Transporta nelaimes gadījumu un incidentu izmeklēšanas birojs

Transport Accident and Incident Investigation Bureau of the Republic of Latvia

Brīvības iela 58, Rīga, LV-1011, Latvia, phone +371 67288140, mob. Phone +371 26520082, fax +371 67283339,
E-mail taiib@taiib.gov.lv, www.taiib.gov.lv

FINAL REPORT No 4-02/1-18(4-19)

on serious incident, runway excursion at Riga international airport (EVRA), on 21 June 2018, aircraft Bombardier CS300, YL-CSC

The Aircraft Accident and Incident Investigation Bureau of the Republic of Latvia is a governmental, independent of all aviation authorities and, in general, of any other party or entity the interests or missions of which could conflict with the task entrusted to the safety investigation authority or influence its objectivity, organization established by law to investigate and determine the cause or probable cause of accidents and serious incidents that occurred in the civil aviation, as well if necessary for enhancing flight safety incidents. The sole objective of the safety investigation in accordance with Annex 13 to the Convention on International Civil Aviation, the Regulation (EU) No.996/2010 of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in Civil Aviation as well as Cabinet Regulation No.423 of May 31, 2011 "Procedures of Civil Aviation Accident and Incident investigation" is the prevention of future accidents and incidents. The Report shall contain, where appropriate, safety recommendations. **Safety investigation is separate from any judicial or administrative proceedings and Investigation Report is not deal with purpose to apportion blame or liability but only for purpose of the safety enhancement.** The Report shall protect the anonymity of any individual involved in the accident or serious incident.

Address:
Brīvības iela 58, Riga, Latvia, LV-1011
E-mail:taiib@taiib.gov.lv,
Fax: 67283339; Tel.: 67288140;

Director: Ivars Alfrēds Gaveika

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Abbreviations

ATM	Air Traffic Management
ATPL	Air Transport Pilot's License
CVR	Cockpit Voice Recorder
DME	Distance Measuring Equipment
FDR	Flight Data Recorder

METAR	Aerodrome routine meteorological report (in meteorological code)
OFC	Operational Flight Check
QNH	Altimeter setting to obtain aerodrome elevation when on the ground
TO/GA	Take-Off/Go-Around thrust
UTC	Coordinated Universal Time
P	Pilot
PIC	Pilot-in-Command
FO	First Officer
PMC	Power Management Control
PF	Pilot Flying
TAF	Terminal Aerodrome Forecasts
ASDA	Accelerate Stop Distance Available
LPC	Low Pressure Compressor
TORA	Take-off Run Available
TODA	Take-off Distance available
LDA	Landing Distance Available
RVR	Runway Visual Range (sensor)
OCC	Operations Control Center
EGT	Exhaust Gas Temperature
AMM	Aircraft Maintenance Manual
TLA	Thrust Lever Angle
TS	Thunderstorm
GMC	Ground Movement Control
EICAS	Engine Indication and Crew Alerting System
FD	Flight Director
TSN	Time Since New
CSN	Cycles Since New

FINAL REPORT

4-02/1-18 **Aircraft:** Bombardier CS300 **Engines:** Pratt & Whitney Canada Corporation PW1521G-3 **Crew:** 5 **Place:** Riga, Latvia	**Aircraft Registration:** YL-CSC **Type of flight:** Scheduled, IFR **Passengers:** 130 **Date and Time:**21.06.2018 at 19:42

All times in this report are UTC. Local time UTC + 3 hours.

Synopsis

Unless stated otherwise the time in this Report is UTC

The aircraft involved in serious incident on June 21, 2018 was on the scheduled flight from the international airport Geneva (**LSGG**) to the Riga International airport (**EVRA**), the aircraft call sign was BTI7QX. This was the second flight on that day for the flight crew.

At 19:42 the aircraft Bombardier CS300, YL-CSC, during 3rd unstable approach to Runway (RWY) 18 at Riga International Airport (during landing flare wind was strong and gusty) the aircraft had runway excursion (runway veer-offs), in which the aircraft goes off the side of the runway along green area with left gear and broke two RWY edge lights and burst of a left side tyre of nose landing gear.

Notification

The Transport Accident and Incident Investigation Bureau of the Republic of Latvia was not notified by involved aircraft Operator and Airport Operator immediately after the incident. The Transport Accident and Incident Investigation Bureau (TAIIB) was informed of the incident only at the next day, June 22, 2018 from the Latvian ANS provider - LGS - in the form of a ATS Occurrence Preliminary Report, and later by Airport Operator. Aircraft Operator sent Internal Investigation Report according to request of TAIIB. TAIIB investigators were not called to the scene to make measurements, collect evidence and interview witnesses and perform other activities according to requirements of international standards and national legislation.

The following organizations have been notified by TAIIB according to Annex 13 and REGULATION (EU) No 996/2010 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 October 2010: International Civil Aviation Organisation (ICAO), European Aviation Safety Agency (EASA), the European Commission (EC), Investigation Authority of the State of Manufacturer - Canada (TSB) as well as the Latvian CAA.

The Investigation

The Transport Accidents and Incidents Investigation Bureau (TAIIB) of the Republic of Latvia as State of Occurrence according to Annex 13, Section 5.1 instituted an investigation into the circumstances of the incident and started to conduct the investigation. TSB Canada appointed accredited representative (ACCREP) to assist this investigation.

TAIIB performed collecting data from involved institutions - aircraft Operator, ANS provider under the provisions of Annex 13 to the Convention on International Civil Aviation (Chicago 1944) and the REGULATION (EU).

Investigation material

- Reports from the airport and air traffic control;
- Flight plan;
- Flight crew licences and Medical Certificates;

- Images from the airport;
- Flight Safety Report to Operator air Baltic;
- OPMET and ATIS data;
- METAR and TAF to Riga International;
- FDR data;
- Riga Tower and Ground radiotelephony transcripts;
- Aircraft Certificate of Registration;
- Aircraft Certificate of Airworthiness;
- Air Operator Certificate;

Operator's investigation

Air Baltic's internal investigation of the incident was submitted to TAIIB in the form of a safety report FSR867 dated 22 July, 2018. According to the investigation, there were difficulties keeping the aircraft on the runway centre line due to gusty cross-winds. In accordance of FSR during third approach IAS was changing rapidly and due to that accidental press of TOGA button was made, AT and AP off immediately and approach continued manually, FD off. During landing flare wind was strong and gusty, at touch down PIC felt like she can't maintain straight runway direction-was veering left and trying to regain control. Clipped one of RWY side edge lights and during roll out from RWY via TWY B saw "tire press low", EICAS info page showed nose wheel LH wheel no pressure. Stopped on TWY, informed ATC, CC, PAX, and OPS.

Air Baltic's report was submitted to the Latvian civil aviation agency (CAA) on 22 June, 2018.

FACTUAL INFORMATION

1.1 History of the Flight

During approach to RWY 18 first attempt and approach was discontinued due to indicated thunderstorm cell on weather radar on final approach path on centerline approximately 6NM. Avoiding maneuvering with radar vectoring the crew initiated climb to FL70. Aircraft flying behind BTI7QX landed and informed "it's only rain". The crew of BTI7QX decided to another attempt to land.

On second approach in front of BTI7QX was preceding RYANAIR aircraft which made a go around due to unstable approach conditions (probably due to wind component). When BTI7QX was at approximately 1300ft Riga TWR reported actual wind for RWY- 300/14G30 which gave to BTI7QX 16kts tailwind component which was out of aircraft limitations. BTI7QX performed go around again.

As tailwind was exceeding limitations for landing execution preceding to BTI7QX aircraft performing "Go around" requested RWY change to which ATC responded "no change is planned".

The crew of BTI7QX checked fuel on board and was recognized that there are necessary extra fuel (approximately 500kg) to perform another approach.

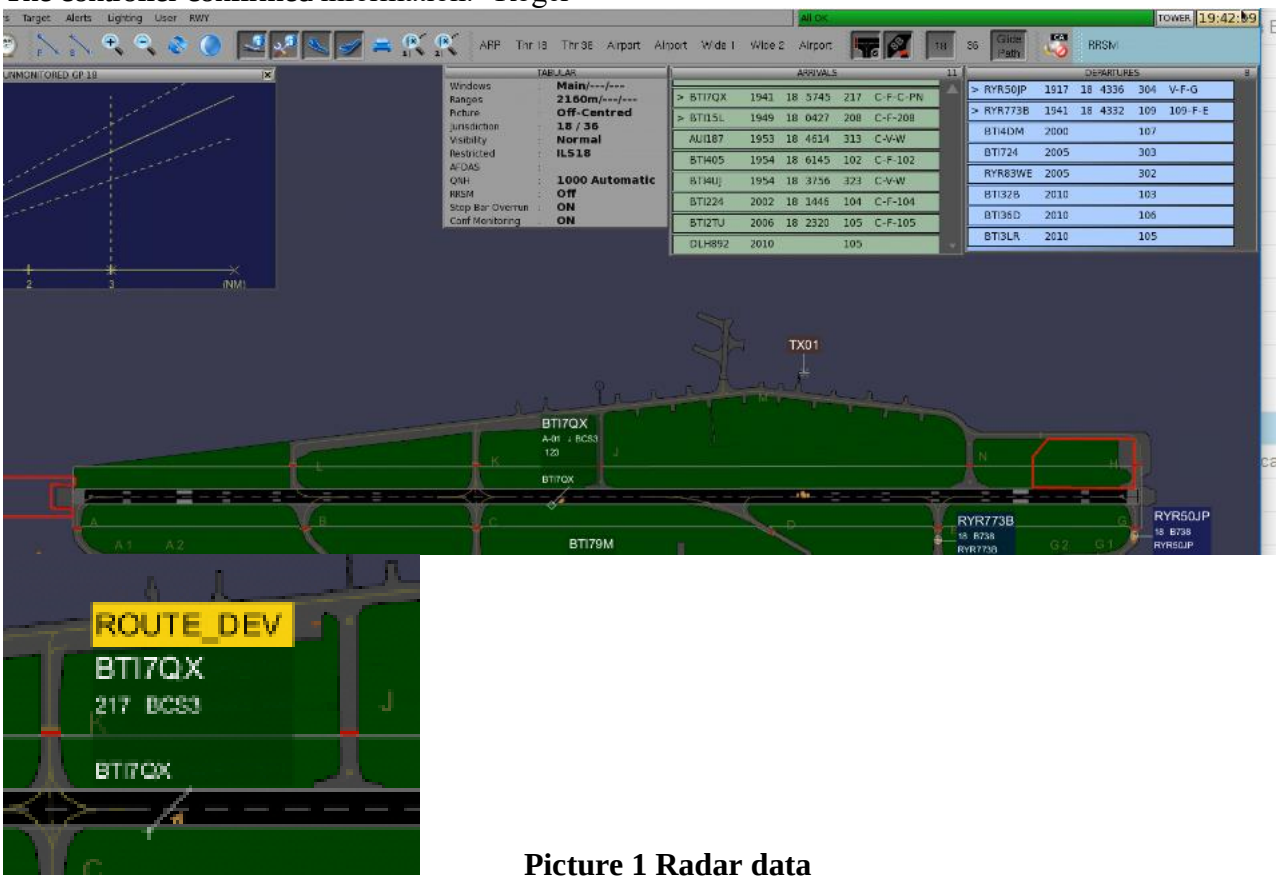
TWR informed that aircraft, which preceding on approach, executed safe landing and the crew of BTI7QX decided to start one more (third) approach.

At 19:39:15 the crew of air Baltic established contact with Controller GMC "Air Baltic 7QX ILS 18" Controller GMC gave clearance to land: "Air Baltic 7QX, Riga TWR, good evening, wind 290 degrees 12 knots gusts 27 knots, visibility 6 km in shower rain, RWY 18, cleared to land".

The pilot of BTI7QX confirmed clearance "Cleared to land RWY18 Air Baltic 7QX".
ATC information on the weather conditions were communicated with crew.
At 19:41:17 the controller informed: "Wind check 280 degrees 14 gusts 27 knots".

During landing flare wind was strong and gusty, at touch down the pilot felt like he can't maintain straight runway direction, trying to regain control but aircraft was veering left and clipped one of RWY side edge lights and during roll out from RWY via TWY B saw "tire press low" EICAS info page showed nose wheel left hand wheel no pressure. Stopped on TWY informed ATC, CC, PAX, and OPS.

At 19:42:18 the Controller instructed the crew BTI-7QX "Air Baltic 7QX vacate the RWY to the left via TWY B and contact Ground 118,8"
The pilot of BTI-7QX confirmed: "Vacating to the right via B, Ground 118,8 , Air Baltic 7QX"
AT 19:42:36 the pilot **of** BTI-7QX asked:" And Air Baltic 7QX please request to check the RWY after us"
The Controller answered: "Roger, will do that and the reason?"
The pilot of BTI-7QX informed: "Nearlv we run off the RWY, on the left side"
The controller confirmed information: "Roger"



Picture 1 Radar data

Picture 2 Length of the of the aircraft's MLG left outer tire trace in the grass 121m

At 19:43:26 the crew of BTI-7QX contacted Riga ground Controller: “Ground, Air Baltic 7QX”

The Ground controller instructed BTI7QX:” Air Baltic 7QX ,Riga Ground labvakar, continue taxi F,Cstand217”
The crew of BTI-7QX confirmed instruction:” F,C,217, Air Baltic7QX”

At 19:43:53 the crew of BTI-7QX requested:" Air Baltic 7QX request "follow me" to check a wheels, I think we burst the tire."
The Ground controller confirmed:" Roger, will do."

At 19:46:28 the Ground Controller informed the crew of BTI-7QX:" 7QX so, "follow me" checked your tires and for them it appears than all is OK, all tires are fine."
The crew of BTI-7QX confirmed: "That is copied, stand-by Air Baltic 7QX"

At 19:47:08 the pilot of BTI-7QX contacted Ground controller again and asked: "Confirm, marshal ...(unreadable)...all tires appears OK?"

The Controller answered: "Yes, for marshal appears that all tire were fine but he said, he is now going for your technicians and they would have a look."

At 19:50:15 the Ground Controller instructed BTI-7QX: "Air Baltic 7QX hold your position, technician is now approaching for your main gear"

At 19:52:25 the Ground Controller informed the crew of BTI-7QX: "Air Baltic 7QX,so, technician reported that left tire on your nose gear is burst"

At 19:53:03 contacted the Ground Controller: "Air Baltic 7QX standing by and will advice about taxiing"
The Ground Controller confirmed: "Roger"

At 20:03:32 the pilot of BTI-7QX asked the Ground Controller: "Air Baltic7QX do you have any news about RWY inspection?"
The Ground Controller informed the Crew of BTI-7QX: "We had one light which was broken which is all for now and also "follow me" reported, that your technician said will they arrange the truck will be towed when you shut down your engines."

Marshaler got air Baltic maintenance staff to the aircraft to do visual inspection which confirmed left hand wheel flat. No other damage noticed by maintenance after that the aircraft was towed to stand 217 by push-car with supervision of maintenance staff.
At 20:16 the aircraft was towered to stand 217, normal disembarkation performed, no injuries reported.

1.2. Injuries to persons

Injuries	Crew	Passengers	Total in the aircraft	Others
Fatal	-	-		-
Serious	-	-		-
Minor	-	-		-
None	5	125	130	-
TOTAL	5	125	130	-

1.3.Damage to aircraft

Burst NLG left hand tyre

1.4. Other damage

During landing

1. 5. Personnel information

The flight crew certified and qualified for the flight in accordance with existing regulations, have valid ATPL licenses with flight operational and medical eligibility. During the approach and landing, the PIC was the PF.

PIC -female, age - 38,
Total flying experience -6977:40 hrs..
Flying experience on aircraft type Bombardier CS300- 929:18 hrs;
Flying hours last 28 days - 61:38 hrs;
Flying hours last 7 days - 31:51 hrs;
Flying hours last 24 hours before incident - 6:29 hrs;
FO - female, age - 29,
Total flying experience -2482:32 hrs
Flying experience on aircraft type Bombardier CS300- 918:18 hrs;
Flying hours last 28 days - 80:18 hrs;
Flying hours last 7 days - 18:25 hrs;
Flying hours last 24 hours before incident - 6:29 hrs;
Rest time:
PIC 63:50hrs (2days off)
FO 45hrs (1 day off)

1.6. AIRCRAFT INFORMATION

1.6.1. General aircraft information

The BD-500-1A11 (CS300) manufactured by C Series Aircraft Limited Partnership, Mirabel, Canada is a twin-engine turbofan transport aircraft.
Year of manufacture: 2017
Serial number: 55005
Engines: PRATT & WHITNEY (CANADA) (PW1521G-3)
Left engine S/N P736044, TSN 412:09
Right engine S/N P736043, TSN 597:21
Registration: YL-CSC, registered in Latvia on March 31, 2017
MTOM: 67585 kg
Certificate of airworthiness: The certificate No232 was issued by Civil Aviation Agency of the Ministry of Transport Republic of Latvia on March 31, 2017. No Limitations, it was valid.
Airframe TSN – 3986:25 hrs;
Airframe CSN – 1862 landings;

1.7. Meteorological information

INFO: ATIS DATA - 21-JUNE-2018 from 18:20 (UTC) till 20:50 (UTC)

Date & Time	ATIS VOICE data	ATIS DATALINK data
2018-06-21 18:20:00	RIGA, ARRIVAL, DEPARTURE, ATIS INFORMATION, MIKE. AT, 1820. EXPECT ILS APPROACH. RUNWAY IN USE, 18. RUNWAY SURFACE IS WET. BRAKING ACTION GOOD. TAXYWAY SURFACE IS WET. TRANSITION LEVEL 65. BIRD ACTIVITY IN VICINITY OF THE AERODROME. WIND 160 DEGREES, 9 KNOTS. VISIBILITY TOUCHDOWN ZONE, 10 KILOMETERS OR MORE.	ATIS INFO M. 1820 Z. EXP ILS APCH. RWY 18. RWY SFC WET. BA GOOD. TWY SFC WET. TRL 65. BIRD ACT IN VCY OF AD. WIND 160 DEG, 9 KT. VIS TDZ 10 KM OR MORE. CLD FEW CB 4900 FT. T 18. DP 17. QNH 0998.

	CLOUD FEW CUMULONIMBUS 4 THOUSAND 9 HUNDRED FEET. TEMPERATURE 18. DEWPOINT 17. QNH 0998. TREND TEMPORARY VISIBILITY 3 THOUSAND METERS, LIGHT SHOWERS OF RAIN. ACKNOWLEDGE INFORMATION, MIKE	TREND TEMPO VIS 3000 M, FBL SHRA. END OF INFO M
2018-06-21 18:50:01	RIGA, ARRIVAL, DEPARTURE, ATIS INFORMATION, NOVEMBER. AT, 1850. EXPECT ILS APPROACH. RUNWAY IN USE, 18. RUNWAY SURFACE IS WET. BRAKING ACTION GOOD. TAXYWAY SURFACE IS WET. TRANSITION LEVEL 65. BIRD ACTIVITY IN VICINITY OF THE AERODROME. WIND 170 DEGREES, 11 KNOTS. VISIBILITY TOUCHDOWN ZONE, 10 KILOMETERS OR MORE. CLOUD SCATTERED CUMULONIMBUS 4 THOUSAND 9 HUNDRED FEET. TEMPERATURE 18. DEWPOINT 17. QNH 0997. TREND TEMPORARY VISIBILITY 1 THOUSAND 5 HUNDRED METERS, THUNDERSTORM WITH MODERATE RAIN. ACKNOWLEDGE INFORMATION, NOVEMBER	ATIS INFO N. 1850 Z. EXP ILS APCH. RWY 18. RWY SFC WET. BA GOOD. TWY SFC WET. TRL 65. BIRD ACT IN VCY OF AD. WIND 170 DEG, 11 KT. VIS TDZ 10 KM OR MORE. CLD SCT CB 4900 FT. T 18. DP 17. QNH 0997. TREND TEMPO VIS 1500 M, MOD TSRA. END OF INFO N
2018-06-21 18:56:58	RIGA, ARRIVAL, DEPARTURE, ATIS INFORMATION, OSCAR. AT, 1856. EXPECT ILS APPROACH. RUNWAY IN USE, 18. RUNWAY SURFACE IS WET. BRAKING ACTION GOOD. TAXYWAY SURFACE IS WET. TRANSITION LEVEL 65. BIRD ACTIVITY IN VICINITY OF THE AERODROME. WIND 190 DEGREES, 7 KNOTS. VISIBILITY TOUCHDOWN ZONE, 10 KILOMETERS OR MORE. WEATHER THUNDERSTORM. CLOUD SCATTERED CUMULONIMBUS 4 THOUSAND 9 HUNDRED FEET. TEMPERATURE 18. DEWPOINT 17. QNH 0997. ACKNOWLEDGE INFORMATION, OSCAR	ATIS INFO O. 1856 Z. EXP ILS APCH. RWY 18. RWY SFC WET. BA GOOD. TWY SFC WET. TRL 65. BIRD ACT IN VCY OF AD. WIND 190 DEG, 7 KT. VIS TDZ 10 KM OR MORE. WX TS. CLD SCT CB 4900 FT. T 18. DP 17. QNH 0997. END OF INFO O
2018-06-21 19:15:15	RIGA, ARRIVAL, DEPARTURE, ATIS INFORMATION, PAPA. AT, 1915. EXPECT ILS APPROACH. RUNWAY IN USE, 18. RUNWAY SURFACE IS WET. BRAKING ACTION GOOD.	ATIS INFO P. 1915 Z. EXP ILS APCH. RWY 18. RWY SFC WET. BA GOOD. TWY SFC WET.

	TAXYWAY SURFACE IS WET. TRANSITION LEVEL 65. BIRD ACTIVITY IN VICINITY OF THE AERODROME. WIND 250 DEGREES, 13 KNOTS, GUSTING TO 23 KNOTS, VARYING BETWEEN 180 AND 270 DEGREES. VISIBILITY TOUCHDOWN ZONE, 7 KILOMETERS. WEATHER THUNDERSTORM WITH LIGHT RAIN. CLOUD SCATTERED 1 THOUSAND 1 HUNDRED FEET, BROKEN CUMULONIMBUS 2 THOUSAND 1 HUNDRED FEET, BROKEN 4 THOUSAND 9 HUNDRED FEET. TEMPERATURE 18. DEWPOINT 17. QNH 0998. ACKNOWLEDGE INFORMATION, PAPA	TRL 65. BIRD ACT IN VCY OF AD. WIND 250 DEG, 13 KT GUSTING TO 23 KT, VRB BTN 180 AND 270 DEG. VIS TDZ 7 KM. WX FBL TSRA. CLD SCT 1100 FT, BKN CB 2100 FT, BKN 4900 FT. T 18. DP 17. QNH 0998. END OF INFO P
2018-06-21 19:20:00	RIGA, ARRIVAL, DEPARTURE, ATIS INFORMATION, QUEBEC. AT, 1920. EXPECT ILS APPROACH. RUNWAY IN USE, 18. RUNWAY SURFACE IS WET. BRAKING ACTION GOOD. TAXYWAY SURFACE IS WET. TRANSITION LEVEL 65. BIRD ACTIVITY IN VICINITY OF THE AERODROME. WIND 270 DEGREES, 19 KNOTS, GUSTING TO 29 KNOTS, VARYING BETWEEN 180 AND 300 DEGREES. VISIBILITY TOUCHDOWN ZONE, 6 KILOMETERS. WEATHER THUNDERSTORM WITH LIGHT RAIN. CLOUD SCATTERED 5 HUNDRED FEET, BROKEN CUMULONIMBUS 2 THOUSAND 1 HUNDRED FEET, OVERCAST 4 THOUSAND 2 HUNDRED FEET. TEMPERATURE 18. DEWPOINT 16. QNH 0999. NOSIG. ACKNOWLEDGE INFORMATION, QUEBEC	ATIS INFO Q. 1920 Z. EXP ILS APCH. RWY 18. RWY SFC WET. BA GOOD. TWY SFC WET. TRL 65. BIRD ACT IN VCY OF AD. WIND 270 DEG, 19 KT GUSTING TO 29 KT, VRB BTN 180 AND 300 DEG. VIS TDZ 6 KM. WX FBL TSRA. CLD SCT 500 FT, BKN CB 2100 FT, OVC 4200 FT. T 18. DP 16. QNH 0999. NOSIG. END OF INFO Q
2018-06-21 19:22:00	RIGA, ARRIVAL, DEPARTURE, ATIS INFORMATION, ROMEO. AT, 1920. EXPECT ILS APPROACH. RUNWAY IN USE, 18. RUNWAY SURFACE IS WET. BRAKING ACTION GOOD. TAXYWAY SURFACE IS WET. TRANSITION LEVEL 65. BIRD ACTIVITY IN VICINITY OF THE AERODROME. WIND 270 DEGREES, 19 KNOTS, GUSTING TO 29 KNOTS, VARYING BETWEEN 180 AND 300 DEGREES.	ATIS INFO R. 1921 Z. EXP ILS APCH. RWY 18. RWY SFC WET. BA GOOD. TWY SFC WET. TRL 65. BIRD ACT IN VCY OF AD. WIND 290 DEG, 15 KT GUSTING TO 29 KT, VRB BTN 200 AND 320 DEG. VIS TDZ 10 KM OR MORE. WX FBL TSRA.

	VISIBILITY TOUCHDOWN ZONE, 6 KILOMETERS. WEATHER THUNDERSTORM WITH LIGHT RAIN. CLOUD SCATTERED 5 HUNDRED FEET, BROKEN CUMULONIMBUS 2 THOUSAND 1 HUNDRED FEET, OVERCAST 4 THOUSAND 2 HUNDRED FEET. TEMPERATURE 18. DEWPOINT 16. QNH 0999. NOSIG. ACKNOWLEDGE INFORMATION, ROMEO	CLD SCT 500 FT, BKN CB 1100 FT, OVC 4200 FT. T 17. DP 15. QNH 0999. END OF INFO R
2018-06-21 19:26:54	RIGA, ARRIVAL, DEPARTURE, ATIS INFORMATION, SIERRA. AT, 1926. EXPECT ILS APPROACH. RUNWAY IN USE, 18. RUNWAY SURFACE IS WET. BRAKING ACTION GOOD. TAXYWAY SURFACE IS WET. TRANSITION LEVEL 65. BIRD ACTIVITY IN VICINITY OF THE AERODROME. WIND 290 DEGREES, 17 KNOTS, GUSTING TO 29 KNOTS, VARYING BETWEEN 250 AND 340 DEGREES. VISIBILITY TOUCHDOWN ZONE, 10 KILOMETERS OR MORE. WEATHER THUNDERSTORM WITH LIGHT RAIN. CLOUD SCATTERED 7 HUNDRED FEET, BROKEN CUMULONIMBUS 1 THOUSAND 5 HUNDRED FEET, OVERCAST 4 THOUSAND 2 HUNDRED FEET. TEMPERATURE 16. DEWPOINT 14. QNH 1000. ACKNOWLEDGE INFORMATION, SIERRA	ATIS INFO S. 1926 Z. EXP ILS APCH. RWY 18. RWY SFC WET. BA GOOD. TWY SFC WET. TRL 65. BIRD ACT IN VCY OF AD. WIND 290 DEG, 17 KT GUSTING TO 29 KT, VRB BTN 250 AND 340 DEG. VIS TDZ 10 KM OR MORE. WX FBL TSRA. CLD SCT 700 FT, BKN CB 1500 FT, OVC 4200 FT. T 16. DP 14. QNH 1000. END OF INFO S
2018-06-21 19:30:52	RIGA, ARRIVAL, DEPARTURE, ATIS INFORMATION, TANGO. AT, 1930. EXPECT ILS APPROACH. RUNWAY IN USE, 18. RUNWAY SURFACE IS WET. BRAKING ACTION GOOD. TAXYWAY SURFACE IS WET. TRANSITION LEVEL 65. BIRD ACTIVITY IN VICINITY OF THE AERODROME. WIND 300 DEGREES, 19 KNOTS, GUSTING TO 30 KNOTS, VARYING BETWEEN 260 AND 340 DEGREES. VISIBILITY TOUCHDOWN ZONE, 10 KILOMETERS OR MORE. WEATHER LIGHT SHOWERS OF RAIN. CLOUD SCATTERED 7 HUNDRED FEET, BROKEN CUMULONIMBUS 1 THOUSAND 5 HUNDRED FEET, OVERCAST 4 THOUSAND 2 HUNDRED FEET. TEMPERATURE 15.	ATIS INFO T. 1930 Z. EXP ILS APCH. RWY 18. RWY SFC WET. BA GOOD. TWY SFC WET. TRL 65. BIRD ACT IN VCY OF AD. WIND 300 DEG, 19 KT GUSTING TO 30 KT, VRB BTN 260 AND 340 DEG. VIS TDZ 10 KM OR MORE. WX FBL SHRA. CLD SCT 700 FT, BKN CB 1500 FT, OVC 4200 FT. T 15. DP 14. QNH 1000. RE TS. END OF INFO T

	DEWPOINT 14. QNH 1000. RECENT WEATHER THUNDERSTORM. ACKNOWLEDGE INFORMATION, TANGO	
2018-06-21 19:35:47	RIGA, ARRIVAL, DEPARTURE, ATIS INFORMATION, UNIFORM. AT, 1935. EXPECT ILS APPROACH. RUNWAY IN USE, 18. RUNWAY SURFACE IS WET. BRAKING ACTION GOOD. TAXYWAY SURFACE IS WET. TRANSITION LEVEL 65. BIRD ACTIVITY IN VICINITY OF THE AERODROME. WIND 290 DEGREES, 17 KNOTS, GUSTING TO 30 KNOTS, VARYING BETWEEN 260 AND 330 DEGREES. VISIBILITY TOUCHDOWN ZONE, 8 KILOMETERS. WEATHER MODERATE SHOWERS OF RAIN. CLOUD SCATTERED 7 HUNDRED FEET, SCATTERED CUMULONIMBUS 1 THOUSAND 1 HUNDRED FEET, OVERCAST 1 THOUSAND 6 HUNDRED FEET. TEMPERATURE 14. DEWPOINT 13. QNH 1000. RECENT WEATHER THUNDERSTORM. ACKNOWLEDGE INFORMATION, UNIFORM	ATIS INFO U. 1935 Z. EXP ILS APCH. RWY 18. RWY SFC WET. BA GOOD. TWY SFC WET. TRL 65. BIRD ACT IN VCY OF AD. WIND 290 DEG, 17 KT GUSTING TO 30 KT, VRB BTN 260 AND 330 DEG. VIS TDZ 8 KM. WX MOD SHRA. CLD SCT 700 FT, SCT CB 1100 FT, OVC 1600 FT. T 14. DP 13. QNH 1000. RE TS. END OF INFO U
2018-06-21 19:44:58	RIGA, ARRIVAL, DEPARTURE, ATIS INFORMATION, VICTOR. AT, 1944. EXPECT ILS APPROACH. RUNWAY IN USE, 18. RUNWAY SURFACE IS WET. BRAKING ACTION GOOD. TAXYWAY SURFACE IS WET. TRANSITION LEVEL 65. BIRD ACTIVITY IN VICINITY OF THE AERODROME. WIND 290 DEGREES, 13 KNOTS, GUSTING TO 27 KNOTS, VARYING BETWEEN 250 AND 320 DEGREES. VISIBILITY TOUCHDOWN ZONE, 10 KILOMETERS OR MORE. WEATHER LIGHT SHOWERS OF RAIN. CLOUD SCATTERED 7 HUNDRED FEET, SCATTERED CUMULONIMBUS 1 THOUSAND 1 HUNDRED FEET, OVERCAST 1 THOUSAND 6 HUNDRED FEET. TEMPERATURE 14. DEWPOINT 13. QNH 1000. RECENT WEATHER THUNDERSTORM. RECENT WEATHER SHOWERS OF RAIN. ACKNOWLEDGE INFORMATION, VICTOR	ATIS INFO V. 1944 Z. EXP ILS APCH. RWY 18. RWY SFC WET. BA GOOD. TWY SFC WET. TRL 65. BIRD ACT IN VCY OF AD. WIND 290 DEG, 13 KT GUSTING TO 27 KT, VRB BTN 250 AND 320 DEG. VIS TDZ 10 KM OR MORE. WX FBL SHRA. CLD SCT 700 FT, SCT CB 1100 FT, OVC 1600 FT. T 14. DP 13. QNH 1000. RE TS. RE SHRA. END OF INFO V
2018-06-21 19:45:06	RIGA, ARRIVAL, DEPARTURE, ATIS INFORMATION, WHISKEY. AT, 1945.	ATIS INFO W. 1945 Z. EXP ILS APCH.

	EXPECT ILS APPROACH. RUNWAY IN USE, 18. RUNWAY SURFACE IS WET. BRAKING ACTION GOOD. TAXYWAY SURFACE IS WET. TRANSITION LEVEL 65. WIND 290 DEGREES, 13 KNOTS, GUSTING TO 27 KNOTS, VARYING BETWEEN 250 AND 320 DEGREES. VISIBILITY TOUCHDOWN ZONE, 10 KILOMETERS OR MORE. WEATHER LIGHT SHOWERS OF RAIN. CLOUD SCATTERED 7 HUNDRED FEET, SCATTERED CUMULONIMBUS 1 THOUSAND 1 HUNDRED FEET, OVERCAST 1 THOUSAND 6 HUNDRED FEET. TEMPERATURE 14. DEWPOINT 13. QNH 1000. RECENT WEATHER THUNDERSTORM. RECENT WEATHER SHOWERS OF RAIN. ACKNOWLEDGE INFORMATION, WHISKEY	RWY 18. RWY SFC WET. BA GOOD. TWY SFC WET. TRL 65. WIND 290 DEG, 13 KT GUSTING TO 27 KT, VRB BTN 250 AND 320 DEG. VIS TDZ 10 KM OR MORE. WX FBL SHRA. CLD SCT 700 FT, SCT CB 1100 FT, OVC 1600 FT. T 14. DP 13. QNH 1000. RE TS. RE SHRA. END OF INFO W
2018-06-21 19:50:01	RIGA, ARRIVAL, DEPARTURE, ATIS INFORMATION, X-RAY. AT, 1950. EXPECT ILS APPROACH. RUNWAY IN USE, 18. RUNWAY SURFACE IS WET. BRAKING ACTION GOOD. TAXYWAY SURFACE IS WET. TRANSITION LEVEL 65. WIND 280 DEGREES, 13 KNOTS, GUSTING TO 26 KNOTS, VARYING BETWEEN 250 AND 340 DEGREES. VISIBILITY TOUCHDOWN ZONE, 10 KILOMETERS OR MORE. WEATHER LIGHT SHOWERS OF RAIN. CLOUD SCATTERED 7 HUNDRED FEET, SCATTERED CUMULONIMBUS 1 THOUSAND 4 HUNDRED FEET, OVERCAST 2 THOUSAND 3 HUNDRED FEET. TEMPERATURE 14. DEWPOINT 13. QNH 1000. RECENT WEATHER THUNDERSTORM. RECENT WEATHER SHOWERS OF RAIN. TREND TEMPORARY VISIBILITY 3 THOUSAND METERS, THUNDERSTORM WITH LIGHT RAIN. ACKNOWLEDGE INFORMATION, X-RAY	ATIS INFO X. 1950 Z. EXP ILS APCH. RWY 18. RWY SFC WET. BA GOOD. TWY SFC WET. TRL 65. WIND 280 DEG, 13 KT GUSTING TO 26 KT, VRB BTN 250 AND 340 DEG. VIS TDZ 10 KM OR MORE. WX FBL SHRA. CLD SCT 700 FT, SCT CB 1400 FT, OVC 2300 FT. T 14. DP 13. QNH 1000. RE TS. RE SHRA. TREND TEMPO VIS 3000 M, FBL TSRA. END OF INFO X
2018-06-21 19:54:24	RIGA, ARRIVAL, DEPARTURE, ATIS INFORMATION, YANKEE. AT, 1954. EXPECT ILS APPROACH. RUNWAY IN USE, 18. RUNWAY SURFACE IS WET. BRAKING ACTION GOOD. TAXYWAY SURFACE IS WET. TRANSITION LEVEL 65.	ATIS INFO Y. 1954 Z. EXP ILS APCH. RWY 18. RWY SFC WET. BA GOOD. TWY SFC WET. TRL 65. WIND 340 DEG, 12 KT GUSTING TO 22 KT, VRB BTN 240 AND 360 DEG. VIS TDZ 8 KM.

	WIND 340 DEGREES, 12 KNOTS, GUSTING TO 22 KNOTS, VARYING BETWEEN 240 AND 360 DEGREES. VISIBILITY TOUCHDOWN ZONE, 8 KILOMETERS. WEATHER LIGHT SHOWERS OF RAIN. CLOUD SCATTERED 7 HUNDRED FEET, SCATTERED CUMULONIMBUS 1 THOUSAND 4 HUNDRED FEET, OVERCAST 2 THOUSAND 3 HUNDRED FEET. TEMPERATURE 13. DEWPOINT 12. QNH 0999. RECENT WEATHER THUNDERSTORM. RECENT WEATHER SHOWERS OF RAIN. ACKNOWLEDGE INFORMATION, YANKEE	WX FBL SHRA. CLD SCT 700 FT, SCT CB 1400 FT, OVC 2300 FT. T 13. DP 12. QNH 0999. RE TS. RE SHRA. END OF INFO Y
2018-06-21 19:54:42	RIGA, ARRIVAL, DEPARTURE, ATIS INFORMATION, ZULU. AT, 1954. EXPECT ILS APPROACH. RUNWAY IN USE, 18. RUNWAY SURFACE IS WET. BRAKING ACTION GOOD. TAXYWAY SURFACE IS WET. TRANSITION LEVEL 65. WIND 340 DEGREES, 12 KNOTS. VISIBILITY TOUCHDOWN ZONE, 8 KILOMETERS. WEATHER LIGHT SHOWERS OF RAIN. CLOUD SCATTERED 7 HUNDRED FEET, SCATTERED CUMULONIMBUS 1 THOUSAND 4 HUNDRED FEET, OVERCAST 2 THOUSAND 3 HUNDRED FEET. TEMPERATURE 13. DEWPOINT 12. QNH 0999. RECENT WEATHER THUNDERSTORM. RECENT WEATHER SHOWERS OF RAIN. ACKNOWLEDGE INFORMATION, ZULU	ATIS INFO Z. 1954 Z. EXP ILS APCH. RWY 36. RWY SFC WET. BA GOOD. TWY SFC WET. TRL 65. WIND 330 DEG, 12 KT, VRB BTN 260 AND 360 DEG. VIS TDZ 10 KM OR MORE. WX FBL SHRA. CLD SCT 700 FT, SCT CB 1400 FT, OVC 2300 FT. T 13. DP 12. QNH 0999. RE TS. RE SHRA. END OF INFO Z
2018-06-21 19:55:31	RIGA, ARRIVAL, DEPARTURE, ATIS INFORMATION, ALFA. AT, 1955. EXPECT ILS APPROACH. RUNWAY IN USE, 36. RUNWAY SURFACE IS WET. BRAKING ACTION GOOD. TAXYWAY SURFACE IS WET. TRANSITION LEVEL 65. WIND 310 DEGREES, 10 KNOTS, VARYING BETWEEN 260 AND 360 DEGREES. VISIBILITY TOUCHDOWN ZONE, 9 KILOMETERS. WEATHER LIGHT SHOWERS OF RAIN. CLOUD FEW 8 HUNDRED FEET, BROKEN CUMULONIMBUS 1 THOUSAND 3 HUNDRED FEET. TEMPERATURE 13. DEWPOINT 12. QNH 0999. RECENT WEATHER THUNDERSTORM. RECENT WEATHER SHOWERS OF RAIN.	ATIS INFO A. 1955 Z. EXP ILS APCH. RWY 36. RWY SFC WET. BA GOOD. TWY SFC WET. TRL 65. WIND 310 DEG, 10 KT, VRB BTN 260 AND 360 DEG. VIS TDZ 9 KM. WX FBL SHRA. CLD FEW 800 FT, BKN CB 1300 FT. T 13. DP 12. QNH 0999. RE TS. RE SHRA. END OF INFO A

	ACKNOWLEDGE INFORMATION, ALFA	
2018-06-21 20:05:01	RIGA, ARRIVAL, DEPARTURE, ATIS INFORMATION, BRAVO. AT, 2004. EXPECT ILS APPROACH. RUNWAY IN USE, 36. RUNWAY SURFACE IS WET. BRAKING ACTION GOOD. TAXYWAY SURFACE IS WET. TRANSITION LEVEL 65. WIND 310 DEGREES, 6 KNOTS, VARYING BETWEEN 220 AND 350 DEGREES. VISIBILITY TOUCHDOWN ZONE, 10 KILOMETERS OR MORE. WEATHER LIGHT SHOWERS OF RAIN. CLOUD SCATTERED 9 HUNDRED FEET, SCATTERED CUMULONIMBUS 2 THOUSAND 9 HUNDRED FEET. TEMPERATURE 13. DEWPOINT 12. QNH 1000. ACKNOWLEDGE INFORMATION, BRAVO	ATIS INFO B. 2004 Z. EXP ILS APCH. RWY 36. RWY SFC WET. BA GOOD. TWY SFC WET. TRL 65. WIND 310 DEG, 6 KT, VRB BTN 220 AND 350 DEG. VIS TDZ 10 KM OR MORE. WX FBL SHRA. CLD SCT 900 FT, SCT CB 2900 FT. T 13. DP 12. QNH 1000. END OF INFO B
2018-06-21 20:20:00	RIGA, ARRIVAL, DEPARTURE, ATIS INFORMATION, CHARLIE. AT, 2020. EXPECT ILS APPROACH. RUNWAY IN USE, 36. RUNWAY SURFACE IS WET. BRAKING ACTION GOOD. TAXYWAY SURFACE IS WET. TRANSITION LEVEL 65. WIND 300 DEGREES, 6 KNOTS, VARYING BETWEEN 250 AND 360 DEGREES. VISIBILITY TOUCHDOWN ZONE, 10 KILOMETERS OR MORE. WEATHER LIGHT SHOWERS OF RAIN. CLOUD SCATTERED 9 HUNDRED FEET, SCATTERED CUMULONIMBUS 2 THOUSAND 9 HUNDRED FEET. TEMPERATURE 13. DEWPOINT 12. QNH 1000. TREND TEMPORARY VISIBILITY 3 THOUSAND METERS, THUNDERSTORM WITH LIGHT RAIN. ACKNOWLEDGE INFORMATION, CHARLIE	ATIS INFO C. 2020 Z. EXP ILS APCH. RWY 36. RWY SFC WET. BA GOOD. TWY SFC WET. TRL 65. WIND 300 DEG, 6 KT, VRB BTN 250 AND 360 DEG. VIS TDZ 10 KM OR MORE. WX FBL SHRA. CLD SCT 900 FT, SCT CB 2900 FT. T 13. DP 12. QNH 1000. TREND TEMPO VIS 3000 M, FBL TSRA. END OF INFO C
2018-06-21 20:50:01	RIGA, ARRIVAL, DEPARTURE, ATIS INFORMATION, DELTA. AT, 2050. EXPECT ILS APPROACH. RUNWAY IN USE, 36. RUNWAY SURFACE IS WET. BRAKING ACTION GOOD. TAXYWAY SURFACE IS WET. TRANSITION LEVEL 65. WIND VARIABLE, 2 KNOTS. VISIBILITY TOUCHDOWN ZONE, 10 KILOMETERS OR MORE. WEATHER LIGHT SHOWERS OF RAIN. CLOUD SCATTERED CUMULONIMBUS 4 THOUSAND 9 HUNDRED FEET.	ATIS INFO D. 2050 Z. EXP ILS APCH. RWY 36. RWY SFC WET. BA GOOD. TWY SFC WET. TRL 65. WIND VRB, 2 KT. VIS TDZ 10 KM OR MORE. WX FBL SHRA. CLD SCT CB 4900 FT. T 13. DP 12. QNH 0999.

	TEMPERATURE 13. DEWPOINT 12. QNH 0999. TREND TEMPORARY VISIBILITY 3 THOUSAND METERS, THUNDERSTORM WITH LIGHT RAIN. ACKNOWLEDGE INFORMATION, DELTA	TREND TEMPO VIS 3000 M, FBL TSRA. END OF INFO D

OPMET DATA - 21-JUNE-2018 from 14:00 (UTC) till 20:00 (UTC)

Date & Time	OPMET message	Notes
2018-06-21 02:00:00	TAF EVRA 210201Z 2103/2203 21010KT 9999 SCT040 TEMPO 2109/2113 23015G28KT SCT030CB TEMPO 2113/2121 VRB28KT 3000 TSRA BKN010 BKN030CB=	
2018-06-21 05:00:00	TAF EVRA 210501Z 2106/2206 21010KT 9999 SCT040 TEMPO 2109/2113 23015G28KT SCT030CB TEMPO 2113/2121 VRB28KT 3000	
2018-06-21 08:00:00	TAF EVRA 210808Z 2109/2209 20010KT 9999 BKN040 TEMPO 2109/2113 19015G28KT -TSRA SCT030CB TEMPO 2113/2121 VRB28KT 3000 TSRA BKN010 BKN020CB=	
2018-06-21 08:00:00	TAF AMD EVRA 210929Z 2109/2209 20013KT 9999 BKN040 TEMPO 2109/2113 19015G30KT -TSRA SCT030CB TEMPO 2113/2121 VRB30KT 3000 TSRA BKN010 BKN020CB=	
2018-06-21 09:20:00	EVRA AD WRNG 1 VALID 210925/211500 EVRA-RIGA AD SFC WSPD MAX 30KT FCST NC=	
2018-06-21 11:00:00	TAF EVRA 211100Z 2112/2212 19013KT 9999 BKN040 TEMPO 2112/2115 21015G30KT -TSRA SCT030CB TEMPO 2115/2121 VRB30KT 3000 TSRA BKN010 BKN020CB BECMG 2120/2121 25010KT TEMPO 2121/2124 28013G28KT SCT020CB TEMPO 2208/2212 22015G30KT SCT030CB=	
2018-06-21 14:00:00	TAF EVRA 211409Z 2115/2215 19010KT 9999 BKN040 TEMPO 2115/2121 VRB30KT 1500 TSRA BKN010 BKN020CB BECMG 2120/2121 25010KT TEMPO 2121/2124 28013G28KT SCT020CB TEMPO 2208/2215 22015G30KT SCT030CB=	
2018-06-21 14:20:00	MET REPORT EVRA 211420Z WIND RWY 18 TDZ 210/6KT VRB BTN 180/ AND 240/ END 210/6KT VIS RWY 18 TDZ 10KM MID 10KM END 10KM CLD FEW CB 1100FT T25 DP15 QNH 1001HPA TREND TEMPO VIS 1500M MOD TSRA	
2018-06-21 14:20:01	METAR EVRA 211420Z 22005KT 9999 VCTS FEW011CB 25/15 Q1001 TEMPO 1500 TSRA	
2018-06-21 14:27:47	SPECIAL EVRA 211427Z WIND RWY 18 TDZ 160/16KT VRB BTN 150/ AND 220/ END 170/13KT VIS RWY 18 TDZ 10KM MID 10KM END 10KM FBL SHRA CLD BKN CB 4900FT T24 DP17 QNH 1001HPA	

2018-06-21 14:50:00	METAR EVRA 211450Z 17007KT 9999 -SHRA BKN049CB 22/17 Q1001 TEMPO 1500 TSRA	
2018-06-21 14:50:00	MET REPORT EVRA 211450Z WIND RWY 18 TDZ 170/9KT END 170/7KT VIS RWY 18 TDZ 10KM MID 10KM END 10KM FBL SHRA CLD BKN CB 4900FT T22 DP17 QNH 1001HPA TREND TEMPO VIS 1500M MOD TSRA	
2018-06-21 14:56:08	SPECIAL EVRA 211456Z WIND RWY 18 TDZ 170/9KT END 160/5KT VIS RWY 18 TDZ 10KM MID 10KM END 10KM FBL TSRA CLD BKN CB 4900FT T21 DP17 QNH 1000HPA	
2018-06-21 15:04:00	EVRA AD WRNG 2 VALID 211504/212100 EVRA-RIGA AD SFC WSPD MAX 30KT FCST NC=	
2018-06-21 15:14:00	EVRR SIGMET A1 VALID 211515/211715 EVRA-EVRR RIGA FIR FRQ TS OBS WI N5625 E02201 - N5753 E02336 - N5730 E02631 - N5610 E02509 - N5625 E02201 TOP FL370 MOV NE 15KT NC=	
2018-06-21 15:14:01	SPECIAL EVRA 211513Z WIND RWY 18 TDZ 220/7KT END 230/12KT VRB BTN 180/ AND 240/ VIS RWY 18 TDZ 10KM MID 5KM END 5KM MOD TSRA CLD SCT CB 3600FT T21 DP17 QNH 1001HPA	
2018-06-21 15:17:37	SPECIAL EVRA 211517Z WIND RWY 18 TDZ 220/8KT VRB BTN 200/ AND 260/ END 240/9KT VRB BTN 190/ AND 260/ VIS RWY 18 TDZ 10KM MID 6KM END 10KM FBL TSRA CLD SCT CB 3600FT T20 DP17 QNH 1001HPA RESHRA	
2018-06-21 15:20:00	MET REPORT EVRA 211520Z WIND RWY 18 TDZ 230/8KT VRB BTN 200/ AND 260/ END 240/10KT VRB BTN 190/ AND 260/ VIS RWY 18 TDZ 10KM MID 6KM END 10KM FBL TSRA CLD SCT CB 3600FT T20 DP17 QNH 1001HPA RESHRA TREND NOSIG	
2018-06-21 15:20:01	METAR EVRA 211520Z 23009KT 190V260 8000 -TSRA SCT036CB 20/17 Q1001 RESHRA NOSIG	
2018-06-21 15:28:34	SPECIAL EVRA 211528Z WIND RWY 18 TDZ 230/6KT VRB BTN 190/ AND 260/ END 240/8KT VIS RWY 18 TDZ 10KM MID 10KM END 10KM FBL SHRA CLD SCT CB 3600FT T19 DP17 QNH 1001HPA RETS	
2018-06-21 15:50:00	METAR EVRA 211550Z 23005KT 200V270 9999 -SHRA SCT049CB 19/17 Q1000 RETS TEMPO 3000 -TSRA	
2018-06-21 15:50:00	MET REPORT EVRA 211550Z WIND RWY 18 TDZ 260/4KT VRB BTN 210/ AND 300/ END 240/4KT VRB BTN 200/ AND 270/ VIS RWY 18 TDZ 10KM MID 10KM END 10KM FBL SHRA CLD SCT CB 4900FT T19 DP17 QNH 1000HPA RETS TREND TEMPO VIS 3000M FBL TSRA	
2018-06-21 16:00:20	SPECIAL EVRA 211600Z WIND RWY 18 TDZ 160/10KT END 170/12KT VIS RWY 18 TDZ 10KM MID 10KM END 10KM FBL SHRA CLD SCT CB 4900FT T19 DP17 QNH 1001HPA	

2018-06-21 16:20:00	MET REPORT EVRA 211620Z WIND RWY 18 TDZ 170/9KT END 170/7KT VIS RWY 18 TDZ 10KM MID 10KM END 10KM FBL SHRA CLD SCT CB 4900FT T19 DP17 QNH 1000HPA TREND TEMPO VIS 3000M FBL TSRA	
2018-06-21 16:20:01	METAR EVRA 211620Z 16006KT 9999 -SHRA VCTS SCT049CB 19/17 Q1000 TEMPO 3000 -TSRA	
2018-06-21 16:22:25	SPECIAL EVRA 211622Z WIND RWY 18 TDZ 170/7KT END 170/6KT VIS RWY 18 TDZ 10KM MID 9KM END 10KM FBL TSRA CLD SCT CB 4900FT T19 DP17 QNH 1000HPA	
2018-06-21 16:30:19	SPECIAL EVRA 211630Z WIND RWY 18 TDZ 170/9KT END 160/8KT VIS RWY 18 TDZ 10KM MID 6KM END 2800M MOD TSRA CLD SCT CB 3700FT T19 DP18 QNH 1000HPA	
2018-06-21 16:38:21	SPECIAL EVRA 211638Z WIND RWY 18 TDZ 180/14KT END 180/13KT VRB BTN 130/ AND 220/ VIS RWY 18 TDZ 10KM MID 10KM END 9KM FBL TSRA CLD BKN CB 3300FT T19 DP17 QNH 1000HPA RESHRA	
2018-06-21 16:44:12	SPECIAL EVRA 211644Z WIND RWY 18 TDZ 200/14KT VRB BTN 150/ AND 220/ END 210/13KT VRB BTN 150/ AND 220/ VIS RWY 18 TDZ 7KM MID 3300M END 2500M MOD TSRA CLD SCT CB 3300FT T19 DP17 QNH 1001HPA	
2018-06-21 16:50:00	METAR EVRA 211650Z 20011KT 170V230 4100 TSRA SCT033CB 19/17 Q1000 NOSIG	
2018-06-21 16:50:00	MET REPORT EVRA 211650Z WIND RWY 18 TDZ 200/9KT END 200/9KT MAX20 MNM7 VRB BTN 170/ AND 230/ VIS RWY 18 TDZ 4500M MID 8KM END 10KM MOD TSRA CLD SCT CB 3300FT T19 DP17 QNH 1000HPA TREND NOSIG	
2018-06-21 16:51:07	SPECIAL EVRA 211651Z WIND RWY 18 TDZ 200/10KT END 200/8KT MAX20 MNM6 VIS RWY 18 TDZ 10KM MID 10KM END 10KM FBL TSRA CLD SCT CB 3300FT T19 DP17 QNH 1000HPA RESHRA	
2018-06-21 16:53:35	SPECIAL EVRA 211653Z WIND RWY 18 TDZ 210/8KT END 210/6KT VIS RWY 18 TDZ 10KM MID 10KM END 10KM FBL SHRA CLD SCT CB 3300FT T19 DP17 QNH 1000HPA RETS RESHRA	
2018-06-21 17:00:00	TAF EVRA 211702Z 2118/2218 19010KT 9999 BKN040 TEMPO 2118/2121 VRB30KT 1500 TSRA BKN010 BKN020CB BECMG 2120/2121 25013KT TEMPO 2121/2124 28015G28KT SCT020CB TEMPO 2206/2215 22015G30KT SCT030CB PROB40 TEMPO 2210/2215 3000 -TSRA=	
2018-06-21 17:20:00	MET REPORT EVRA 211720Z WIND RWY 18 TDZ 140/8KT END 130/8KT VIS RWY 18 TDZ 10KM MID 10KM END 10KM CLD FEW CB 3200FT T19 DP18 QNH 0999HPA RETS RESHRA TREND NOSIG	
2018-06-21 17:20:01	METAR EVRA 211720Z 14007KT 9999 FEW032CB 19/18 Q0999 RETS RESHRA NOSIG	

2018-06-21 17:21:00	EVRR SIGMET A2 VALID 211721/211920 EVRA- EVRR RIGA FIR EMBD TS OBS W OF LINE N5730 E02631 - N5610 E02509 TOP FL330 MOV E 15KT WKN=	
2018-06-21 17:50:00	METAR EVRA 211750Z 15009KT 120V180 9999 FEW045CB 19/17 Q0998 NOSIG	
2018-06-21 17:50:00	MET REPORT EVRA 211750Z WIND RWY 18 TDZ 150/10KT VRB BTN 110/ AND 170/ END 150/9KT VRB BTN 120/ AND 180/ VIS RWY 18 TDZ 10KM MID 10KM END 10KM CLD FEW CB 4500FT T19 DP17 QNH 0998HPA TREND NOSIG	
2018-06-21 18:20:00	MET REPORT EVRA 211820Z WIND RWY 18 TDZ 160/9KT END 170/8KT VIS RWY 18 TDZ 10KM MID 10KM END 10KM CLD FEW CB 4900FT T18 DP17 QNH 0998HPA TREND TEMPO VIS 3000M FBL SHRA	
2018-06-21 18:20:01	METAR EVRA 211820Z 16008KT 9999 FEW049CB 18/17 Q0998 TEMPO 3000 -SHRA	
2018-06-21 18:50:00	METAR EVRA 211850Z 17009KT 9999 VCTS SCT049CB 18/17 Q0997 TEMPO 1500 TSRA	
2018-06-21 18:50:01	MET REPORT EVRA 211850Z WIND RWY 18 TDZ 170/11KT END 170/11KT VIS RWY 18 TDZ 10KM MID 10KM END 10KM CLD SCT CB 4900FT T18 DP17 QNH 0997HPA TREND TEMPO VIS 1500M MOD TSRA	
2018-06-21 18:56:58	SPECIAL EVRA 211856Z WIND RWY 18 TDZ 190/7KT END 190/8KT VRB BTN 160/ AND 220/ VIS RWY 18 TDZ 10KM MID 10KM END 10KM TS CLD SCT CB 4900FT T18 DP17 QNH 0997HPA	
2018-06-21 19:15:00	EVRR SIGMET A3 VALID 211920/212120 EVRA-EVRR RIGA FIR EMBD TS OBS E OF E02200 TOP FL330 MOV E 20KT WKN=	
2018-06-21 19:15:15	SPECIAL EVRA 211915Z WIND RWY 18 TDZ 250/13KT MAX23 MNM8 VRB BTN 180/ AND 270/ END 240/16KT VRB BTN 180/ AND 270/ VIS RWY 18 TDZ 7KM MID 6KM END 5KM FBL TSRA CLD SCT 1100FT BKN CB 2100FT BKN 4900FT T18 DP17 QNH 0998HPA	
2018-06-21 19:20:00	MET REPORT EVRA 211920Z WIND RWY 18 TDZ 270/19KT MAX29 MNM8 VRB BTN 180/ AND 300/ END 280/14KT VRB BTN 180/ AND 320/ VIS RWY 18 TDZ 6KM MID 5KM END 8KM FBL TSRA CLD SCT 500FT BKN CB 2100FT OVC 4200FT T18 DP16 QNH 0999HPA TREND NOSIG	
2018-06-21 19:20:00	METAR EVRA 211920Z 24013G23KT 180V320 8000 -TSRA SCT005 BKN021CB OVC042 18/16 Q0999 NOSIG	
2018-06-21 19:22:00	SPECIAL EVRA 211921Z WIND RWY 18 TDZ 290/15KT MAX29 MNM7 VRB BTN 200/ AND 320/ END 300/14KT MAX24 MNM7 VRB BTN 210/ AND 330/ VIS RWY 18 TDZ 10KM MID 9KM END 10KM FBL TSRA CLD SCT 500FT BKN CB 1100FT OVC 4200FT T17 DP15 QNH 0999HPA	

2018-06-21 19:26:54	SPECIAL EVRA 211926Z WIND RWY 18 TDZ 290/17KT MAX29 MNM7 VRB BTN 250/ AND 340/ END 300/20KT VRB BTN 240/ AND 330/ VIS RWY 18 TDZ 10KM MID 10KM END 10KM FBL TSRA CLD SCT 700FT BKN CB 1500FT OVC 4200FT T16 DP14 QNH 1000HPA	
2018-06-21 19:30:52	SPECIAL EVRA 211930Z WIND RWY 18 TDZ 300/19KT MAX30 MNM8 VRB BTN 260/ AND 340/ END 310/17KT MAX28 MNM7 VRB BTN 260/ AND 350/ VIS RWY 18 TDZ 10KM MID 10KM END 10KM FBL SHRA CLD SCT 700FT BKN CB 1500FT OVC 4200FT T15 DP14 QNH 1000HPA RETS	
2018-06-21 19:35:47	SPECIAL EVRA 211935Z WIND RWY 18 TDZ 290/17KT MAX30 MNM9 VRB BTN 260/ AND 330/ END 300/13KT MAX28 MNM5 VRB BTN 260/ AND 350/ VIS RWY 18 TDZ 8KM MID 5KM END 4000M MOD SHRA CLD SCT 700FT SCT CB 1100FT OVC 1600FT T14 DP13 QNH 1000HPA RETS	
2018-06-21 19:44:58	SPECIAL EVRA 211944Z WIND RWY 18 TDZ 290/13KT MAX27 MNM7 VRB BTN 250/ AND 320/ END 280/14KT MAX27 MNM5 VRB BTN 250/ AND 340/ VIS RWY 18 TDZ 10KM MID 8KM END 10KM FBL SHRA CLD SCT 700FT SCT CB 1100FT OVC 1600FT T14 DP13 QNH 1000HPA RETS RESHRA	
2018-06-21 19:50:00	METAR EVRA 211950Z 29014G27KT 260V340 8000 -SHRA SCT007 SCT014CB OVC023 14/13 Q1000 RETS RESHRA TEMPO 3000 -TSRA	
2018-06-21 19:50:01	MET REPORT EVRA 211950Z WIND RWY 18 TDZ 280/13KT MAX26 MNM6 VRB BTN 250/ AND 340/ END 290/12KT MAX27 MNM6 VRB BTN 260/ AND 340/ VIS RWY 18 TDZ 10KM MID 8KM END 10KM FBL SHRA CLD SCT 700FT SCT CB 1400FT OVC 2300FT T14 DP13 QNH 1000HPA RETS RESHRA TREND TEMPO VIS 3000M FBL TSRA	
2018-06-21 19:54:24	SPECIAL EVRA 211954Z WIND RWY 18 TDZ 340/12KT MAX22 MNM6 VRB BTN 240/ AND 360/ END 330/11KT VRB BTN 260/ AND 360/ VIS RWY 18 TDZ 8KM MID 8KM END 10KM FBL SHRA CLD SCT 700FT SCT CB 1400FT OVC 2300FT T13 DP12 QNH 0999HPA RETS RESHRA	

The note no. 4-6 / 953 of Latvian Center for Environment, Geology and Meteorology on actual weather conditions in Riga International airport

The actual weather at Riga International airport and the TREND forecast in METAR code form on June 21, 2018 during the period. 7:50 pm to 10:20 pm (4:50 pm to 7:20 pm UTC)

METAREVRA211650Z20011KT 170V230 4100 TSRA SCT033CB 19/17 Q1000 NOSIG=

METAR EVRA 211720Z 14007KT 9999 FEW032CB 19/18 Q0999 RETS RESHRA NOSIG=

METAR EVRA 211750Z 15009KT 120V180 9999 FEW045CB 19/17 Q0998 NOSIG=

METAR EVRA 211820Z 16008KT 9999 FEW049CB 18/17 Q0998 TEMPO 3000 -SHRA=

METAR EVRA 211850Z 17009KT 9999 VCTS SCT049CB 18/17 Q0997 TEMPO 1500 TSRA=

METAR EVRA 211920Z 24013G23KT 180V320 8000 -TSRA SCT005 BKN021CB OVC042 18/16 Q0999 NOSIG=

TAF forecast for Riga aerodrome from June 21, 2018 18 (15 UTC) through June 22, 18 (15 UTC), [dispatched June 21, at 6 pm 5:09 pm (2:09 pm UTC)]

TAF EVRA 211409Z 2115/2215 19010KT 9999 BKN040 TEMPO 2115/2121 VRB30KT 1500 TSRA BKN010 BKN020CB BECMG 2120/2121 25010KT TEMPO 2121/2124 28013G28KT SCT020CB TEMPO 2208/2215 22015G30KT SCT030CB=

TAF forecast for Riga aerodrome from June 21, 2018 9pm (6pm UTC) until June 22nd 21 (18 UTC), [dispatched June 21, at 11:00 AM 8:02 pm (5:02 pm UTC)]

TAF EVRA 211702Z 2118/2218 19010KT 9999 BKN040 TEMPO 2118/2121 VRB30KT 1500 TSRA BKN010 BKN020CB BECMG 2120/2121 25013KT TEMPO 2121/2124 28015G28KT SCT020CB TEMPO 2206/2215 22015G30KT SCT030CB PROB40 TEMPO 2210/2215 3000 -TSRA=

High wind warning (30 knots and above) for RIGA aerodrome from June 21, 2018 6:04 pm (3:04 pm UTC) until 10pm 00 (June 21st, 21:00 UTC), [dispatched June 21st, 6:04 pm (3:04 pm UTC)]

1.8. Aids to Navigation

At the time of the incident, Riga International Airport had the following radio navigation and landing aids for runway 18: ILS CAT II, GP, DME and VOR. All navigation aids were functioning at time of the accident without any remarks.

Type of aid, MAG VAR, Type of supported OPS (for VOR/ILS/MLS, give declination)	ID	Frequency, Channel number, Service provider	Hours of operation	Position of transmitting antenna coordinates	Elevation of DME transmitting antenna
1	2	3	4	5	6
DVOR/DME 7.0° E/ 2012	RIA	112.050 MHz CH-57Y SJSC "Latvijas gaisa satiksme"	H24	565515.1N 0235754.7E	100 FT
LOC 18 ILS CAT II	IRV	111.100 MHz	H24	565404.3N 0235803.0E	
GP 18		331.700 MHz	H24	565556.3N 0235814.3E	
DME18	IRV	CH - 48X SJSC "Latvijas gaisa satiksme"	H24	565556.3N 0235814.3E	100 FT
LOC 36 ILS CAT II	IRP	108.100 MHz	H24	565624.9N 0235826.2E	
GP 36		334.700 MHz	H24	565433.2N 0235800.6E	
DME36	IRP	CH - 18X SJSC "Latvijas gaisa satiksme"	H24	565433.2N 0235800.6E	100 FT
VOR/DME 7.0° E/2010	TUK	112.300 MHz CH-70X SJSC "Latvijas gaisa satiksme"	H24	565550.1N 0231423.9E	200 FT

1.9. Communications

Radio communications between the crew and Riga Tower (TWR) on frequency 118.1MHz, Riga Approach (APP) controller on frequency 129.925MHz, Riga Ground Controller (GMC) on frequency 118.805 MHz were recorded and made available to the TAIIB for evaluation.

1.10. Aerodrome information

Riga International airport (EVRA) has been approved for VFR and IFR operations. The airport has one runway 18/36. The dimensions of runway 18/36 is 3200 x 45 meters, CONC+ASPH composite construction. The runway used for landing during the incident was 18 (True BRG 185.16°) Declared Distances

RWY designator	TORA(m)	TODA(m)	ASDA(m)	LDA(m)

18	3200	3200	3200	3200

Selection of runway-in-use

Normally the RIGA TWR controller will assign the operational runway most closely aligned to a headwind.

The following relevant factors mentioned below will also be taken into consideration for runway-in-use selection:

- approach and landing facilities serviceability;
- meteorological conditions (RVR);
- reported or forecast wind shear, or when thunderstorms are expected to affect the approach or departure;
- air traffic flow/direction;
- preferential runway system.

A runway-in-use direction with a tail wind component, including gusts, not exceeding 5 kt can be assigned, when:

- air traffic flow expected to runway direction
- the crosswind component, including gusts, does not exceed 15 kt and/or
- the runway condition is not worse than "WET" and braking action is not worse than "GOOD" and
- braking action is not adversely affected by runway contaminants such as ice, slush, snow, frost and water.

Preferential runway system

The term "Preferential RWY System" shall be used to indicate the runway that, at a particular time, is considered by the ATC unit to be the most suitable for use by the aircraft expected to land at or take-off from the aerodrome, by taking into consideration aircraft performance, surface wind speed and its components. Preferential runway system operations contribute to the optimum use of Riga aerodrome capacity. The following RWY configuration will be used in preference to the other configuration:

	00:00 to 17:59	18:00 to 23:59
Landing	18/36	36

1.11. Flight recorders

1.11.1. Cockpit Voice Recorder (CVR)

Honeywell SSCVR

CVR records were not submitted for investigation

1.11.2. Flight Data Recorder (FDR)

Honeywell SSFDR

1.12. Wreckage and impact information

NIL

1.13. Medical and pathological information

NIL

1.14. Fire

NIL

1.15. Survival aspects

NIL

1.16. Tests and research

NIL

1.17. Organizational and management information

1.17.1. Operator's Procedures for Handling of Accidents and Occurrences

Air Baltic Operations Manual Part A Chapter 11 "Handling of Accidents and Occurrences" consists 10 forms used for reporting different event categories and forms are presented in details in the Cabin Crew Handbook (Chapter 1.18).

The Manual does not include a developed procedure for prompt notification to the State Safety Investigation Authority (TAIIB) in the event of a serious incident or accident.

The Corporate Management Manual Chapter 4 "Safety Management System", paragraph 4.9. as well as OM-A Chapter 11 consists requirement of Mandatory Reporting within the meaning of REGULATION (EU) No 376/2014 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 3 April 2014 on the reporting, analysis and follow-up of occurrences in civil Aviation, and notes that significant incidents or occurrences requiring immediate local attention shall only be reported to the National Aviation Authority (NAA) of the State in which the incident occurred.

Established Reporting system in accordance with REGULATION (EU) No 376/2014 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 3 April 2014 is foreseen for statistical and safety analysis purposes not for immediate Safety Investigation Authority reaction to occurrence.

According to Article 9.1. "Obligation to notify accidents and serious incidents" of REGULATION (EU) No 996/2010 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation ***"Any person involved who has knowledge of the occurrence of an accident or serious incident shall notify without delay the competent safety investigation authority of the State of Occurrence thereof."***

The Manual only notes that: "Quality Assurance team is responsible for report database keeping, statistical analysis and follow-up and, when required, for report forwarding to the CAA of Latvia and Aircraft Accidents and Incidents investigation Bureau of the Republic of Latvia or Authority of foreign country where occurrence took place."

1.17.2. Voice recorder/Flight data recorder

Air Baltic Operations Manual Part A Chapter 11.4 "Voice recorder/Flight data recorder" defines the Commander responsibility immediately after an incident or accident to:

- Stop the voice recorder by depressing the appropriate circuit breaker. This will ensure that the recorded data will not be overwritten.
- Safeguard the recorders until the relevant authorities have taken control of them.

There are not clear defined who are the relevant authorities. According to Manual removal of FDR, CVR and QAR data card and ensure safe storage until data is requested for investigation shall ensure Operator's Technical department.

There are not developed and included procedure that in case of accident or serious incident such actions shall be performed by or in the presence of investigators of the State Safety Investigation Authority (TAIIB).

According to Article 13.2 of REGULATION (EU) No 996/2010 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation "Pending the arrival of safety investigators, no person shall modify the state of the site of the accident, **take any samples therefrom**, undertake any movement of or sampling from the aircraft, its contents or its wreckage, move or remove it, except where such action may be required for safety reasons or to bring assistance to injured persons, or under the express permission of the authorities in control of the site and, when possible, in consultation with the safety investigation authority."

1.18. Additional information

NIL

1.19. Useful or effective investigation techniques

NIL

2.0 Analysis

2.1. The crew actions performing approach landing

The crew calculated the landing performance for reported weather that showed no evidence of any limitation exceedance. The first attempt to land and approach discontinued was performed due to indicated thunderstorm cell on weather radar on final approach path. Then initiated climbing to FL70.

The crew received information from flight crew, who navigated behind them on first approach attempt that thunderstorm cell on approach path was only rain. After that the crew decided to start second approach.

The crew started second approach but preceding aircraft performed go-around due to unstable approach conditions (probably due to wind component). ATC reported actual wind for landing RWY18, which and calculations results shows out of aircraft limitations (tailwind component). Go around second time was performed again.

Another aircraft requested RWY change as tailwind was exceeding limitations for landing execution on RWY18 but not accepted by ATC.

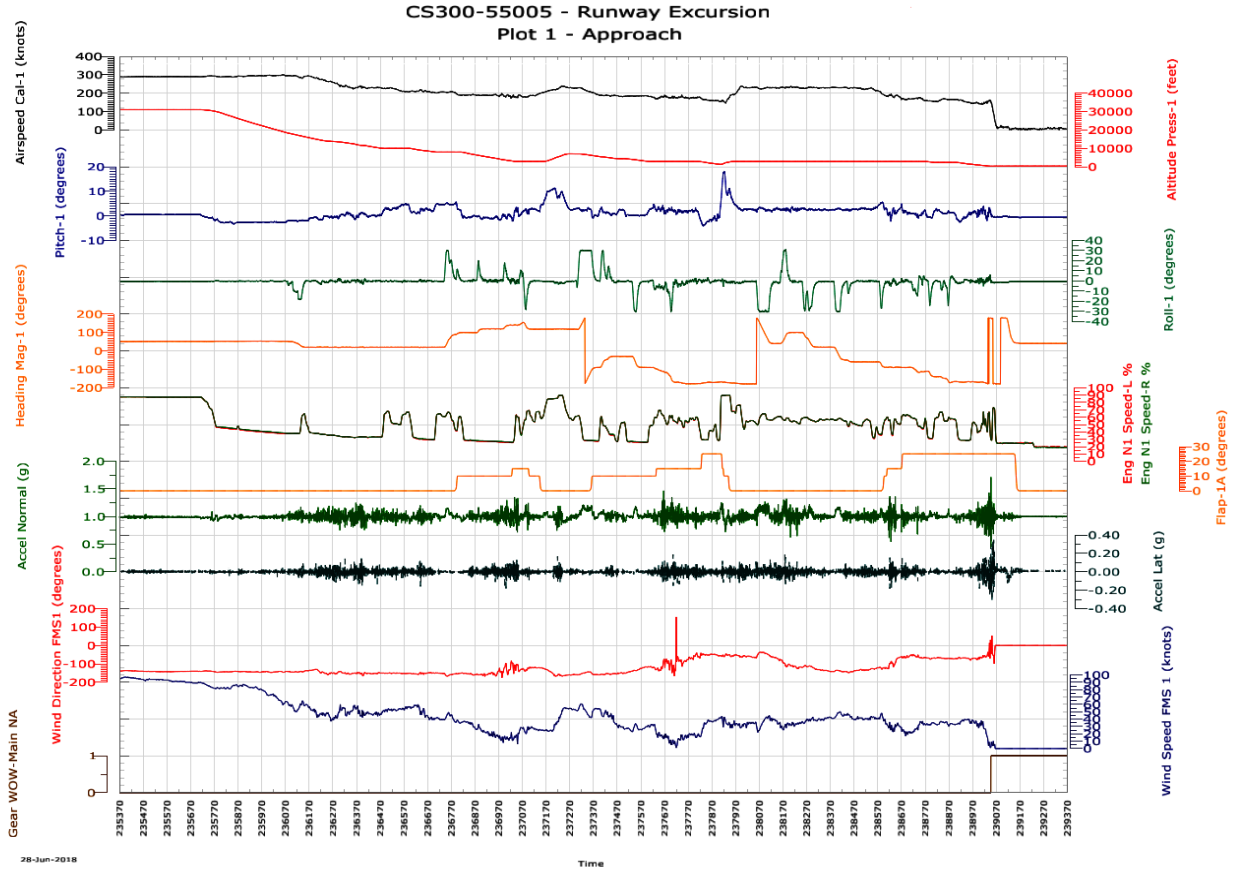
The crew checked fuel on board as a result necessary extra fuel was recognized to perform another approach, as well as at that time information was received from ATC that aircraft, which was before BTI-7QX on approach, executed safe landing. Then the crew decided to start one more approach (third by number).

During third approach attempt crew reported rapid changes in IAS, and turbulence. Due to turbulence, inadvertent press of TOGA button was made by PF, consequently which disengaged autopilot selected flight modes and manual flight control without FD guidance was continued.

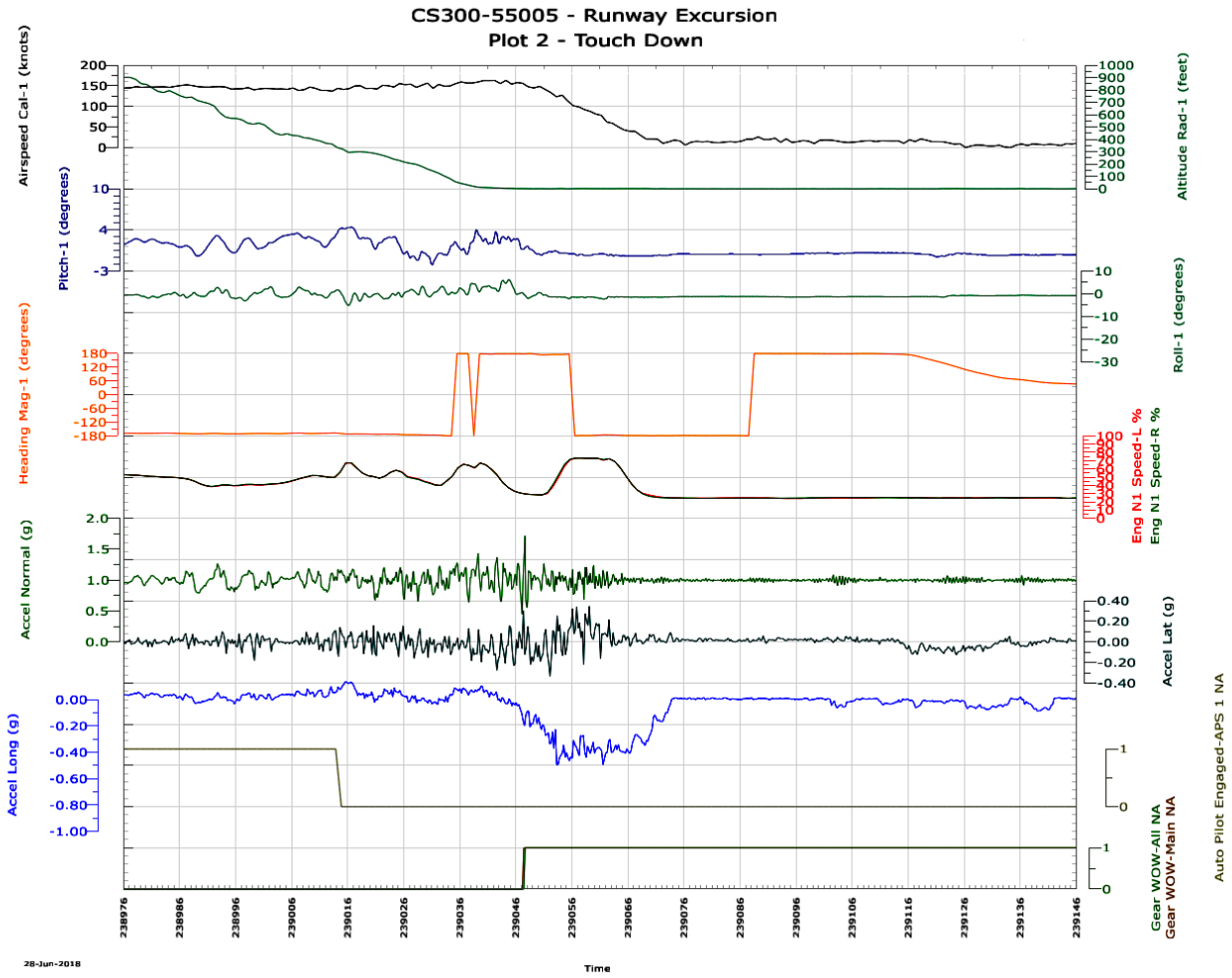
According to information given by PF, landing flare was initiated and strong wind gusts experienced, which made difficult to maintain straight direction of aircraft. After touchdown, unexpected movement to the left was experienced and measures to return aircraft to the centerline of the runway were taken.

During deviation from the runway centerline some runway lights were damaged by aircraft landing gear tires. Control of aircraft regained, runway vacated via TWY B. CAS message "tire press low" with indication of nose wheel LH wheel no pressure presented. Aircraft stopped on taxiway,

assistance called. Aircraft assessed and flat tyre confirmed. Aircraft towed to stand, normal disembarkation made, maintenance actions taken. Damage reported VIA techlog, FSR submitted.



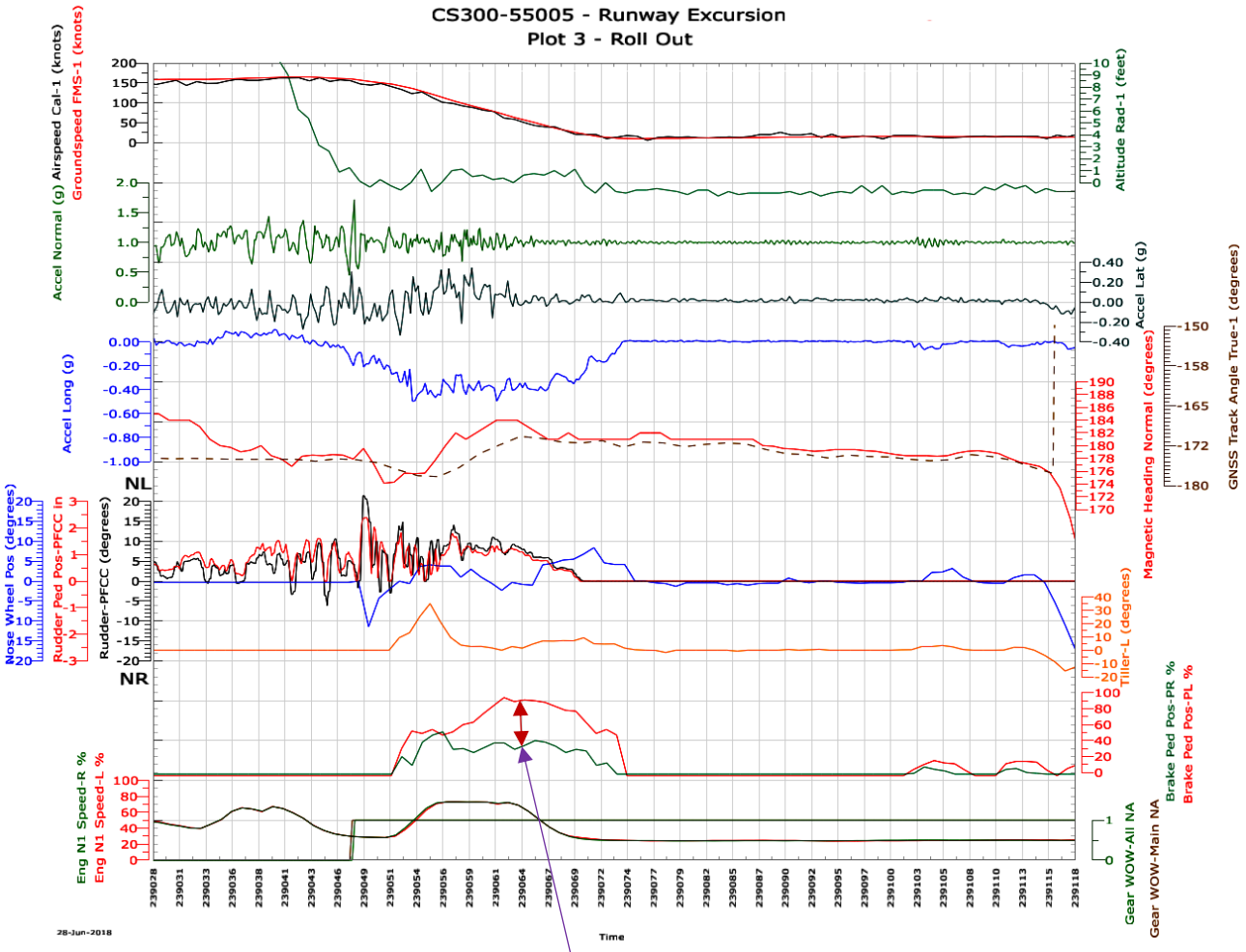
During final approach below 100ft RALT - airspeed variations between ~145kts and ~165kts recorded, wind speed to 15kts, wind direction changes between 290º and 325º. Pitch angle 1º to 3º, bank angle to 6.2º.



FDR data revealed following: Touchdown performed with airspeed about 160kts, pitch angle of 1^0, bank angle below 2^0. After touch-down, aircraft movement (veer-off to the left) observed with subsequent heading changes between 180^0 and 190^0 degrees over speed reduction period recorded.

Flight control inputs, which caused non-intentional deviation of aircraft direction and resulted in unexpected side load. Accidental activation of non-relevant modes (TOGA) on critical part of flight phase (Final part of approach), which resulted in reduced level of automation (disengaged autopilot selected flight modes and manual flight control without FD guidance) used.

Max Vertical acceleration during landing about 1.71G. All wheels on ground at approximately the same time (within 0.2 seconds).



Flight control input recordings show application of right ruder pedal with simultaneous increase of left hand brake pedal application.

FDR data confirmed asymmetric brake application during landing. Higher brake force application on left hand side main gear wheels (red line on Plot 3) caused aircraft deviation to the left with subsequent aircraft side skid. During skidding, exposed side load on the nose wheel left tire sidewall reached load on which tire inner liner was detached from the rim and nitrogen pressure was lost. When brake force on left brake pedal was reduced, directional control of aircraft was regained.

Rudder position indications have recorded values to +2.5in (right). Brake pedal application shows difference between left and right pedal up to ~50% (max left brake pedal application at ~95% recorded while right pedal indication stayed at ~40%).

2.2. Weather limitations and conditions

2.2.1. Wind Limitations in accordance with Operator's OM Part A

Tailwind Conditions:

The maximum tailwind component approved for landing is **10 kts.**

Crosswind Conditions (Landing):

The maximum crosswind component approved for landing is **29 kts**.

Runway CC	Equivalent Pilot Reported Braking Action / FC	Maximum Crosswind Component
4	Good to Medium / 0.39 – 0.36	27 kts
3	Medium / 0.35 – 0.30	20 kts
2	Medium to Poor / 0.29 – 0.25	10 kts
1	Poor / ≤ 0.25	10 kts
0	NIL	NIL

2.2.2. Weather conditions

Reported weather conditions shows development of thunderstorm passing airport (EVRA), with associated adverse weather conditions: precipitation, wind speed and direction change. Actual landing performed on RW18 (Landing course 178^0) time 20:24 utc.

There were not existed abnormalities reported by the crew during the flight, ATC information on the weather conditions were constantly communicated. The runway was reported wet with tailwind component (Recorded wind in FDM on landing: speed up to 15kts, wind direction changes between 290^0 and 325^0). The crew calculated the landing performance. Calculated performance for reported weather showed no evidence of any limitation exceedance.

2.3. Operator's Manuals requirements

Air Baltic Manual OM-A Chapter 8 "Operating Procedures" Item 8.3.8. "Adverse and Potentially Hazardous Atmospheric Conditions" defines: Whenever such conditions are encountered, all necessary steps shall be taken to ensure safety of the aircraft and its occupants. In addition the Commander is responsible to report all hazardous flight conditions to the appropriate ATC unit without delay.

According to Item 8.3.8.1. Thunderstorms: During the flight the situation awareness about the TS activities should be maintained via constant visual and radio outlook as well as use of the weather radar when not in VMC.

Approaching the areas of reported/observed thunderstorms pilots should evaluate possibility of flight continuation along the route as well as avoidance or diversion maneuver, when required.

Intentional penetration of observed CB with TS activity and/or heavy rain showers is prohibited. The following separation intervals for avoidance shall be used:

1	Above the top of the CB clouds	2000 feet	
2	Laterally (NM):	Visually	On weather radar
En route		5NM	10NM
TMA vicinity (Departure/ Approach)		2.5NM	5NM

3. Below the CB clouds base - 500' feet but out of the heavy showers areas and not below MSA if not on appropriate instrument Departure / Approach profile.

A frontal thunderstorm should be penetrated at right angle to the front with the separation intervals stated above and on the Rough Air speed to minimize structural loads.

Showery precipitations

The main problems that could be caused by showery precipitations are as follows:

1. Aircraft performance deterioration could lead to inadvertent deviation from the desired path that in combination with low altitude and minimum obstacles clearance shortly after take-off or before landing could cause a real danger of aircraft impact with the surface;
2. Power plant performance deterioration – stall, surge or even flame out.

There is no specific limitation for take-off and approach execution in showery types of precipitations. In additions to some precautions stated in OM-B the common sense dictates to postpone the take-off and landing execution in heavy shower especially taking into account their temporary status.

2.4. Aerodrome RWY condition after incident

TAIIB investigators were not called to incident site. In accordance to information sent by Operator during RWY inspection, heavy rubber deposits on the RWY left part were observed, which could be created by partially blocked landing gear tires. Mentioned deposits shows evidence of possibly heavy braking with skidding tires. Only left side main landing gear both tire rubber deposits recognized on the RWY. No signs of the right side main landing gear tires rubber deposits recognized on the RW.

2.5. Aircraft maintenance

The aircraft had a valid Certificate of Registration, Certificate of Airworthiness and Airworthiness Review Certificate. The aircraft maintenance records were in compliance with the established maintenance program. The work was carried out in accordance with Part 145 and in respect to that work the aircraft is considered ready for release to service, airBaltic Part -145 approval ref. LV.145.0001. Recordings about performed operations was made on April 21, 2018 in SEQ #01057-01060 and SEQ # 01053-01056.

2.6. Mass and centre of gravity (extract from Load Sheet Final)

GVA	**RIX**		Crew 2/3
DOW dry operating weight (kg):	38502 kg		
ZFW zero fuel weight (kg):	51552 kg	MAX	55792 kg
TOF take-off fuel (kg):	7816 kg		
TOW take-off weight (kg):	59368 kg	MAX	67585 kg
TIF trip fuel (kg):	4861 kg		
LAW landing weight (kg):	54547 kg	MAX	58740 kg
UNDLD under load before LMC (kg):	4193 kg		
PAX M passengers:	5/125	TTL	130
DOI dry operating index:	31.6		
DLI dead load index:	28.3		
LIZFW loaded index at ZFW:	44.4		
LITOW	42.0		
LILAW	44.1		
MAC ZFW- % MAC at ZFW	24.8		
MACTOW	28.9		
MACLAW	30.3		
BALANCE LIMITS BEFORE LMC - FWD and AFT balance limitation for actual loading and configuration	30.7		

FWD /ACTL/AFT	16.53/24.76/33.89	ZFMAC	

Due to report about NLG LH tire burst on ground the special irregular inspection was performed according to IAW AMP BD500-A- J05-51-09-01AAA-284A-A. The inspection was done and NLG LH tyre was found deflated. Both NLG wheels were replaced IAW BD500-A-J32-42-01-01AAA-720A-A. Recordings about performed operations was made on June 22, 2018 in SEQ #01394.

Due to crew Report about aircraft runway excursion and possibly hitting the RWY light by NLG the special irregular inspection was performed according to IAW AMP BD500-A-J05-51-20-01AAA-284A-A, Step 3. During inspection no damage found. Recordings about performed operations was made on June 22, 2018 in SEQ #01396.

2.7. Information to ATC

The cockpit crew informed Riga International airport GMC about the possible hitting RWY equipment and requested to check RWY of possible sequences FOD on the RWY18. The information to the GMC was useful and timely.

3. Conclusions

3.1. Findings

1. The flight crew was properly licensed.
2. The aircraft had a valid airworthiness certificate.
3. The aircraft maintenance records were verified to be in compliance with the established maintenance program.
4. The mass and centre of gravity was within the limitations.
5. Reported weather shows development of thunderstorm passing EVRA airport, with associated adverse weather conditions: precipitation, wind speed and direction change.
6. There were no abnormalities reported by the crew during the flight.
7. ATC information on the weather conditions were communicated constantly.
8. Calculated performance by crew for reported weather showed no evidence of any limitation exceedance.
9. The crew acted in accordance with section 8, paragraph 8.3.8. of Manual OM-A, "Adverse and Potentially Hazardous Atmospheric Conditions"
10. During third approach attempt the crew reported rapid changes in IAS, and turbulence.
11. Inadvertent press of TOGA button was made, which disengaged autopilot selected flight modes and manual flight control without FD guidance was continued.
12. Flight control input recordings shows application of right ruder pedal with simultaneous increase of left hand brake pedal application.
13. Brake pedal application shows difference between left and right pedal up to ~50% (max left brake pedal application at 95% recorded while right pedal indication stayed at 40%).

14. Asymmetric brake application during landing that create higher brake force application on left hand side main gear wheels caused aircraft deviation to the left with subsequent aircraft side skid.

15. During skidding, exposed side load on the nose wheel left tire sidewall reached load on which tire inner liner was detached from the rim and pressure was lost.

16. During maintenance deflated and disassembled LH nose landing gear tire recognized with visible damages on wheel rim. No more damages to aircraft recognized during maintenance inspection.

17. No any malfunctions of aircraft system performance observed during affected approach and landing execution. Damage to aircraft created by external factors.

18. On the day of the serious incident, TAIIB was not notified about occurrence.

19. The Operator's Manuals does not include a developed detailed procedures for prompt notification to the State Safety Investigation Authority (TAIIB) in the event of a serious incident or accident in accordance to EU Regulation 996/2010.

3.2. Causes

3.2.1. Root cause

Uncoordinated asymmetric flight control inputs by the crew during landing.

3.2.2. Direct cause

Force applied to the wheels of the main landing gear on the left which caused the aircraft deviation to the left with subsequent aircraft side skid.

3.2.3. Possible contributing causes

1. Adverse weather conditions (Thunderstorm)
2. Accumulated increasing level of stress during repeated approaches before last approach execution.

4. Safety initiatives during the investigation

During the course of the investigation the following safety actions were issued:

The Operator informed and familiarized involved flight crew and other flight personnel with internal investigation results.

4.2. The Transport Accident Incident Investigation Bureau, Latvia makes the following recommendations:

Recommendation - LV2019-001

The investigation revealed that Air Baltic Operations Manual OM- A Chapter 11 "Handling of Accidents and Occurrences" consists 10 forms used for reporting different event categories and forms that are presented in details in the Cabin Crew Handbook (Chapter 1.18). don't include a developed

procedures for prompt notification to the State Safety Investigation Authority (TAIIB) in the event of a serious incident or accident.

Consequently, the Transport Accident Incident Investigation Bureau makes the following recommendation to the Operator Air Baltic responsible for the operation of the aircraft:

To develop and implement in the Operational documentation procedures for immediate notifying State Safety Investigation Authority about occurred serious incident or accident.

Recommendation - LV2019-002

According to Operators Manual removal of FDR, CVR and QAR data card and ensure safe storage until data is requested for investigation shall ensure Operator's Technical department. Not explicitly stated here for what investigation data is requested internal investigation or in accordance with Annex 13 to the Convention.

It is in contrary of requirement that in case of accident or serious incident any movement of or sampling from the aircraft, its contents or its wreckage, move or remove shall be performed by or in the presence of investigators of the State Safety Investigation Authority (TAIIB).

Consequently, the Transport Accident Incident Investigation Bureau makes the following recommendation to the Operator Air Baltic responsible for the operation of the aircraft:

To develop and implement in the Air Baltic Operational documentation procedures about cooperation with State Safety Investigation Authority of removing aircraft recorders, sampling and other evidence in case of occurred serious incident or accident.

October 17. 2019 Riga

Investigator in charge: Visvaldis Trubs

Director of Aircraft Accident
and Incident Investigation Bureau Ivars Alfreds Gaveika