

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

concerning the incident (Airprox)

between DLH3703 and KLM1931

on 26 April 2004

at Geneva Airport

FINAL REPORT

AIR TRAFFIC INCIDENT REPORT (ATIR)

AIRPROX (NEAR MISS)

THIS REPORT SERVES EXCLUSIVELY TO PREVENT ACCIDENTS. THE LEGAL ASSESSMENT OF ACCIDENT/INCIDENT CAUSES AND CIRCUMSTANCES IS NO CONCERN OF THE INCIDENT INVESTIGATION
(ART. 24 OF THE AIR NAVIGATION LAW)

PLACE/DATE/TIME Geneva airport, 26 April 2004
13:15 UTC

AIRCRAFT DLH 3703, ATR42-500
Flight Geneva – Düsseldorf

KLM1931, Boeing 737-300, PH-BDB
Flight Amsterdam – Geneva

ATC UNIT Terminal Control, Geneva TWR, Aerodrome Control

CONTROLLER Aerodrome Control Air Traffic Controller
TWR/APP

AIRSPACE D

HISTORY

On Monday 26 April 2004, at 13:09, aircraft DLH3703, type ATR45, taxied onto taxiway GOLF for a departure from runway 05 and called on the Geneva Control Tower frequency.

At 13:10 UTC, aircraft KLM1931, type Boeing 737, called the Control Tower and reported that it was established on final approach on the ILS of runway 05.

An aircraft type Avro RJ85, flight SWR607N, was on short final approach on the ILS of runway 05 and was in the landing phase.

The aerodrome controller asked the pilot of aircraft DLH3703 if he was ready for an immediate departure, to which the pilot responded in the negative.

The traffic load being handled by the aerodrome controller was heavy. Separation between aircraft flying according visual flight rules (VFR) in the control area obliged him to transmit essential traffic information.

At 13:11, the aerodrome controller cleared aircraft SWR607N to land. At this moment, the pilot of aircraft DLH3703 stated that he was ready for take-off.

At 13:12, the aerodrome controller informed the pilot of aircraft DLH3703 that he could expect a departure behind the second landing aircraft and instructed him to hold short of the runway.

The second aircraft which the aerodrome controller indicated was landing was flight KLM1931, the Boeing 737 which was then 6.5 NM from the threshold of runway 05.

At 13:13, aircraft SWR607N landed and, during the aircraft's deceleration phase before it vacated the runway, the aerodrome controller did not notice that aircraft DLH3703 had made an incursion onto runway 05 and was lining up for take-off.

For more than a minute, the aerodrome controller was busy handling VFR traffic in the control area and, at 13:14, cleared the pilot of aircraft KLM1931 to land.

The pilot of aircraft KLM1931 noticed aircraft DLH3703 which was on the runway and was expecting it to take off immediately. At about 300 FT above ground level, as the aircraft was still in the holding position on the runway, he decided to go around.

About 10 seconds after hearing the landing clearance given to aircraft KLM1931, the pilot of aircraft DLH3703 called the Control Tower and confirmed that he was on the runway.

The aerodrome controller's reaction was virtually immediate; he instructed the pilot of aircraft KLM1931 to go around.

The aircraft initiated the go around when it was about 0.5 NM at an altitude of 1700 FT.

The aerodrome controller informed the pilot of aircraft DLH3703 that he would submit an incident report.

FINDINGS

- Weather: Geneva, bulletin at 12:50 UTC
Wind 040 degrees 7 knots, variable between 010 and 080 degrees
Visibility: 10 KM
Cloud: few at 5000 FT
Temperature: + 15° C
QNH 1016 hPa
NOSIG (no significant change).
- Runway in operation: 05.
- Grass runway closed to VFR traffic.
- The aerodrome controller was in possession of a valid licence.
- All radio communications on the TWR frequency 118.7 MHz between the pilots of flights KLM1931, DLH3703 and the aerodrome controller took place in English.
- 11 aircraft were controlled on frequency 118.7 MHz over an interval of 7 minutes and 22 seconds; 3 departures, 5 arrivals and 3 VFR.
- At 13:09:55, the pilot of aircraft DLH3703 called the Control Tower on frequency 118.7 MHz, reporting that he would call back when ready to take off.
- At 13:10:43, the pilot of aircraft KLM1931 called the Control Tower on frequency 118.7 MHz, reporting that he was established on the runway 05 ILS.
- At 13:10:51, the aerodrome controller asked the pilot of aircraft DLH3703 if he was ready for an immediate departure.
- At 13:10:54, the pilot answered in the negative.
- At 13:11:24, the aerodrome controller cleared aircraft SWR607N, an Avro RJ85, to land.
- At 13:11:58, the pilot of aircraft DLH3703 called the Control Tower, reporting that he was ready to take off.
- At 13:12:30, the aerodrome controller acknowledged receipt of the message and instructed the pilot of aircraft DLH3703 to hold short of the runway, informing him that he could expect to take off after the second landing aircraft.
- The aerodrome controller did not issue a conditional departure clearance to the pilot of aircraft DLH3703.
- At 13:12:33, the pilot of aircraft DLH3703 acknowledged receipt of the message using the term "*ROGER*".
- No conditional clearance for line-up was delivered to the pilot of aircraft DLH3703
- At 13:13:09, according to the radar recording, aircraft SWR607N crossed the threshold of runway 05.
- According to the report of the eurowings company, the pilot of aircraft DLH3703 declared that he had been cleared by the Control Tower to line up behind the traffic following the landing. He had lined up behind the Avro RJ85 after it cleared the threshold of runway 05. He then heard the Control Tower issue landing clearance to aircraft KLM 1931 and immediately informed the Control Tower that he was on the runway in take-off position.

All times indicated in this report are in UTC format

- Between 13:13:11 and 13:14:15, the aerodrome controller handled 15 bilateral radio communications, mainly with aircraft under VFR conditions.
- At 13:14:15, the aerodrome controller cleared aircraft KLM1931 to land.
- Aircraft KLM1931 was at a distance of 1.5 NM and an altitude of 2000FT.
- At 13:14:20, the pilot of aircraft KLM1931 read back this clearance.
- At 13:14:22, the aerodrome controller handed over aircraft SWR607N to the APRON frequency 121.75 MHz.
- At 13:14:30, the pilot of aircraft DLH3703 stated that he was on the runway.
- At 13:14:36, the aerodrome controller instructed the pilot of aircraft KLM1931 to go around and climb to an altitude of 7000 FT in the direction of Saint-Prex VOR, without giving him information about the traffic on the runway.
- At 13:14:42, the pilot of aircraft KLM1931 read back this message at a distance of 0.75 NM from the touch-down point on runway 05.
- According to his report, the pilot of aircraft KLM1931 declared that he had been cleared to land when he was at about 1000 FT on the ILS, that he had observed an aircraft lining up on the runway, expecting it to take off immediately. At a height of about 300 FT he decided to go around, given that the aircraft was still in the holding position. The Control Tower instructed him to go around at the same time.

ANALYSIS

Aircraft DLH 3703:

The pilot of the aircraft had received the following clearance: "*hold short, expect departure behind the second landing traffic*" The pilot acknowledged receipt of the message by saying "*roger, DLH3703*".

The aerodrome controller therefore instructed the pilot of aircraft DLH3703 to hold short of the runway and informed him that he could expect to depart behind the second landing aircraft.

The aerodrome controller did not issue a conditional departure clearance to the pilot of aircraft DLH3703. However, the instruction to hold short of the runway must always be read back by the pilot. The term "*roger*" is insufficient and does not constitute a read-back.

According to the pilot's report, he understood the clearance in the following way: "hold short of runway and line up on runway 05 behind next landing". This conditional clearance should have been read back; this did not happen. The crew therefore obviously did not understand the clearance and did not concern themselves with finding out if it was correct.

When the aircraft made its unauthorised incursion onto the runway, aircraft KLM1931 was at a distance of between 3 and 4 NM on its final ILS approach at an altitude of about 2800 FT. Since the visibility conditions were good, the crew of DLH3703 should have ensured visually that the final approach was free while lining up on the runway. Moreover, the TCAS is a good means of detecting any traffic on approach. Apparently, none of these means was used to avoid this incursion.

The crew became aware of the problem only when the Control Tower issued the landing clearance to aircraft KLM1931. They reacted immediately by drawing the attention of the Control Tower, surprised that the latter was issuing such a clearance while the runway was occupied.

Aircraft KLM 1931:

When aircraft DLH3703 made its unauthorised entry onto runway 05, aircraft KLM1931 was at a distance of between 3 and 4 NM on its final ILS approach at an altitude of about 2800 FT. The crew of KLM1931 might therefore have thought it was an immediate departure, even though it had not received any traffic information from the Control Tower.

The pilot stated that he had been cleared to land when he was at about 1000 FT on the ILS. According to the radar recordings, the aircraft was 1.5 NM distant at an altitude of 2000 FT. It is surprising that the pilot did not inform the Control Tower at this time that he was not able to comply with the landing clearance because the runway was obstructed by an aircraft.

Again according to the pilot's statements, it was at about 300 FT above ground level that the crew of KLM1931 decided to go around, given that the aircraft was still in the holding position on the runway. He would have received the go-around instruction from the Control Tower at the same time.

The aerodrome controller:

The traffic load at the time of the incident was heavy. Between the landing of aircraft SWR607N, behind which aircraft DLH3703 lined up without clearance, and the landing clearance given to aircraft KLM1931, the aerodrome controller's attention was distracted by a VFR conflict which required radar observation (head down).

The aerodrome controller did not visually monitor the application of the clearance issued to aircraft DLH3703 and gave a landing clearance without confirming visually that the runway was clear.

Since the instruction to hold short of the runway had not been read back, the controller had not received any assurance that the pilot of aircraft DLH3703 was going to carry out this instruction. From that point onward, the risk of an incursion became possible.

The aerodrome controller became aware of the problem only at the last moment, when the pilot of aircraft DLH3703 informed him that he was on the runway (head up).

After becoming aware of the conflict, he issued the go-around instruction.

According to his statements, the aerodrome controller would have appreciated assistance from a TWR coordinator. His presence would have provided one means of detecting the error.

The TWR control unit consists of 3 control positions, ADC, TRC and GND.

During periods of heavy traffic loads, the aerodrome controller is assisted by the TWR coordinator (TRC), whose tasks are clearly defined in the Geneva ATM manual. Apart from assisting the aerodrome controller, his tasks consist, among others, of ensuring coordinations, transmitting landing, departure and go-around times and managing the auxiliary control screens and the control strips.

Since the concept of heavy traffic load is interpreted in different ways, the TRC control station is not systematically occupied.

CAUSE

The incident is due to the following facts:

- the crew of aircraft DLH3703 did not read back the clearance which they did not understand,
- the aerodrome controller did not ensure that the clearance he had issued had been understood,
- a landing clearance was issued without a prior visual check of the runway by the aerodrome controller.

Factor affecting the evolution of the incident:

Absence of assistance for the aerodrome controller in a situation of heavy traffic load.

SAFETY RECOMMENDATION NO. 358 - 359**Safety deficit**

The Geneva airport aerodrome controller allowed a commercial aircraft to land without noticing that the runway was occupied. The crew of the aircraft occupying the runway did not read back and did not understand the instruction from the control tower.

Safety recommendation

358. The Federal Office of Civil Aviation should require that all intersections and ends of runways be equipped with stop bars and that these should be activated during all meteorological conditions during the airport's hours of activity.

359. The Federal Office of Civil Aviation should study the possibility of introducing courses for improving English phraseology during the refresher courses required by JAR standards.

Berne, 12 May 2005

Aircraft Accident Investigation Bureau

THIS REPORT SERVES EXCLUSIVELY TO PREVENT ACCIDENTS. THE LEGAL ASSESSMENT OF ACCIDENT/INCIDENT CAUSES AND CIRCUMSTANCES IS NO CONCERN OF THE INCIDENT INVESTIGATION
(ART. 24 OF THE AIR NAVIGATION LAW)

All times indicated in this report are in UTC format

**TRANSCRIPT OF TELEPHONY
OR RADIOTELEPHONY COMMUNICATION TAPE-RECORDINGS**

Investigation into the **incident** that occurred on **26.04.2004**

- Subject of transcript: **DLH3703 / KLM1931**

- Centre concerned: Swiss Radar Area West

- Designation of unit: Terminal Control, Geneva Tower

- Frequency / Channel: 118.7 MHz

- Date and period (UTC) covered by attached extract: 26.04.2004
13:09 - 13:17 UTC

- Date of transcript: 12 May 2004

- Name of official in charge of transcription: Didier JAVET

- Certificate by official in charge of transcription:

I hereby certify:

- That the accompanying transcript of the telephony or radiotelephony communication tape-recordings, retained at the present time in the premises of the Analysis Department, has been made, 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, 12 May 2004


Didier JAVET

Abbreviations

<u>Sector</u>	<u>Designation of sector</u>
TWR	- Terminal Control, Geneva Tower

<u>Aircraft</u>	-	<u>Callsign</u>	<u>Type of acft</u>	<u>Flight rules</u>	<u>ADEP</u>	-	<u>ADES</u>
3703	-	Lufthansa 3703	AT45	IFR	LSGG	-	EDDL
DCY	-	D – IPSY	BE20	IFR	EDSB	-	LSGG
1931	-	KLM 1931	B733	IFR	EHAM	-	LSGG
607N	-	Swiss 607N	RJ85	IFR	LFPG	-	LSGG
FOY	-	F – GTOY	AS50	VFR	LFLI	-	????
986	-	Topswiss 986	A319	IFR	EGNX	-	LSGG
HHW	-	HB – CHW	C172	VFR	????	-	LSGG
HNJ	-	HB - ?NJ	????	VFR	????	-	????
9KW	-	Lufthansa 9KW	B735	IFR	LSGG	-	EDDF
340P	-	Sky Share 340P	H25B	IFR	EGKB	-	LSGG
FGT	-	F - GGGT	C550	IFR	LSGG	-	LFRD

OGED / 12 May 2004

TRANSCRIPT SHEET

Occurrence: DLH3703 / KLM1931 of 26.04.2004



To Col.1	From Col.2	Time Col.3	Communications Col.4	Observations Col.5
-------------	---------------	---------------	-------------------------	-----------------------

Frequency: 118.7 MHz, Geneva Tower

TWR	3703	13:09:55	Tower, good evening, Lufthansa three seven zero three.	
3703	TWR	58	Lufthansa three seven zero three, good afternoon, report ready.	
TWR	3703	13:10:01	Call you ready, Lufthansa three seven zero three.	
DCY	TWR	16	Sierra Yankee, Ground, one two one decimal six seven, tschüss.	
TWR	DCY	20	XXXXX, bye-bye, Delta Sierra Yankee.	Could be "Six one two seven"
TWR	1931	43	<i>Tower, good day, KLM one nine three one, established on the ILS zero five.</i>	
1931	TWR	47	<i>KLM one nine three one, good afternoon, roger.</i>	
3703	TWR	51	<i>Lufthansa three seven zero three, ready for rapid departure?</i>	
TWR	3703	54	<i>Heu... negative, Lufthansa three seven zero three.</i>	
607N	TWR	13:11:24	Swiss six zero seven November, the wind zero five zero degrees, three knots, runway zero five, cleared to land.	
TWR	607N	30	Cleared to land zero five, Swiss six zero seven November.	
TWR	FOY	38	Genève d'hélicoptère Fox Oscar Yankee, bonjour.	
FOY	TWR	42	Un instant, je vous rappelle.	
TWR	3703	58	Ready now, Lufthansa three seven zero three.	
3703	TWR	13:12:21	Station calling Geneva, say again.	
TWR	3703	27	Lufthansa three seven zero three, fully ready now.	
3703	TWR	30	Roger, hold short, expect Departure behind the second landing traffic.	
TWR	3703	33	Roger, Lufthansa three seven zero three.	

Signature of person
in charge of transcription :

TRANSCRIPT SHEET

Occurrence: DLH3703 / KLM1931 of 26.04.2004



To Col.1	From Col.2	Time Col.3	Communications Col.4	Observations Col.5
FOY	TWR	13:12:35	Et l'hélicoptère en français qui appelait la Tour, vous pouvez y aller?	
TWR	FOY	37	Oui, bonjour..., un Ecureuil, Fox Golf Tango Oscar Yankee, on vient de décoller d'Annemasse, on aimerait faire un transit par Sierra Echo et... Echo si c'était possible, à trois mille pieds QNH.	
FOY	TWR	48	Tout en restant en dehors de la CTR?	
TWR	FOY	51	Heu... on pourrait, on aimerait passer par les points Sierra Echo et Echo si c'était possible.	
FOY	TWR	56	Oscar Yankee, alors c'est approuvé, à maximum trois mille cinq cents pieds, Sierra Echo, rappelez Sierra Echo.	
TWR	FOY	13:13:03	On rappelle Sierra Echo, maximum trois milles cinq cents pieds..., Oscar Yankee.	
TWR	986	07	Genève Tour, bonjour, Topswiss nine eight six, established on the ILS zero five.	
986	TWR	11	Topswiss niner eight six, bonjour, report three miles.	
TWR	986	14	Report three miles, nine eight six.	
TWR	HHW	21	Geneva Tower, Hotel Bravo Charlie Hotel Whiskey.	
HHW	TWR	24	Hotel Bravo Charlie Hotel Whiskey, good afternoon.	
TWR	HHW	27	Hotel Hotel Whiskey..., approaching Echo, three thousand five hundred feet, for landing, information Alfa.	
HHW	TWR	32	Hotel Hotel Whiskey, roger, report... Sierra Echo, runway zero five concrete, QNH one zero one six.	
TWR	HHW	39	Report Sierra Echo..., QNH one zero one six..., runway zero five concrete, Hotel Hotel Whiskey.	
HHW	TWR	47	Correct, look out for a traffic, single engine aircraft..., opposite direction, approaching Echo.	
TWR	HHW	53	XXXXX.	Noise of microphone
HNJ	TWR	56	Hotel November Juliett, regarde pour un trafic mono-moteur qui s'approche d'Echo en direction opposée.	

Signature of person in charge of transcription :

TRANSCRIPT SHEET

Occurrence: DLH3703 / KLM1931 of 26.04.2004

To Col.1	From Col.2	Time Col.3	Communications Col.4	Observations Col.5
TWR	HNJ	13:14:00	Hotel November Juliett, compris, je descends vers trois mille pieds et j'arrive à Echo.	
HNJ	TWR	05	Reçu, tu procèdes November?	
TWR	HNJ	07	Je... fais route, affirm, par Gland, Novembre ... en dessous de la TMA.	
HNJ	TWR	11	Reçu, rappelle November.	
TWR	HNJ	13	Hotel November Juliett, rappelle November.	
1931	TWR	15	<i>KLM one nine three one, the wind zero four zero degrees, six knots, runway zero five, cleared to land.</i>	
TWR	1931	20	<i>Cleared to land zero five, KLM one nine three one.</i>	
607N	TWR	22	Swiss six zero seven November, one two one seven five, au revoir.	No reply
TWR	9KW	26	Tower, bonjour, Lufthansa nine Kilo Whiskey.	No reply
TWR	3703	30	Heu... Lufthansa three seven zero three, just to confirm, we are on the runway.	
1931	TWR	36	<i>KLM one nine three one, go around, I say again, go around, proceed Saint-Prex, climb to seven thousand feet, QNH one zero one six.</i>	
TWR	1931	42	<i>Yes, go around, ?????? climb to seven thousand, KLM one nine three one.</i>	Unreadable
3703	TWR	47	Lufthansa three seven zero three, you were never allowed to line up!	
TWR	3703	54	We had a line up clearance, Lufthansa three seven zero three.	
3703	TWR	57	You did not, hold position.	
TWR	3703	13:15:00	We were cleared to line up behind the landing, heu... Swiss.	
3703	TWR	04	Negative, I said "expect departure behind second landing".	
TWR	3703	11	Okay, we'll check that, Lufthansa three seven zero three.	

TRANSCRIPT SHEET

Occurrence: DLH3703 / KLM1931 of 26.04.2004



To Col.1	From Col.2	Time Col.3	Communications Col.4	Observations Col.5
3703	TWR	13:15:14	So will I.	
TWR	340P	24	Tower, bonjour, Sky Share three four zero Papa, twelve miles final.	No reply
TWR	FGT	35	Le.....	
TWR	FGT	38	Genève Tour, Fox trois fois Golf Tango, bonjour.	
FGT	TWR	42	Fox trois fois Golf Tango, bonjour, je vous rappelle.	
TWR	FGT	42	Reçu, Golf Tango.	
1931	TWR	53	<i>KLM one nine three one, Departure, Arrival, one three one, correction, one three six decimal two five, goodbye.</i>	
TWR	1931	58	<i>One three six two five, bye-bye, KLM one nine three one.</i>	
3703	TWR	13:16:03	Lufthansa three seven zero three, the wind zero five zero degrees, four knots, runway zero five, cleared take-off.	
TWR	3703	07	Cleared for take-off zero five, Lufthansa three seven zero three.	
FOY	TWR	11	Oscar Yankee, vous restez en dehors de la CTR, procédez Echo.	
TWR	FOY	15	Oui, Oscar Yankee, on part en direction d'Echo.	
TWR	340P	22	Tower, good day, Sky Share three four zero Papa is with you, nine miles final.	
340P	TWR	27	Sky Share three four zero Papa, bonjour, continue approach.	
TWR	986	40	Two miles, Topswiss... nine eight six.	
986	TWR	43	Topswiss niner eight six, the wind zero six zero degrees five knots, runway zero five, clear to land.	
TWR	986	47	Clear to land zero five, Topswiss nine eight six.	
TWR	9KW	52	Tower, bonjour, Lufthansa nine Kilo Whiskey, ready and holding short zero five.	

Signature of person in charge of transcription :

TRANSCRIPT SHEET

Occurrence: DLH3703 / KLM1931 of 26.04.2004

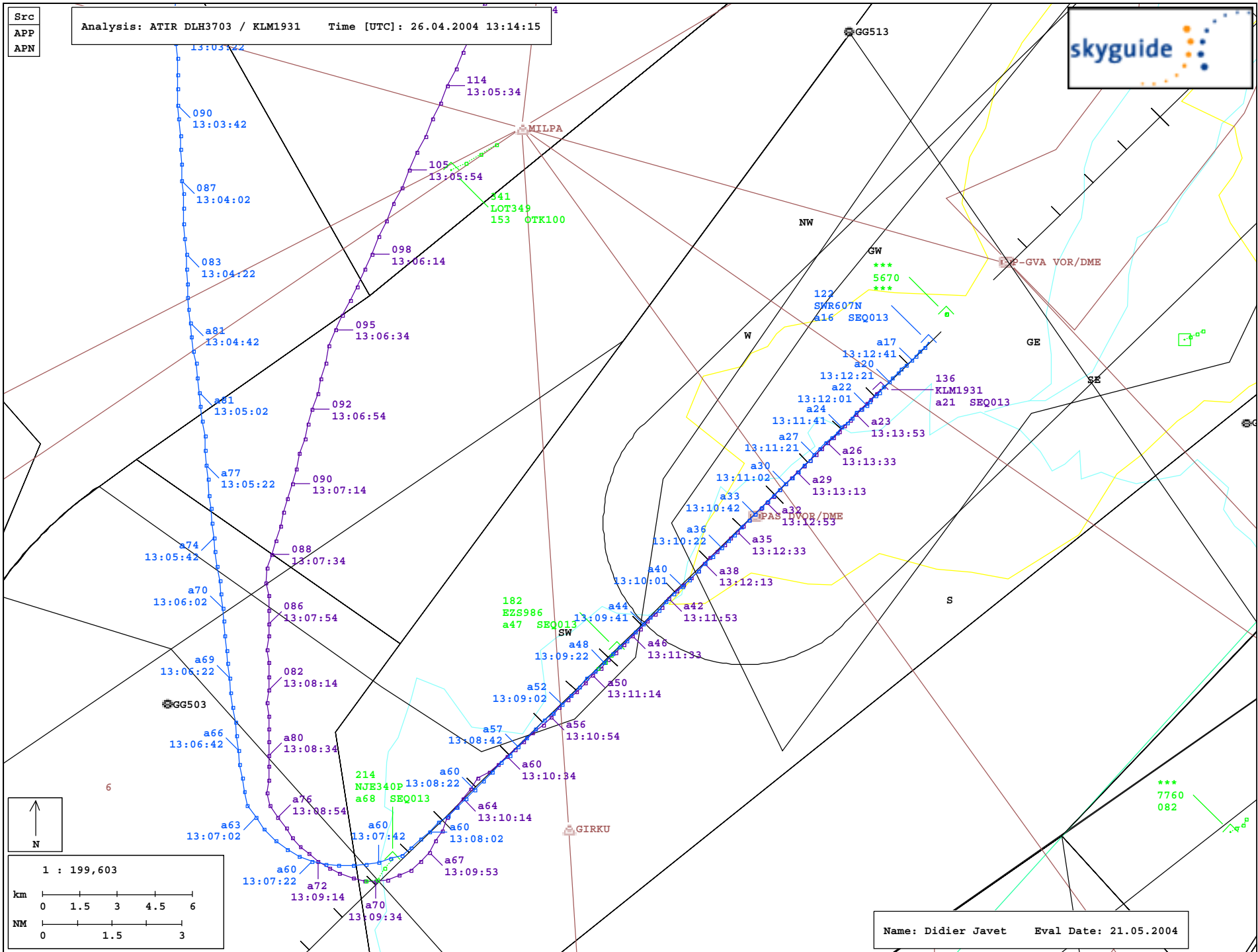


To <u>Col.1</u>	From <u>Col.2</u>	Time <u>Col.3</u>	Communications <u>Col.4</u>	Observations <u>Col.5</u>
9KW	TWR	13:16:58	Lufthansa niner Kilo Whiskey, bonjour, hold short.	
TWR	9KW	13:17:01	Holding short, Lufthansa nine Kilo Whiskey.	
3703	TWR	07	Lufthansa three seven zero three, be advised that we'll have to file a report.	
TWR	3703	12	That's copied.	
3703	TWR	14	Three seven zero three, contact Departure, one two one decimal three, goodbye.	
TWR	3703	17	One two one decimal three, Lufthansa three seven ... heu... zero three and sorry XXXXX.	Could be "again"

Signature of person
in charge of transcription :

Src
APP
APN

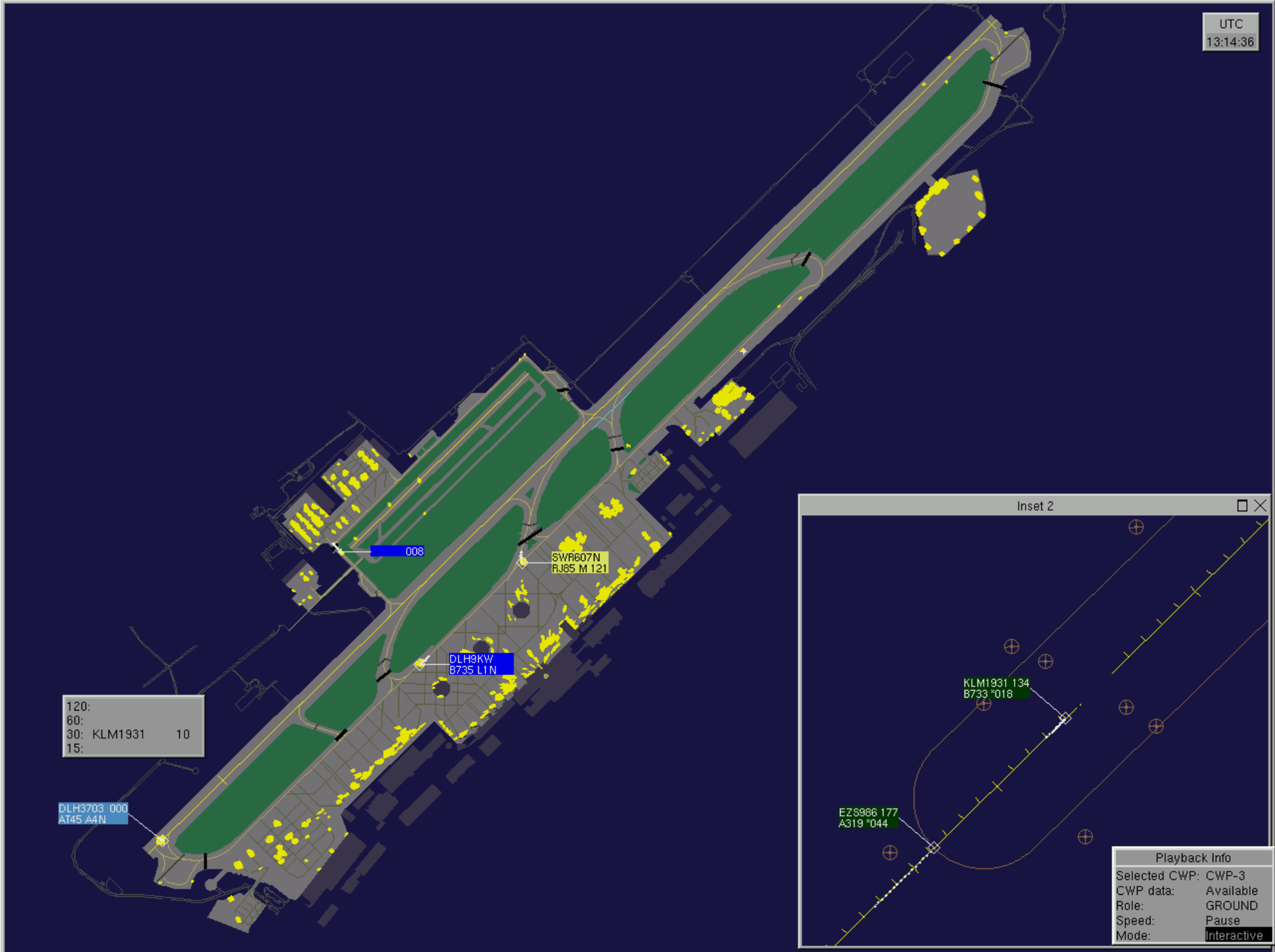
Analysis: ATIR DLH3703 / KLM1931 Time [UTC]: 26.04.2004 13:14:15



Name: Didier Javet Eval Date: 21.05.2004



UTC
13:14:36



120:
60:
30: KLM1931 10
15:

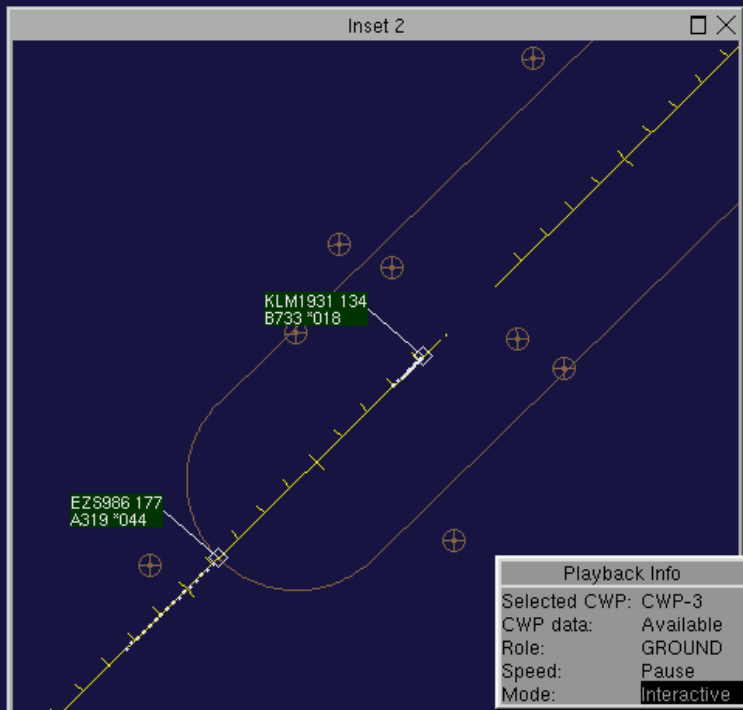
DLH3703 000
AT45 A4N

008

SWR607N
RJ85 M 121

DLH3KW
B735 L1N

Inset 2



KLM1931 134
B733 *018

EZS986 177
A319 *044

Playback Info
Selected CWP: CWP-3
CWP data: Available
Role: GROUND
Speed: Pause
Mode: Interactive