



**Final Report
of the Aircraft Accident
Investigation Bureau**

concerning the incident (Airprox)

between LDA9235 and SPW554

on 19th November 1999

on the ground, at Geneva airport

AIRCRAFT ACCIDENT INVESTIGATION BUREAU

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 On the ground, at Geneva airport

DATE / TIME 19 November 1999 / 20:45 UTC

AIRCRAFT 1: LDA9235; Challenger; Geneva – Vienna
2: SPW554; Citation 550; Geneva - Agadir

ATC SERVICE Aerodrome control

CONTROLLER Aerodrome controller

AIRSPACE On the ground

HISTORY

On Friday 19 November 1999 at 20:45 UTC, flight SPW554 from Geneva to Agadir (Morocco), a Citation 550 aircraft of the Speedwings company, is at holding point CAT II at the Bravo taxiway intersection. It is authorised to line up on runway 23 by the Control Tower Controller.

At this time, a Challenger (CRJ1) aircraft, flight LDA9235, of the Lauda Air company, from Geneva to Vienna (Austria), is taxiing for take-off from the beginning of runway 23. Both aircraft are on the frequency 118.700 MHz.

A REGA helicopter is over the city, flying towards the airport, in order to overfly the centre line of the runway and land at its base. Several times the controller is concerned about the position of this helicopter which is hampering him in the performance of his tasks.

Visibility is reduced by fog on the ground; the runway visual range is 1500 metres on the first part of the runway. Category II is operational.

According to his statements, the pilot of SPW554 delays lining-up, having neither visual nor auditory reference with the aircraft taking off.

Throughout the taxiing on the taxiway before reaching the runway, he notices the aircraft at rotation speed passing abeam his position, on the runway.

The Control Tower controller, according to his statements, is convinced that SPW554 is lining up at the beginning of runway 23 in accordance with the authorisation which he has given to it.

The pilot of the aircraft SPW554, again according to his statements, is certain that he received authorisation to proceed to Bravo intersection and then to line up from this intersection. The pilot of SPW554 makes no remarks on the frequency and does not submit an ATIR. Flight LDA9235 makes no remarks on the frequency.

The pilot of SPW554 submits an ATIR on the following 3 December, after contacting the operations management of the Control Tower, in order, according to his statements, to ensure that constructive prevention and safety consequences can be drawn.

FINDINGS

- The runway in service at Geneva was runway 23.
- The meteorological bulletin at 20:46 UTC was as follows: wind 250 degrees at 4 knots, visibility 10 kilometres, banks of fog, clouds: few at 500 ft, broken at 5000 ft, temperature minus 1 degree, dew point minus 2 degrees, atmospheric pressure 1007 hectopascals, no changes expected.
- It was night-time.
- At 20:35, the controller requested activation of Category II by pressing the pushbutton on the Electrical Service.
- Category II was activated and CATII procedures were applied.
- The reported runway visual range on 23 was 1500 metres on the first third of the runway and 550 metres on the last third.

- The controller gave the latest runway visual range values in direct reading (RVR) to Air France 1242 in landing phase: 1100 metres on the first third of the runway and 400 metres on the second third.
- The ATIS (Automatic Terminal Area Information Service) was instructing aircraft landing to clear the runway by taxiways Delta or Echo, because of Category II operations.
- The airport surface detection equipment was functioning normally and was engaged (ASDE radar)
- The CATII runway lighting system was functioning normally and was engaged.
- The stop bars prohibiting passage between the taxiways and the runway were illuminated.
- The stop bars have to be extinguished by the controller operating a pushbutton to allow an aircraft to pass.
- The passage of an aircraft (or any other object) is detected automatically by a radar system on all the taxiways, independently of the status of the stop bars.
- The stop bars light up again automatically after the passage of an aircraft.
- The taxiways (runway intersections) Bravo and Charlie are not useable according to the regulations for Category II (ref. TORA O.S. GT 4084)
- The controller's operations on the system are continuously recorded by the Electrical Service.
- A difference of + one minute in the recordings of the operations on the electrical system by the Control Tower controller and the ATC recordings of the conversations between the control and the aircraft was ascertained by the investigator.
- The Speedwings pilot expressed a wish to make a departure from the Bravo intersection at the time of his taxiing request, whilst he was still on the North area. **"We would like to depart from Bravo"**.
- The controller did not explicitly authorise the plane to use taxiway Bravo.
- The controller authorised the aircraft to taxi to the CAT II holding point for 23, at the Yankee intersection.
- The controller extinguished the stop bar on the Yankee taxiway to allow the aircraft to pass.
- The aircraft was authorised to cross the runway and it called back on taxiway Charlie, runway cleared.
- The passage of the aircraft was detected by the system and the Yankee stop bar lit up again automatically.
- The passage of the aircraft was detected by the system on taxiway Charlie.
- The controller then expressly authorised Speedwings 554 for Category II holding point runway 23. **"Call back at CATII holding point runway 23"**
- The pilot acknowledged the authorisation. **"We will call back at holding point CATII for 23"**

- The pilot informed the controller of his position at Bravo. "**We are arriving at Bravo, we will be ready for departure**"
- The controller did not acknowledge the aircraft position message.
- The situation preceding the incident appeared as follows: the aircraft LDA9235 was authorised to line up and wait on runway 23; a REGA helicopter was flying over the city towards the runway to fly over the runway and land at its base; the Speedwings 554 aircraft was crossing the runway, in front of the lined-up aircraft, before going to holding point CAT II 23; a Proteus company aircraft flight 4051 was requesting start-up.
- The Lauda Air aircraft received authorisation to take off from the beginning of runway 23 at 20:44:50 UTC.
- The Speedwings 554 aircraft received the authorisation to line up at 20:45:12 UTC.
- According to the recordings of the Electrical Service, the ALFA stop bar at the beginning of the runway was not extinguished by the controller at the time of the authorisation for the aircraft to line up.
- According to the recordings of the Electrical Service, the BRAVO stop bar was illuminated at the time of the passage of the aircraft.
- The passage of the aircraft to the BRAVO taxiway was detected by the system.
- The SPW 554 aircraft announced its take-off at 20:46:47 seconds.
- The distance between the beginning of runway 23 and the Bravo intersection is 1100 metres.
- The pilot of SPW 554 did not report the incident on the frequency and did not submit an ATIR by radio.
- The pilot of Lauda Air 9235 made no remarks on the frequency.
- The controller drew up a detailed written and signed report.
- The pilot wrote a letter to the Civil Aviation Office. This too was a detailed written and signed report.

ANALYSIS

The incident between the Challenger aircraft scheduled flight LDA9235 and the Citation 550 aircraft non-scheduled commercial flight SPW554 took place on the ground, at the intersection of runway 23 and the Bravo taxiway, about 1000 metres from the beginning of runway 23 at Geneva, at night.

Visibility, degraded because of banks of fog on the ground, provided a runway visual range (RVR) of 1500 metres on the first third of the runway and 400 metres on the second third.

CATII had been operational for a short time before the incident, which implies the implementation of the special procedures inherent in its use; thus the red stop bars prohibiting access to the runway from all taxiways were activated.

Only the aerodrome surface detection radar (ASDE) could detect the estimated position of the aircraft.

The aircraft were not visible to the secondary radar, given that they were both on the ground. (A system cancels the secondary radar responses on the ground in order to avoid image saturation at the centre of the controller's display screen).

The ASDE radar recordings were not sufficiently accurate either in terms of time or in terms of image definition to be able to estimate the minimum distances between the two aircraft at the time of the incident.

The pilot of the Citation wished to depart from taxiway Bravo at the time of his taxiing request from the North area to the Yankee taxiway, before crossing the runway. The controller did not take up this wish and did not authorise it in this sense. Although the controller used the term "d'accord" (OK) in his reply, the pilot's repeat of the message does not mention this.

In view of the complexity and volume of traffic at this time, this wish was of little importance in relation to the controller's priorities.

The controller was insistently occupied by the helicopter, its position and its flight conditions, which was travelling back to its base. When this helicopter flew over the runway, the controller again reported to it the Speedwings aircraft which was crossing the runway from the Yankee taxiway to the Charlie taxiway. The controller, not having heard the message from the helicopter when it reported it had landed, was worried several times about its position and called it.

It may have been the delayed departure time imposed on the Lauda Air aircraft, which had been at the holding position on runway 23 for 5 minutes, which clouded the controller's attention.

It was then that the pilot of the Speedwings aircraft announced "we are arriving at BRAVO", ready for departure, adding without a break that the helicopter had reported that it was on the ground. This message could be interpreted as the report made by the pilot of his position across the BRAVO taxiway.

The controller probably gave his entire attention to the report on the helicopter's position rather than that of the aircraft which was calling him. He even asked for confirmation that the helicopter was in fact on the ground.

Without waiting, he authorised the Lauda Air aircraft to take off. Considering that the Citation was at holding point CAT II runway 23, according to the authorisation he had given it, he authorised it to line up some twenty seconds after giving the authorisation to take off to the Lauda Air aircraft. This time interval is clearly too short to line up an aircraft from an intersection in the case of a departure from the beginning of runway 23 but it is normal from holding position CAT II 23.

For some unexplained reason, the controller did not extinguish the stop bar for the holding point CAT II runway 23 to allow the aircraft to pass.

At this time, the pilot of the Speedwings aircraft stated that he realised that he had neither seen nor heard the aircraft take off and taxied slowly towards the runway to line up, going through the stop bars of the Bravo taxiway, which were illuminated.

It seems that the Speedwings pilot did not notice it or judged the authorisation to line up to take priority. This state of fact remains unexplained.

In all probability, the Citation pilot was convinced that the controller was aware of his intentions to use Bravo taxiway for departure, since he had requested this of him at the time of his initial taxiing. It seems that he was no less convinced that the

controller was authorising him to do so, even tacitly. This, therefore, was a misunderstanding.

At the time of the incident, visibility was sufficient for the pilot to notice the aircraft in rotation phase on the runway, level with his position on the taxiway. It has not been possible to establish the distance between the two aircraft but this was clearly insufficient.

By chance, the reflex action of the pilot of the Speedwings aircraft, delaying lining-up, certainly avoided an accident.

The fact that the pilot of aircraft LDA9235 made no comment on the frequency is certainly due to the fact that he saw nothing.

CAUSE

The incident is due to the fact that the aerodrome controller authorised the Citation to line up from Taxiway BRAVO during the take-off phase of the Challenger LDA 9235, in poor visibility, believing that the Citation was behind the Challenger, at the beginning of runway 23.

Factors affecting the progress of the incident:

- Use by the aerodrome controller of imprecise phraseology.
- The passage of the Citation aircraft, in spite of the fact that the stop bars were illuminated.

Measure taken following the Lauda Air 9235 and HB-VLQ incident

Following point No. 17 of the findings, a correction of the recording time of the lighting commands was requested by the investigator and actioned on 17 January by the Electrical Service. It is now synchronised with that of the ATC recordings.

SAFETY RECOMMENDATIONS

Take-offs from intersections should be forbidden during CAT II/III.

It is recommended to use only the English phraseology for transmissions to allow all crews involved to understand the evolution of the situation.

It is recommended to equip the control towers with an acoustic and visual alarm in the event of an illicit penetration onto the runway.

It is recommended to install modern Surface Movement Guidance and Control Systems.

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

Investigation into the **incident** that occurred on **November 19th 1999**

- Subject of transcript: **LDA9235 / SPW554**
- Centre concerned: Geneva
- Designation of unit: Tower
- Frequency: 118.7 MHz
- Date and period covered by attached extract: November 19th 1999
20:25 – 20:47 UTC
- Date of transcript: November 16th 1999
- 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, November 16th 1999

M. Simonet



TRANSCRIPT SHEET

Abbreviations

TWR - Geneva Tower

9235 - Lauda 9235	CRJ1	IFR flight	LSGG - LOWW
554 - Speedwing 554	C550	IFR flight	LSGG - GMAD
1242 - Air France 1242	B735	IFR flight	LFPG - LSGG
6931 - Farner 6931	F27	IFR flight	LSGG - LFSB
15 - REGA 15	AS50	VFR flight	LSZZ - LSGG
4051 - Proteus 4051	D328	IFR flight	LSGG - LFMH
739N - Crossair 739N	SB20	IFR flight	LFML - LSGG

GED/ 25/03/2002

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>
<u>Frequency 118.7 MHz: Geneva Tower, concerning LDA9235 and SPW554 only</u>				
TWR	9235	20:25: 32	Bonsoir Lauda niner two three five, stand two three, information Foxtrott, we should be ????? in three minutes, request start up please.	unreadable
9235	TWR	41	Roger Lauda nine two three five, call you back.	
TWR	9235	43	XXXXX.	noise of microphone meaning "roger" TWR in contact with: - CRX849
TWR	554	58	Genève Sol de Speedwing cinq cent cinquante-quatre, bonsoir.	
554	TWR	20:26: 01	Bonsoir.	
TWR	554	03	Mise en route, s'il vous plaît.	
554	TWR	04	Je vous rappelle.	TWR in contact with: - EZS909 - CRX849 - SAB38K - CRX479
9235	TWR	20:27: 02	Lauda nine two three five cleared to start, clearance ...	
TWR	9235	06	Go ahead	
9235		07	... To Vienna, KONIL 1 Juliett Departure, squawk five seven six one.	
TWR	9235	14	Cleared to start, to Vienna, KONIL 1 Juliett, five seven six one, Lauda niner two three five.	
9235	TWR	21	Roger, taxi on one two one seven five, good bye.	
TWR	9235	24	?????	unreadable TWR in contact with: EZS909 BCS1006 SWR838R
554	TWR	20:28: 04	Speedwing cinq cinq quatre peut mettre en route pour votre destination, route de départ ARGIS 2 Alfa, transponder cinquante-sept trente-six.	

Signature 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	554	20:28: 13	Autorisé à mettre en route via ARGIS 2 Alfa et cinquante-sept trente-six, cinq cent cinquante-quatre.	
554	TWR	17	Vous êtes parqué au CAG ?	
TWR	554	18	Affirmatif.	

TWR in contact with:

- BAW92GG
- CRX479
- SWR838R
- SVW101
- REGA15
- BAW92GG
- SWR945G
- SWR838R
- SVW101
- DLH5369
- NTR34J
- BAW92GG
- SAB38K
- BAW93GG
- SWR945G
- BCS1006
- SAB38K
- DLH5369
- REGA15
- SAB38K
- FAT6931
- AFR1242
- DLH5369
- SWR945G
- FAT6931
- DLH5369
- AFR1242
- REGA15
- BCA1006
- FAT6931
- REGA15

From now on frequency 118.7 MHz, all traffic

TWR	554	20:37: 49	Speedwing cinq cent cinquante-quatre on est prêt pour rouler.
554	TWR	56	Speedwing cinq cent cinquante-quatre roulez point d'attente catégorie deux pour la piste vingt-trois sur la Yankee.
TWR	554	20:38: 03	Compris, on roule pour la Yankee, on aimerait un départ à partir d'Bravo.
554	TWR	07	D'accord, rappelez au point d'attente cat. deux.
TWR	554	09	On rappelle au point d'attente cat. deux.

Signature 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>
1242	TWR	20:38: 21	Air France douze quarante-deux, vous avez libéré la piste ?	
TWR	1242	24	Oui, Air France douze quarante-deux la piste est libérée.	
1242	TWR	27	D'accord, attendez sur la voie d'accès, appelez la..., l'Apron, cent vingt et un soixante-quinze, au revoir.	
TWR	1242	31	Qu'on maintient, et l'Apron, cent vingt et un soixante-quinze, Air France douze quarante-deux, au revoir.	
6931	TWR	39	Farnier six nine three one cleared for take-off, wind two three zero degrees, three knots.	
TWR	6931	44	Farnier six niner three one is cleared for take-off.	
TWR	15	47	REGA quinze, finale à l'hôpital, je rappelle au décollage.	
15	TWR	49	Oui, d'accord.	
TWR	9235	20:39: 14	Bonsoir, Lauda nine two three five.	
9235	TWR	17	Lauda nine two three five bonsoir, report holding cat. two.	
TWR	9235	21	Wilco.	
6931	TWR	47	Farnier six nine three one, Departure, one two one three, good-bye.	
TWR	6931	51	One two one three, bye-bye.	
TWR	9235	55	Lauda nine two three five cat. two holding.	
9235	TWR	20:40: 01	Roger Lauda niner two three five, line up two three and wait.	
TWR	9235	06	Line up and wait two three, Lauda nine two three five.	
TWR	15	43	REGA quinze au départ de l'hôpital pour poser à la base.	
15	TWR	47	REGA quinze, répétez ?	

Signature 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	15	20:40: 49	Au départ de l'hôpital, et je rappelle PALEXPO avant d'traverser.	
15	TWR	52	Oui, d'accord.	
TWR	554	20:41: 23	Cinq cent cinquante-quatre, on est sur Yankee pour traverser.	
554	TWR	27	Cinq cent cinquante-quatre vous pouvez traverser la piste, rappelez sur Charlie.	
TWR	554	32	On traverse, on vous rappelle sur Charlie.	
15	TWR	20:42: 02	REGA quinze, vous avez toujours la piste en vue ?	
TWR	15	07	REGA quinze on est à PALEXPO.	
15	TWR	09	Vous avez la piste en vue ?	
TWR	15	11	Oui, on a la piste en vue, REGA quinze.	
15	TWR	14	Bien, autorisé à tra., à traverser les axes et atterrir au ... CAG, le vent est calme, rappelez au sol.	
TWR	15	20	J'rappelle au sol, REGA quinze, merci.	
15	TWR	25	Pour info, on a un avion qui traverse de.. Yankee à Charlie.	
TWR	15	30	Okay REGA quinze, merci.	
TWR	554	34	On a libéré, on est sur Charlie, XXXXX.	Difficult to understand: "cinq cent cinquante-quatre"
554	TWR	36	Compris, rappelez au point d'attente cat. deux, piste vingt-trois.	
TWR	554	40	On rappelle au point d'attente cat. deux pour la vingt-trois.	
TWR	15	20:44: 03	REGA quinze au sol.	
15	TWR	12	REGA quinze, vous êtes au sol ?	no answer
TWR	4051	18	Genève bonsoir, Proteus quarante cinquante et un, on est en Roméo dix, avec l'information Fox, pour mettre en route.	
4051	TWR	26	Bonjour, j'vous rappelle.	

Signature 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	4051	20:44: 27	D'accord.	
15	TWR	31	REGA quinze ?	no answer
TWR	554	37	Speedwing cinq cent cinquante-quatre on arrive en Bravo; on serait prêt pour le départ et REGA quinze a essayé d'vous appeler, il était au sol.	
554	TWR	44	Ah il a appelé, d'accord. Il était au sol, confirmez ?	
TWR	554	46	Affirmatif.	
554	TWR	47	D'accord.	
9235	TWR	48	Lauda nine two three five wind calm, cleared for take-off.	
TWR	9235	51	Cleared for take-off two three, Lauda nine two three five, just for information, RVR please ?	
9235	TWR	57	RVR above one five zero zero meters for the third part, and the second part four zero zero meters.	
TWR	9235	20:45: 03	Okay, thank you.	
554	TWR	12	Speedwing cinq cent cinquante-quatre alignez-vous vingt-trois.	
TWR	554	15	On s'aligne vingt-trois cinq cent cinquante-quatre.	
554	TWR	20:46: 12	Speedwing cinq cent cinquante-quatre le vent est calme, autorisé au décollage, la RVR mille quatre cents mètres et.. rappelez en roulant.	
TWR	554	21	Je vous rappelle en roulant. Autorisé au décollage, cinq cent cinquante-quatre.	
9235	TWR	24	Lauda nine two three five Departure, one two one three, good-bye.	
TWR	9235	28	Salut.	
4051	TWR	30	Proteus quarante cinquante et un, vous pouvez mettre en route.	
TWR	4051	33	On met en route, quarante cinquante et un.	

Signature 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>
4051	TWR	20:46: 34	Autorisé à destination, route de départ ARGIS deux Alfa, transponder cinquante-sept zéro un.	
TWR	4051	39	Cinquante-sept zéro un, ARGIS deux Alfa, Proteus quarante cinquante et un.	
4051	TWR	43	Oui, et pour rouler, cent vingt et un soixante-quinze, au revoir.	
TWR	4051	46	Soixante-quinze, au revoir.	
TWR	554	47	Cinq cent cinquante-quatre, on décolle.	
554	TWR	49	Oui.	
TWR	739N	51	Genève Tower bonsoir, Crossair seven three nine November, established on localizer one, heu correction: two three.	
739N	TWR	20:47: 00	Crossair seven three nine November roger, number one.	
TWR	739N	02	Number one, Crossair seven three nine November.	
554	TWR	23	Speedwing cinq cent cinquante-quatre appelez le Départ, cent vingt et un trois, au revoir.	
TWR	554	27	Cent vingt et un trois, au revoir.	

25/03/2002 / GED/sm
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Signature of person in charge:

