



Final Report of the Aircraft Accident Investigation Bureau

concerning the incident (Airprox)

between PT-OEX and VLM506

on 17 november 1999

Limit of Geneva CTR and TMA,
2 NM NW of VOR/DME of PAS

FINAL REPORT
AIR TRAFFIC INCIDENT REPORT (ATIR)
AIRPROX (NEAR COLLISION)

THIS REPORT HAS BEEN PREPARED FOR THE PURPOSE OF ACCIDENT/INCIDENT PREVENTION. THE LEGAL
ASSESSMENT OF ACCIDENT/INCIDENT CAUSES AND CIRCUMSTANCES IS NO CONCERN
OF THE INCIDENT INVESTIGATION
(ART. 24 OF THE AIR NAVIGATION LAW)

PLACE Limit of Geneva CTR and TMA 2 NM NW of
VOR/DME of PAS

DATE / TIME 17 November 1999 / 14:30 UTC

AIRCRAFT 1: PT-OEX, Falcon 900, Geneva – Zurich

 2: VLM506, Fokker 50, VLM Airlines, Geneva – Antwerp

ATS SERVICE Geneva Approach Control

CONTROLLER Departure controller

AIRSPACE D

HISTORY

On Wednesday 17 November 1999 at 14 :30 UTC, a Fokker 50 aircraft, VLM506, a commercial flight from Geneva to Antwerp, takes off from runway 23.

It is followed, two minutes later, by a Falcon 900, aircraft registration PT-OEX, a non-commercial flight from Geneva to Zurich.

Before transferring the Falcon 900 to the Geneva Departure radio frequency, the Control Tower controller asks the pilot, in accordance with his authorisation, to start his right turn. The pilot acknowledges and continues on his heading (approx. 250°). During this time, the Fokker 50 VLM506 turns right onto a heading for the beacon (VOR) of DIJ, and the two aircraft very quickly close to a distance less than the prescribed minimum distances.

The pilot of the Fokker 50 VLM506 informs the controller that he has the PT-OEX in sight and that he does not intend to submit a report. The pilot of the Falcon 900 PT-OEX also does not submit a report.

FINDINGS

- The incident took place at the limit of the control area (CTR) and the terminal control area (TMA) of Geneva, 2nm NW of the VOR/DME of PAS in D airspace.
- Instrument flight rules were applicable.
- The runway in service was runway 23.
- Geneva weather 14:20:
 - Wind: 200° 5 KT. Variable between 040° and 320°
 - Visibility: 10 KM
 - Cloud: scattered 500FT, broken 3000FT
 - QNH 1015
 - QFE THR 23 966
 - QFE THR 05 964
 - Nosig
- The incident took place in the area of responsibility of Geneva Departure control.
- At the time of the incident, flight VLM506 as well as flight PT-OEX were in contact and under radar control with Geneva Departure on frequency 121.3MHz.
- The incident took place at flight level 90.
- The Falcon 900 PT-OEX was ready for take-off before the Fokker 50 VLM506.
- Geneva Control Tower allowed the Fokker 50 VLM506 to take off before the Falcon 900 PT-OEX for reasons related to slots.
- The Fokker 50 VLM506 was authorised on the standard departure route "Dijon one Alpha departure" and to take off from intersection B.
- The Falcon 900 PT-OEX was authorised on the standard departure route "Konil one Juliett" and to take off 2 minutes later from the start of runway 23.

- Two minutes after it took off, the Falcon 900 PT-OEX receives an instruction from the Control Tower to start its right turn: "Start right turn".
- The pilot of the Falcon PT-OEX acknowledges with "Stop right turn".
- The controller does not realise the error and sends the Falcon 900 PT-OEX to the Geneva Departure frequency 121.3MHz (hear back).
- For the Tower controller, the situation was normal and no telephone co-ordination took place with Geneva Departure.
- The performance (rate of climb and speed) of the Falcon 900 PT-OEX was greater than that of the Fokker 50 VLM506 when the two aircraft were closing, and was increasing.
- PT-OEX speed 197KT rate of climb 3200FT/MIN
- VLM506 speed 151KT rate of climb 2200FT/MIN
- On passing the beacon (VOR) of Passeiry , 6800FT and climbing, the Fokker 50 VLM506 is authorised for the first time direct Dijon by Geneva Departure.
- On the first call, the Falcon 900 PT-OEX is authorised by Geneva Departure for flight level 100, then one minute later gives him the instruction to turn immediately to heading 020, followed by heading 070.
- The Fokker 50 VLM506 is informed by Geneva Departure of the traffic which is passing on his right, flight level 85 and climbing, distance 1.5 NM.
- The Fokker 50 VLM506 replied that he had the aircraft in sight.
- Geneva Departure asks him to keep the aircraft in sight and a 2nd time to turn direct Dijon (left turn).
- The pilots of aircraft VLM506 and PT-OEX do not submit an ATIR report.
- The minimum distances according to the radar recordings were 0.7NM and 300FT.
- The radar plot clearly gives the impression that the Falcon 900 PT-OEX turns left instead of turning right.

ANALYSIS

The Geneva tower controller authorises the Falcon 900 PT-OEX, two minutes after take-off, to start his right turn in accordance with his authorisation in these terms "**START** right turn" probably for reasons of separation from the preceding traffic. The pilot acknowledges with "**STOP** right turn" and continues on his heading "approx. 250°". The controller does not realise the error and transfers him to the Geneva Departure frequency. At this time, the Geneva Departure controller has 30 seconds

to realise and correct the rapid approach of the two aircraft in terms of distance and altitude.

He immediately initiates an avoiding action by turning the Falcon 900 PT-OEX to the right and twice gives traffic information to the pilot of the Fokker 50 VLM506 who has visual contact. It must be noted that the term "**START** right turn" does not exist in the standard phraseology. On the other hand, "**STOP** right turn" is correct. It has not been possible to establish if this fact influenced the pilot.

In the event, at the time of this incident, the radar plot clearly gives the impression that the Falcon 900 PT-OEX turns left instead of right. This probably caused the controller to give him this authorisation.

CAUSE

The incident is due to the use of inappropriate phraseology followed by an erroneous acknowledgement which was not picked up by the controller.

MEASURES TAKEN

In order to avoid any misunderstanding, SWISSCONTROL will remind controllers to use the terms "**turn XXX now**" instead of "**start XXX turn now**", in accordance with the official phraseology.

RECOMMENDATIONS

The imprecision of the radar plot.

The precision of the radar should be improved, in order to avoid to misguide the controller about the actual trajectory of the plane (it appears to turn to the left on the radar track, but in fact it turns to the right).

**TRANSCRIPT OF TELEPHONY
OR RADIOTELEPHONY COMMUNICATIONS TAPE-RECORDING**

Investigation into the **incident** that occurred on **November 17th 1999**

- Subject of transcript:	PTOEX / VLM506
- Centre concerned:	Geneva
- Designation of units:	GND / TWR / DEP
- Frequencies:	121.9 / 118.7 / 121.3 MHz
- Date and period covered by attached extract:	November 17 th 1999 14:07 – 14:41 UTC
- Date of transcript:	January 14 th 2000
- Name of official in charge of transcription service:	Monica Simonet

- Certificate by official in charge of Analysis Department:

I hereby certify:

- That the accompanying transcript of the telephony or radiotelephony communication tape-recording, retained at the present time in the premises of Analysis Department, has been made under my supervision.
- That it was examined and checked by me.
- That no changes have been made to the entries in columns 2, 3 and 4, which contain only clearly understood indications in their original form.

Geneva, January 14th 2000

M. Simonet



TRANSCRIPT SHEET

To <u>Col.1</u>	From <u>Col.2</u>	Hour <u>Col.3</u>	Communications <u>Col.4</u>	Observations <u>Col.5</u>
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Frequency 121.9: Geneva Ground, concerning the start up clearance for VLM506 and PTOEX only

GND	506	14:07: 09	Geneva bonjour, Rubens five O six, information Charlie, heu requesting start for Antwerp and stand twenty-two.	
506	GND	15	Rubens five zero six bonjour, calculated departure time: one four three five. Start up approved, cleared to Antwerpen via Dijon one Alfa Departure, squawk five seven one seven.	
GND	506	26	Cleared to start according to slot and Antwerpen, Dijon niner, heu Dijon one Alfa, five seven one seven, five O six.	
506	GND	33	Correct, Apron, one two one seven five taxi, good day.	
GND	506	35	One two one seven five, good day, five O six.	

GND	PEX	14:18: 40	Genève, Papa Tango Oscar Echo X-Ray XXXXX to start up engines.	probably "ready"
PEX	GND	47	Papa Echo X-Ray roger, for Zurich ?	
GND	PEX	52	Affirmative.	
PEX	GND	53	Roger, start up is approved. Cleared to Zurich, departure route KONIL one Juliett and the squawk will be four three four five.	
GND	PEX	14:19: 06	Cleared to Zurich, KONIL one Juliett, four three four five.	
PEX	GND	12	Correct, for taxi, Apron, one two one seven five, good-bye.	
GND	PEX	15	Bye, thank you.	

Frequency 118.7 MHz: Geneva TowerSignature of
person in charge:

TRANSCRIPT SHEET

<u>To</u> <u>Col.1</u>	<u>From</u> <u>Col.2</u>	<u>Hour</u> <u>Col.3</u>	<u>Communications</u> <u>Col.4</u>	<u>Observations</u> <u>Col.5</u>
TWR	PEX	14:27: 56	Tower, Papa Tango Oscar Echo X-Ray.	PTOEX is quite difficult to understand all along
PEX	TWR	14:28: 01	Oui bonjour Papa Echo X-Ray, report fully ready.	
TWR	PEX	07	X-Ray.	
411	TWR	14:29: 06	Flight... four one one call Departure, one two one three, good-bye.	
TWR	411	10	One two one three, bye, thank you.	
TWR	PEX	13	Papa Tango Oscar Echo X-Ray is ready for take-off.	
PEX	TWR	16	Papa Echo X-Ray roger, ... line up runway two three.	
TWR	PEX	21	Line up and hold runway two three, Papa Tango Oscar Echo X-Ray.	
506	TWR	28	Rubens five zero six, Geneva ?	506 calling at the same time
TWR	506	30	... ready for departure in sequence.	
506	TWR	33	Five zero six roger; do you accept a intersection departure, Bravo ?	
TWR	506	37	We do..., heu... five zero six.	
506	TWR	40	Okay, number one and... for intersection departure. Line up and take-off two three, five zero six, the wind two one zero degrees, five knots.	
TWR	506	47	Cleared for take-off runway two three via Bravo intersection, five O six.	
TWR	592	14:30: 06	Tower ... good afternoon from CSA five niner two, fully established the ILS two three.	
592	TWR	12	Roger.	
506	TWR	14	Five zero six don't worry, the Falcon nine hundred is holding on the runway.	
592	TWR	20	CSA five nine two report three miles.	
TWR	592	14:30: 24	Call you.	
PEX	TWR	27	Papa Echo X-Ray number two, hold position.	
TWR	PEX	30	Number two, holding position, Papa Tango Oscar Echo X-Ray.	

Signature of
person in charge:

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506	TWR	14:31: 34	Rubens five zero six contact Departure radar, one two one decimal three, good-bye.	
TWR	506	37	One two one three, bye-bye, five O six.	
TWR	318	43	Heu Geneva Tower good afternoon, Tango three one eight, we are on heu, abeam bay Yankee one, request Departure, outbound November.	
318	TWR	52	Tango three one eight roger, cleared for take-off, route helicopter November, the wind two three zero degrees, six knots.	
TWR	318	59	Cleared take-off, helicopter route November, three one eight.	
PEX	TWR	14:32: 02	Papa Echo X-Ray, you are cleared for take-off, the wind two three zero degrees, six knots. On the right a helicopter heu taking off, VFR.	
TWR	PEX	11	Papa Tango Oscar Echo X-Ray roger XXXXX, looking out.	probably: "thanks"
592	TWR	14:33: 04	CSA five nine two cleared to land two three, the wind two three zero degrees, six knots.	
TWR	592	09	Cleared to land two three, CSA five niner ... two.	
PEX	TWR	40	Papa Echo X-Ray start right turn.	
TWR	PEX	43	Stop right turn, Papa Tango Oscar Echo X-Ray.	
PEX	TWR	46	Okay Papa Echo X-Ray call Departure, one two one three, good-bye.	
TWR	PEX	49	One two one three, good-bye.	

Frequency 121.3 MHz: Geneva Departure Radar

DEP	506	14:31: 44	Geneva Departure bonjour, Rubens five O six climbing niner zero, Dijon one Alfa.
506	DEP	53	Rubens five zero six bonjour, ... I call you back.

Signature of
person in charge:

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411	DEP	14:32: 45	Flight Check four one one proceed direct to SOSAL.	
DEP	411	48	Proceeding directly SOSAL, thank you, Flight Check four one one.	
506	DEP	52	Rubens five zero six climb to flight level one five zero.	
DEP	506	14:33: 04	Climbing flight level one five zero, Rubens five zero six.	
506	DEP	47	Rubens five zero six proceed direct to Dijon.	
DEP	506	51	Fly direct Dijon, Rubens five O six.	
DEP	PEX	53	Departure, Papa Tango Oscar Echo X-Ray passing five thousand.	
PEX	DEP	57	Papa Echo X-Ray good afternoon, identified, climb to flight level one zero zero.	
DEP	PEX	14:34: 02	Climb to flight level one zero zero.	
411	DEP	08	Flight Check four one one contact Radar, one two five decimal five five, good bye.	
DEP	411	13	One two five five five, bye, thank you.	
DEP	PEX	24	Could you confirm for Papa Tango Oscar Echo X-Ray, start... turn right ?	
PEX	DEP	31	Echo X-Ray stop climb flight level, correction turn right now, immediately heading zero two zero.	
DEP	PEX	36	Zero two zero immediately, right turn.	
506	DEP	40	Victor Lima Mike five zero six for your information, on your right a Jet is passing eight five, climbing.	
DEP	506	46	Roger, Jet in sight, five O six.	
506	DEP	14:34: 48	Roger, keep it in sight and turn now left direct to Dijon.	
DEP	506	52	Left direct Dijon, five O six.	
PEX	DEP	55	Papa Echo X-Ray ... climb to flight level one five zero.	
DEP	PEX	14:35: 00	Climbing to flight level one five zero, Papa Tango Oscar Echo X-Ray.	

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PEX	DEP	03	Continue right heading zero two zero.	
DEP	PEX	06	Continue right heading zero two zero, Papa Tango Oscar Echo X-Ray.	
506	DEP	10	Victor Lima Mike five zero six confirm the traffic still in sight ?	
DEP	506	13	Traffic is... overtaking us now, five O six.	
506	DEP	16	Yes, thank you. It's a mistake of the pilot; I call you back shortly.	
PEX	DEP	37	Papa Echo X-Ray continue right heading zero seven zero.	
DEP	PEX	41	Right turn zero seven zero.	
PEX	DEP	43	That's correct. And for your information, you received a KONIL one Juliett Departure. Confirm you have it ?	
DEP	PEX	50	That's affirmative ! The Tower ... asked us to stop turn, turning right !	
PEX	DEP	59	Roger, and... I call you back.	
DEP	PEX	14:36: 06	That's the reason, because we asked you, if we have to stop the turn.	
PEX	DEP	13	Roger that's understood, maintain flight level one five zero. Proceed direct to SOSAL, if you have it.	
DEP	PEX	20	We <u>have</u> it ! Direct to SOSAL heu ... until flight level one five zero, and heading zero seven zero.	
PEX	DEP	27	Thank you.	DEP in contact with: IBE3481
DEP	PEX	14:38: 01	Papa Tango Oscar Echo X-Ray standing by for higher.	
PEX	DEP	04	Roger, I call you back, what, which level you ... request ?	
DEP	PEX	11	XXXXX.	probably: " Stand by one"
506	DEP	26	Victor Lima Mike five zero six contact Radar, one three four decimal zero two, good-bye Sir.	
DEP	506	31	One three four zero two, good-bye, five O six.	

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<u>To</u> <u>Col.1</u>	<u>From</u> <u>Col.2</u>	<u>Hour</u> <u>Col.3</u>	<u>Communications</u> <u>Col.4</u>	<u>Observations</u> <u>Col.5</u>
DEP	PEX	38	If possible, Papa Tango Oscar Echo X-Ray, we are requesting flight level one niner zero.	
PEX	DEP	45	Roger, climb initially one six zero. It should be your final level.	
DEP	PEX	50	One six zero, thank you.	
DEP	506	14:39: 01	And Departure, Rubens five zero six ?	
506	DEP	04	Rubens five zero six yes, go.	
DEP	506	06	Yes, it's just for our information, how close did he get to us ?	
506	DEP	11	Heu there were one and a half miles.	
DEP	506	15	One and a half mile, okay, thanks.	
506	DEP	17	You'd like to heu to... make a report ?	
506	DEP	30	Rubens five zero six, you'd like to make a report ?	
DEP	506	34	Stand by.	
506	DEP	38	That won't be necessary, thanks, five zero six.	DEP in contact with: IBE3481
PEX	DEP	14:40: 38	Papa Echo X-Ray contact Radar, one two five decimal five five, good-bye Sir.	
DEP	PEX	42	One two five decimal five five, thank you.	DEP in contact with: IBE3481
506	DEP	14:41: 01	Heu Rubens five zero six ?	
DEP	506	14:41: 09	Five zero six, go ahead.	
506	DEP	11	Yes five zero six, hm... would you like to make a report now ?	
DEP	506	16	Heu no, I don't' think that's gonna be necessary, we needn't, we didn't deviate from track ?????.	unreadable
506	DEP	20	Roger, thank you, and contact Radar, one three four zero two, good-bye Sir.	
DEP	506	24	Yea, we're already in contact with them, thanks, bye.	

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Abbreviations

GND - Geneva Ground
TWR - Geneva Tower
DEP - Geneva Departure Radar

506 - Rubens 506	F50	IFR flight	LSGG - EBAW
PEX - PTOEX	F900	IFR flight	LSGG - LSZH
411 - Flight Check 411	BE30	IFR flight	LSGG - EDVE
592 - CSA592	AT44	IFR flight	LKPR - LSGG

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Signature of
person in charge:



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