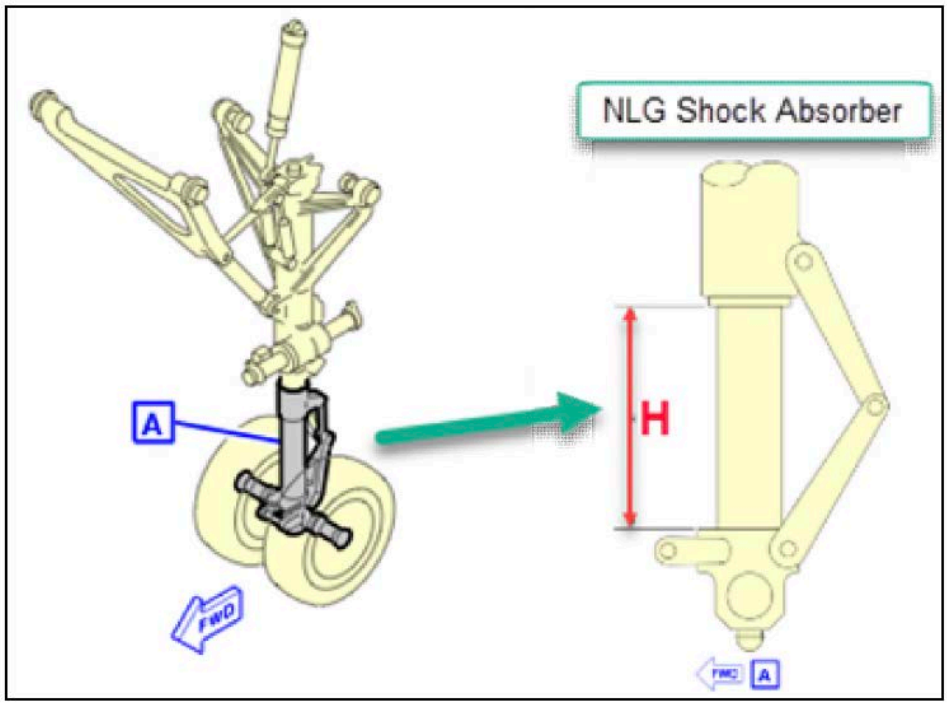
Load simulation was performed to get the baseline of the loads based on undamaged NLG and without tire bottoming (See *Picture 23*). It provided a load exerted on the NLG of 35090 daN. However, both NLG and tires were damaged in the actual incident, so the NLG load should be higher than the baseline simulation load.



Picture 23.

Compared with the critical buckling load of NLG shock absorber which is 28548daN, the baseline simulation load of 35090 daN exceeds this limit. Thus shock absorber has bore a high load at NLG touch down moment.

Besides, the length **H** of the shock absorber was measure at 20.4cm (see *Picture 24*). The length **H** of normal shock absorber is 44.9cm when the NLG is fully extended. It means that the NLG had buckled so the damping capability of shock absorber was decreased and NLG had to bear higher load than the baseline simulation load.



Picture 24.

III. Conclusion

- On 29 November 2018, A321 MSN8199 (VN-A653) was performing an approach to runway 09 at Buon Ma Thuot airport, Vietnam. Autopilot was disengaged at 940ft RA by the Captain (Pilot Flying) and continued a stable manual approach with autothrust engaged.

- At 9ft RA, because the pilot flying applied maximum forward input on the sidestick, resulting in an increase rapid nose down pitch rate. Consequently, the NLG touched down on the ground first.

- The pitch down effectively command doubled the descent rate of NLG vs the descent rate of aircraft at its CG point, resulting in an increase of load on NLG at touch down moment.

- The analysis result of NLG loads indicated that the NLG shock absorber bore a overlimit load, resulting in a decrease of the shock absorber's damping capability during touch down.

- The examination result of nose gear axle and tiebolts indicated that the components were affected by a very high static impact load leading to failure due to overload. As a result, consequential damages to the wheels and aircraft fuselage were formed.

- Captain did not comply with the Flight Crew Training Manual (FCTM) during touch down stage, as follows:

+ At 110ft RA, pitch up inputs were applied to the captain sidestick caused aircraft pitch increased to 3.8^0 at 40ft. Consequently, the aircraft descent rate reduced and aircraft speed reduced below its approach speed target. As the autothrust was still engaged, it increased engine thrust to maintain the target speed. As a result, the aircraft floated above the runway.

+ The captain applied maximum forward input on the sidestick at 9ft RA although this act should be avoided once flare is initiated according to FCOM.

IV. Safety recommendation

4.1. Vietjet Aviation Joint Stock Company

- Conduct re-training program to the flight crew, focusing on following contents:

+ Retraining on all of the approved standard operation procedures (SOP) of VJC;

+ Retraining on landing, flare and touch down skills;

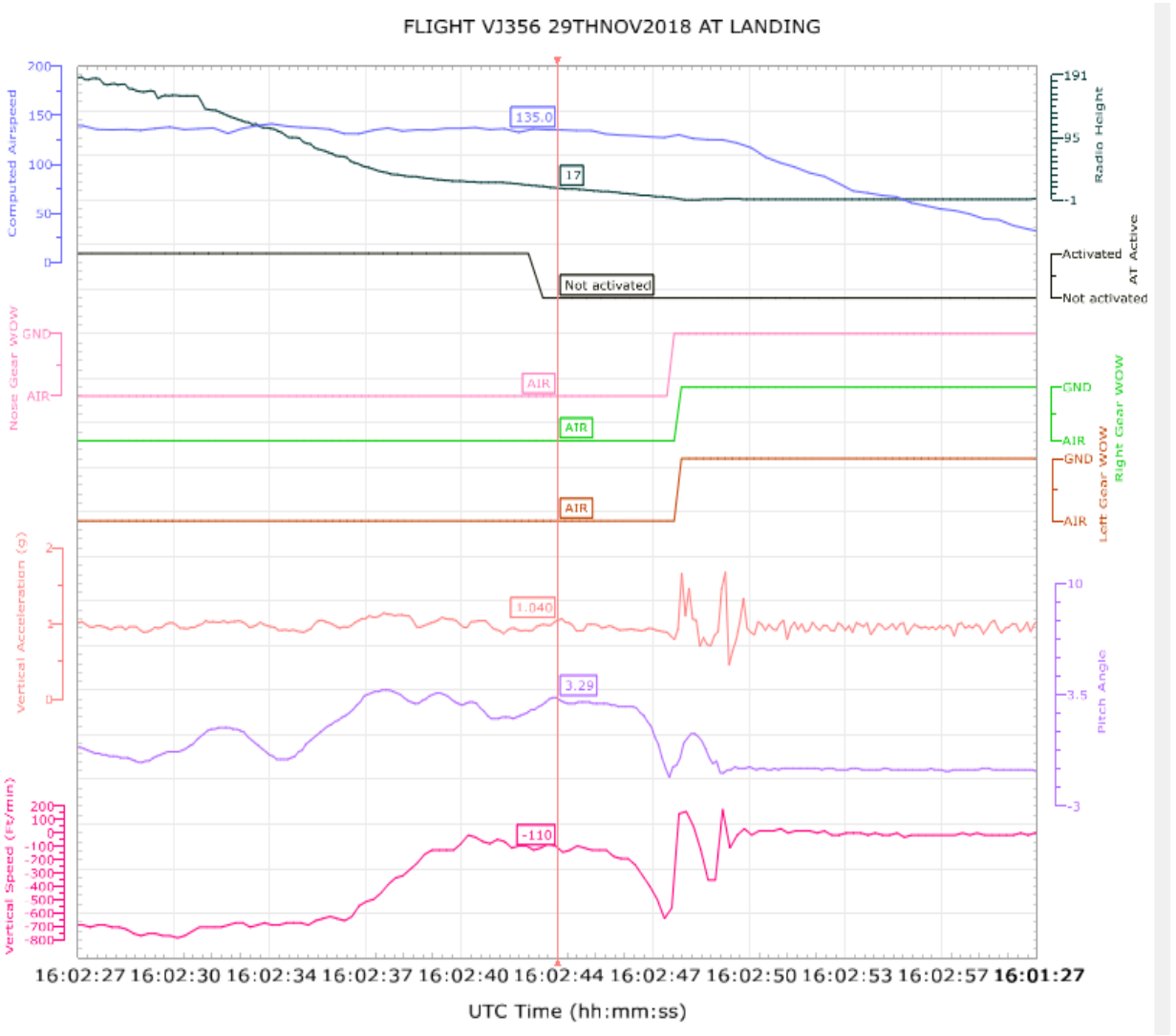
- VJC completed the required training for the flight crews and reported the training result back to CAAV;

- Remind flight crews of the Standard Operating Procedures and good practices for landing, and flare in particular, in the operator's safety bulletins / communication.

4.2 CAAV – Flight Safety Standard Department

- Monitoring the implementation of safety recommendations for Vietjet Aviation Joint Stock Company;

Appendix I
FDR analysis



Appendix II
Communication between ATC and flight crews

15:36:26Z
VJC356: BMT TWR VJC356 good evening.
BMT TWR: Good evening VJC356, BMT TWR, go ahead
VJC356: estimated station at 1600. Requesting latest weather inform maam.
BMT TWR: VJC356 expect ILS Y approach RWY 09 surface wind 080 degrees 12 knots visibility more than 10km ceiling SCT012 temperature 23 QNH1017.
VJC356: copied all, we talking you when handup, VJC356 good evening maam.
15:46:26Z
VJC356: BMT TWR VJC356 confirm arrival via TANGO 1A
BMT TWR: VJC356 affirm at TANGO
VJC356: at TANGO VJC356, thank you.
15:47:10Z
VJC356: TWR VJC356 descending FL110 wish you.
BMT TWR: VJC356 direct to TANGO, descend to altitude 9000ft, Q1017, report TANGO.
VJC356: descend to 9000ft, Q1017, direct to TANGO, report TANGO VJC356.
15:51:23Z
VJC356: VJC356 approaching TANGO 9000ft
BMT TWR: VJC356 cleared ILS Y approach runway 09, report establish on localizer.
VJC356: Cleared ILS Y RWY 09, report establish localizer VJC356.
15:57:15Z
VJC356: VJC356 establish on localizer RWY09
BMT TWR: VJC356 surface wind 080 degrees 10 knots, cleared to land RWY 09.
VJC356: Cleared to land RWY09 VJC356.
15:59:31Z
BMT TWR: VJC356 I don't see your landing light.
VJC356: There are some cloud, we are crossing … 2 mins
16:00:43Z
VJC356: VJC356 … you should see our landing light, ma'am.
16:00:56Z
BMT TWR: VJC356 I see you
VJC356: oke
16:03:26Z
BMT TWR: VJC356 taxi to stand number 4.
VJC356: Negative, we cannot taxi VJC356
16:03:40Z
BMT TWR: VJC356 what happen have you?
16:03:54Z
VJC356: VJC356, request emergency assistance
BMT TWR: VJC356 confirm emergency?
VJC356: Affirm VJC356
BMT TWR: VJC356 roger.
16:04:47Z
BMT TWR: VJC356 confirm do you need any assistance.
VJC356: we are needed VJC356
BMT TWR: VJC356 confirm require ambulance and fire truck
VJC356: Fire truck VJC356
16:06:57Z
BMT TWR: VJC356 do you need any assistance for aircraft.
VJC356: ohm, no I don't VJC356.
BMT TWR: VJC356 fire truck approaching to you.
VJC356: Oke, thank you.

Appendix III
CVR transcript

SPEAKER	CVR (mb)	UTC	FLIGHT CREW CONVERSATIONS (INTERPHONE & P.A)	RADIO COMMUNICATIONS
P1	1:25:08.000	15:36:11.000		BMT TWR VJC356 good evening.
ATC	1:25:12.000	15:36:15.000		Good evening VJC356, BMT TWR, go ahead
P1	1:25:16.000	15:36:19.000		estimated station at 1600. Requesting latest weather inform ma'am.
ATC	1:25:23.000	15:36:26.000		VJC356 expect ILS Y approach RWY 09 surface wind 080 degrees 12 knots visibility more than 10km ceiling SCT012 temperature 23 QNH1017.
P1	1:25:39.000	15:36:42.000		copied all, we talking you when handup, VJC356 good evening ma'am.
P1	1:25:48.000	15:36:51.000		OK
P1	1:25:50.000	15:36:53.000		(*)
ATC	1:26:27.000	15:37:30.000		91193 Decent level 220
P2	1:26:31.000	15:37:34.000		91193
P1	1:26:35.000	15:37:38.000		(*)
ATC	1:26:43.000	15:37:46.000		91193 start to decent now, make a right turn after 5 minutes
P2	1:26:50.000	15:37:53.000		start decent after 5 minutes
P1	1:30:11.000	15:41:14.000		1699 decent level 140
ATC	1:30:15.000	15:41:18.000		( )
ATC	1:31:01.000	15:42:04.000		91193 decent level 100
P2	1:31:05.000	15:42:08.000		decent to level 100 91193
P1	1:35:07.000	15:46:11.000		BMT TWR VJC356 confirm arrival via TANGO 1A
ATC	1:35:15.000	15:46:19.000		VJC356 affirm at TANGO
P1	1:35:18.000	15:46:22.000		at TANGO VJC356, thank you.
P2	1:35:50.000	15:46:55.000		TWR VJC356 descending FL110 wish you.
ATC	1:35:57.000	15:47:02.000		VJC356 direct to TANGO, descend to altitude 9000ft, Q1017, report TANGO.
P2	1:36:04.000	15:47:09.000		descend to 9000ft, Q1017, direct to TANGO, report TANGO VJC356.
P1	1:37:09.000	15:48:14.000	1017 cross-check	
P2	1:37:13.000	15:48:18.000	(*) cross check	
P1	1:37:20.000	15:48:25.000	Check	
P1	1:38:28.000	15:49:33.000	Check list please	
P2	1:38:34.000	15:49:39.000	(*)	
P1	1:38:35.000	15:49:40.000	confirm	
P2	1:38:37.000	15:49:42.000	(*)	

P1	1:38:38.000	15:49:43.000	Check	
P2	1:38:39.000	15:49:44.000	(*)	
P1	1:38:40.000	15:49:45.000	4	
P2	1:38:41.000	15:49:46.000	(*)	
P1	1:38:42.000	15:49:47.000	1017 set	
P2	1:38:43.000	15:49:48.000	1017 set, minimum	
P1	1:38:44.000	15:49:49.000	no010 set	
P2	1:38:45.000	15:49:50.000	no010 set, (*)	
P1	1:38:46.000	15:49:51.000	normal	
P2	1:38:47.000	15:49:52.000	(*)	
P1	1:38:50.000	15:49:55.000	thank you	
P2	1:40:03.000	15:51:08.000		VJC356 approaching TANGO 9000ft
ATC	1:40:09.000	15:51:14.000		VJC356 cleared ILS Y approach runway 09, report establish on localizer.
P2	1:40:14.000	15:51:19.000		Cleared ILS Y RWY 09, report establish localizer VJC356.
ATC	1:40:40.000	15:51:45.000		(*)
P2	1:40:41.000	15:51:46.000		thank you
P1	1:45:56.000	15:57:00.000		VJC356 establish on localizer RWY09
ATC	1:46:02.000	15:57:06.000		VJC356 surface wind 080 degrees 10 knots, cleared to land RWY 09.
P1	1:46:10.000	15:57:14.000		Cleared to land RWY09 VJC356.
P2	1:47:55.000	15:58:59.000	Gear down	
ATC	1:48:12.000	15:59:16.000		VJC356 I don’t see your landing light.
P1	1:48:16.000	15:59:20.000		There are some cloud, we are crossing … 2 mins
P1	1:48:30.000	15:59:34.000	2500	
P1	1:48:31.000	15:59:35.000	(*)	
P2	1:48:34.000	15:59:38.000	Check	
P1	1:48:35.000	15:59:39.000	(*)	
P1	1:49:24.000	16:00:28.000		VJC356 … you should see our landing light, ma’am.
ATC	1:49:37.000	16:00:41.000		VJC356 I see you
P1	1:49:39.000	16:00:43.000		oke
P2	1:49:40.000	16:00:44.000	she's so happy to see you man	
P1	1:49:42.000	16:00:46.000	I know	
P2	1:49:45.000	16:00:49.000	Look at there, she's waving	
	1:50:12.000	16:01:16.000	1000 and runway here	
	1:50:16.000	16:01:20.000	Stabilized	
Call out	1:50:19.000	16:01:23.000	1000	
P2	1:50:20.000	16:01:24.000	check	
Master warning	1:50:22.000	16:01:26.000	AP disconnected	
P2	1:50:41.000	16:01:45.000	we got some gust here	
P2	1:51:03.000	16:02:07.000	100 above	
P1	1:51:03.000	16:02:07.000	check	

P2	1:51:04.000	16:02:08.000	500	
P1	1:51:05.000	16:02:09.000	check	
P2	1:51:11.000	16:02:15.000	400	
P1	1:51:12.000	16:02:16.000	check	
P2	1:51:16.000	16:02:20.000	300	
P1	1:51:18.000	16:02:22.000	check	
P2	1:51:21.000	16:02:25.000	200	
P1	1:51:22.000	16:02:26.000	check	
P2	1:51:30.000	16:02:34.000	100	
P2	1:51:32.000	16:02:36.000	50	
P2	1:51:33.000	16:02:37.000	40	
P2	1:51:35.000	16:02:39.000	30	
P2	1:51:38.000	16:02:42.000	20	
P2	1:51:38.500	16:02:42.500	retard	
P2	1:51:40.000	16:02:44.000	retard	
P2	1:51:53.000	16:02:57.000	what happen	
P1	1:51:54.000	16:02:58.000	what	
P2	1:52:01.000	16:03:05.000		
ATC	1:52:06.000	16:03:11.000		VJC356 taxi to stand number 4.
P1	1:52:11.000	16:03:11.000		Negative, we cannot taxi VJC356
P2	1:52:18.000	16:03:18.000	Check list please	
ATC	1:52:25.000	16:03:25.000		VJC356 what happen have you?
P1	1:52:26.000	16:03:26.000	you want going?	
P2	1:52:28.000	17:03:26.000	no, what happened	
P2	1:52:29.000	18:03:26.000	we bended landing, man	
P2	1:52:30.000	19:03:26.000	yeah I think so	
P1	1:52:36.000	16:03:39.000		VJC356, request emergency assistance
ATC	1:52:40.000	16:03:43.000		VJC356 confirm emergency?
P1	1:52:43.000	16:03:47.000		Affirm VJC356
ATC	1:52:45.000	16:03:49.000		VJC356 roger.
P1	1:52:48.000	16:03:52.000	check list of what	
P2	1:52:54.000	16:03:58.000	(*)	
P1	1:52:55.000	16:03:59.000	ok	
P1	1:53:00.000	16:04:04.000	Aircraft parking brake is safe on	
P2	1:53:03.000	16:04:07.000	(*)	
P1	1:53:14.000	16:04:18.000	(*)	
P!	1:53:24.000	16:04:28.000	engine master all off	
ATC	1:53:28.000	16:04:32.000		VJC356 confirm do you need any assistance.
P1	1:53:35.000	16:04:39.000		we are needed VJC356
ATC	1:53:39.000	16:04:43.000		VJC356 confirm require ambulance and fire truck
P1	1:53:48.000	16:04:52.000		Fire truck VJC356
ATC	1:53:49.000	16:04:53.000		VJ356 roger
P1	1:53:55.000	16:04:59.000	ok, engine master all off	

P1	1:54:11.000	16:05:15.000	maybe we don't need to shut down …	
P2	1:54:13.000	16:05:17.000	no no no, we need man	
P1	1:54:30.000	16:05:34.000	(*)	
P2	1:54:37.000	16:05:41.000	evacuate evacuate	
P1	1:54:39.000	16:05:43.000	maybe we don't need evacuation	
P2	1:54:41.000	16:05:45.000	why?	
P2	1:54:45.000	16:05:49.000	why? Evacuate for what	
P1	1:55:16.000	16:06:20.000	let's go let's go let's go	
ATC	1:55:39.000	16:06:42.000		VJC356 do you need any assistance for aircraft.
P1	1:55:45.000	16:06:48.000		ohm, no I don't VJC356.
ATC	1:55:48.000	16:06:51.000		VJC356 fire truck approaching to you.
P1	1:55:51.000	16:06:54.000		Oke, thank you.