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Aircraft Accident Investigation Bureau AAIB

Final Report No. 1975 by the Aircraft Accident Investigation Bureau

concerning the serious incident (near collision/AIRPROX)
between the Saab 2000 aircraft, registration HB-IZH
operated by Darwin Airline S.A under flight number DWT 501
and the Cessna P210N aircraft, registration HB-CIG

on 29.04.2005

2 NM north-west of Berne-Belp airport

Bundeshaus Nord, CH-3003 Berne

General information on this report

This report contains the AAIB's conclusions on the circumstances and causes of the serious incident which is the subject of the investigation.

In accordance with Annex 13 of the Convention on International Civil Aviation of 7 December 1944 and article 24 of the Federal Air Navigation Law, the sole purpose of the investigation of an aircraft accident or serious incident is to prevent future accidents or serious incidents. The legal assessment of accident/incident causes and circumstances is expressly no concern of the accident investigation. It is therefore not the purpose of this investigation to determine blame or clarify questions of liability.

If this report is used for purposes other than accident prevention, due consideration shall be given to this circumstance.

The German version of this report corresponds to the original and is authoritative.

All times mentioned in this report, unless otherwise indicated, are indicated in universal time coordinated (UTC). At the time of the accident, Central European Summer Time (CEST) applied as standard time (local time – LT) for the region of Switzerland. The relation between LT, CEST and UTC is: $LT = CEST = UTC + 2 \text{ h}$.

For reasons of protection of privacy, the masculine form is used in this report for all natural persons, regardless of their gender.

Final Report

Aircraft

HB-IZH, Saab 2000
Operator: Darwin Airline S.A., Lugano Airport, 6982 Agno, Switzerland
Owner: Darwin Airline S.A., Lugano Airport, 6982 Agno, Switzerland

Scheduled flight DWT 501 from London City Airport (EGLC) to Berne-Belp (LSZB)

Type of operation: IFR

HB-CIG, Cessna P210N
Operator: Groupe de vol à moteur Raffaell'air, Av. Général-Guisan 18, 3960 Sierre, Switzerland
Owner: Groupe de vol à moteur Raffaell'air, Av. Général-Guisan 18, 3960 Sierre, Switzerland

Private flight from Berne-Belp (LSZB) to Ecuwillens (LSGE)

Type of operation: VFR

Crews

DWT 501
CMDR Swiss citizen, born 1974
FO Swiss citizen, born 1975

HB-CIG
CMDR Swiss citizen, born 1942

Location

2 NM north-west of Berne-Belp airport

Date and time

29 April 2005, 10:45 UTC

ATC unit

Berne aerodrome control (Tower – TWR)

Berne approach control (Approach – APP)

Air traffic controllers

TWR / APP trainee Swiss citizen, born 1970

TWR / APP coach Swiss citizen, born 1955

Airspace

D

1 History

On the afternoon of 29 April 2005, the pilot of the Cessna P210N aircraft, registration HB-CIG, made a private flight under visual flight rules (VFR), from Berne to Ecuwillens. According to the pilot's and air traffic controllers' statements, the weather conditions were very good. There was only a light haze which did not affect flying operations. The volume of traffic in Berne was average.

At 10:30:39 UTC, the pilot of HB-CIG called on the 121.025 MHz frequency. He requested a taxi clearance and mentioned that after take-off he would like to make a departure to the right. Berne TWR cleared HB-CIG to taxi to the runway 14 holding point Alpha. A trainee, who was being monitored by a coach, was working in the tower. The trainee was a trained air traffic controller from a regional aerodrome who wished to acquire validation for Berne.

At 10:37:11 UTC, the crew of the Saab 2000 aircraft with the callsign DWT 501, which was on a scheduled flight from London City to Berne, made radio contact with Berne Approach on the 127.325 MHz frequency. They reported that flight DWT 501 was approaching waypoint BELAR and was descending to flight level FL 110. The air traffic controller instructed the crew of DWT 501 to maintain their current heading. He also informed the crew of DWT 501 that they could expect an instrument approach for runway 14. There was an aircraft on approach in front of them, so there was a slight delay. The crew informed ATC that they were ready to make a visual approach for runway 14.

At 10:37:58 UTC, the pilot of aircraft HB-CIG at the taxiway Alpha holding point reported that he was ready for departure. In addition he expressed his intention after take-off to turn right and follow the downwind to reporting point WHISKEY. A departure via reporting point WHISKEY includes a right turn after a take-off from runway 14 and corresponds to the normal procedure. Berne TWR instructed the pilot to wait at his position.

At 10:39:15 UTC, Berne TWR cleared HB-CIG for take-off on runway 14: *"Hotel India Golf, wind calm runway 14, right turn out via Whiskey, cleared for take off"*. The pilot acknowledged this clearance. According to his statement, before take-off he had switched on the transponder with code 7000 in mode A/C. According to the radar recordings, at this time, the Darwin Airline Saab 2000 was 1 NM north-west of Grenchen airport. It was at approximately FL 115 and was descending to FL 90.

According to their statements, the two air traffic controllers monitored the departure of HB-CIG until the beginning of the downwind. They then turned their attention to other duties.

According to the recordings of the La Dôle radar station, situated at the north of Geneva airport, HB-CIG was approaching the approach centre line of runway 14 on an opposing and slightly converging course. It crossed the river Aare twice and finally turned in the direction of reporting point WHISKEY (Annex 1) when over the centre of Berne. The Zurich radar data, which were available to the Berne air traffic controllers on their display (bright display), showed aircraft HB-CIG only after the serious incident.

At 10:39:59 UTC, the crew of flight DWT 501 received clearance to descend to 5000 ft and commence the visual approach on runway 14: *"Darwin five zero one, descend to five thousand feet, the QNH is one zero two one, and cleared visual approach runway one four, report two miles final"*.

At 10:42:48, the crew of flight DWT 501 reported on final approach to runway 14: According to the radar recordings, the Saab 2000 was about 5 NM from the threshold of runway 14. Berne TWR issued DWT 501 landing clearance: *"Darwin five zero one, the wind is one niner zero degrees two knots, runway one four cleared to land"*. The pilot acknowledged the landing clearance.

At 10:43:47 UTC, Berne TWR asked the pilot of aircraft HB-CIG for his position. At 10:43:54 UTC, the pilot of DWT 501 reported a TCAS climb to ATC. At 10:43:57 UTC, the pilot of HB-CIG responded: *"We are closing ah... Whiskey"*.

DWT 501 was at 2800 ft when it complied with the TCAS climb; consequently the crew decided to abort the visual approach for runway 14. The aircraft then climbed to 5600 ft. DWT 501 and HB-CIG converged on opposing flight paths and crossed at 10:44:01 UTC west of the NDB MUR. The lateral distance between the two aircraft was approximately 0.5 NM according to the La Dôle radar recordings. The altitude difference was approximately 200 ft. HB-CIG's transponder code was visible on the bright display of the TWR in Berne only 13 seconds after the closest convergence, at 10:44:14 UTC.

According to the Air Safety Report, the crew reported as follows: *"On short final ILS 14 (visual approach), on TCAS page (EFIS) we observed a traffic which became conflicting on the RH side"*. They estimated the distance at the time of closest convergence at about 200 m. According to his statement, the pilot of HB-CIG had sight of a twin-engined aircraft which was flying towards him. In his opinion, the distance from DWT 501 was about 300 m.

After calling back the crew, Berne TWR gave the following instruction to DWT 501 at 10:44:17: *"Darwin five zero one roger, join left hand downwind for runway and report abeam tower."*

According to the radar recordings, after the serious incident HB-CIG continued to maintain its north-westerly heading for approximately 30 seconds and then turned left in the direction of WHISKEY reporting point.

After landing, the CMDR of DWT 501 contacted air traffic control by telephone. Both parties decided to submit a report on this incident.

Both air traffic controllers classified the incident as serious.

1.1 VFR flights in class D airspace

In the Swiss Aeronautical Information Publication for flights according to visual flight rules, the AIP VFR Guide, the following is stated, among other things, in connection with VFR flights in class D airspace:

"VFR flights in class D airspace are subject to air traffic control of this class. Those flights receive from the air traffic control unit an entry clearance, information about IFR and VFR flights and, on request, traffic avoidance suggestions. No separation is provided."(RAC 4-0-5, § 4.1)

"Transponder shall be set only as instructed by the air traffic unit." (RAC 4-0-5, § 4.3.2)

1.2 VFR procedures in Berne CTR

The following, among other things, is laid down in the Swiss Aeronautical Information Publication AIP for approaches and departures in Berne, in the section entitled "Special regulations for control zone (CTR) and terminal control area (TMA)".

"Aircraft entering for landing or leaving Berne CTR shall proceed via the established routes and control points with the flight paths and reporting points as shown on the Berne visual approach chart VAC. A clearance from Berne TWR is required."(VFR RAC 4-1 LSZB)

In the present case, the departure route is via the downwind west of runway 14. The downwind passes over the municipalities of Belp and Kehrsatz and is offset approximately 1400 m from the extended runway centreline. At the north end of Kehrsatz, the route follows the main road to Wabern, resulting in a slight left turn of approximately 15°. The departure route then heads west to WHISKEY reporting point. (cf. Annex 2.): after take-off, the climb shall be maintained continuously up to max. 4500 ft AMSL.

1.3 Visual Approach Chart Berne

Pilots of VFR flight are made aware of the presence of IFR traffic in the vicinity of the airport by two aircraft symbols depicted on the Visual Approach Chart Berne; one symbol is shown to the northeast, and one to the southeast of the airport. Both are situated outside of CTR and TMA. There is no indication referring to IFR traffic within CTR/TMA.

1.4 Deviations from Published VFR Arrival and Departure Routes

The Federal Office of Civil Aviation FOCA considers lateral deviations from published arrival and departure routes according to visual approach charts VAC of up to 500 meters normal.

1.5 Radar

Berne airport does not have its own radar system. In the Tower/Approach, a bright display (Tower Air Situation Display - TASD) is used; this is supplied with the data from the Zurich Multi Radar Tracker (MRT).

1.5.1 Use of the bright display

The bright display provides Berne ATC with the picture of the air traffic and is used to provide radar services.

1.5.2 Radar recordings

The investigation had at its disposal radar recordings both from Zurich (MRT) displays, as available to the air traffic controllers (ATCOs) in Berne, and that of the Geneva en route radar, with the antenna on La Dôle. The data from the La Dôle radar station was already showing the flight paths of the two aircraft before the serious incident.

The recordings from both radar sources represented the approach of flight DWT 501 identically. Until it crossed HB-CIG, the Saab 2000 was precisely on the runway centre line; afterwards the airliner turned slightly left. Both sources also showed this detail.

In the case of the departure of aircraft HB-CIG, however, there was a lateral deviation with regard to the positions between the recordings from Zurich and Geneva. The changes in heading, however, were represented more or less consistently by both sources.

At 10:43:31 UTC, the data recorded by the La Dôle antenna showed the Cessna's first position. The Cessna flew over the southern part of Wabern and was already in the north of the aerodrome circuit, at an altitude of 2800 ft. Instead of initiating a slight left turn to WHISKEY point, as published on the Berne visual approach chart, the pilot flew a heading which brought the aircraft closer to the approach axis for runway 14. The lateral distance from flight DWT 501 at the time the aircraft crossed was 0.5 NM according to the Geneva radar image. At the moment of the TCAS climb report by the pilot to ATC at 10:43:54 UTC, the Saab was at 2800 ft.

The Zurich radar showed HB-CIG for the first time at 10:44:14 UTC, after it crossed the Saab 2000. The Cessna P 210 was over the city of Berne, at 2800 ft. It was flying an opposing heading to the runway 14 approach axis, offset approximately 0.25 NM to the west.

Both radar sources then showed the left turn by HB-CIG towards reporting point WHISKEY. The pilot was flying in a south-south-west direction and at 10:45:29 UTC reported flying over WHISKEY to the Berne control tower. This report then also enabled the air traffic controller to identify aircraft HB-CIG on the bright display.

1.6 Aerodrome control - Clearances and information

The ATMM Switzerland, Section Aerodrome Control, describes the following duties and functions for aerodrome control, among other things:

"Issue information and clearances to aircraft under your control to achieve a safe, orderly and expeditious flow of air traffic on the aerodrome and in the vicinity of the aerodrome, with the objective of preventing collision(s)..."

"Maintain a continuous watch on all visible flight operations on the aerodrome and in the vicinity of the aerodrome, including aircraft, vehicles and personnel on the manoeuvring area, and control such traffic in accordance with the procedures described herein and in local instructions."

1.7 Approach Control

The ATMM Switzerland, Section 8 Approach Control, describes the following duties and functions for approach control as follows, among other things:

"An approach control unit (APP) is responsible for the provision of ATC, when and as required by airspace classification, Flight Information Service FIS and Alerting Service ALRS within the limits of its area of responsibility."

1.8 Berne METAR according to Skyguide

METAR Bern 09:50 UTC

Wind: 220°, 02 knots

Ground visibility: 10 KM

Cloud: FEW at 7000 FT/GND, SCT at 17,000 FT/GND

Temperature: 19°C, dewpoint 09°C

QNH 1022 hPa

NOSIG

Berne METAR 10:20 and 10:50 were not recorded.

METAR Bern 11:20 UTC

Wind: VRB, 02 knots

Ground visibility: 10 KM

Cloud: FEW at 5500 FT/GND

Temperature: 21°C, dewpoint 10°C

QNH 1021 hPa

NOSIG

2 Analysis

2.1 Visual Approach Chart

Pilots of VFR flight are made aware of the presence of IFR traffic in the vicinity of the airport by two aircraft symbols depicted on the Visual Approach Chart Berne; one symbol is shown to the northeast, and one to the southeast of the airport. Both are situated outside of CTR and TMA. The IFR approach sector is not shown on the chart. A VFR pilot not familiar with Berne airport lacks indications about the presence IFR flight, including commercial traffic, within the CTR, close to published arrival and departure routes. The depiction of the IFR approach sector could enhance the

situational awareness of VFR pilots. The IFR approach sector was shown on former visual approach charts (cf. Annex 2).

2.2 Deviations from Published VFR Arrival and Departure Routes

The Federal Office of Civil Aviation FOCA considers lateral deviations from published arrival and departure routes according to visual approach charts VAC of up to 500 m normal. The right hand downwind of runway 14 is situated 1400 m from the extended runway centreline. In case an aircraft flies this downwind with the accepted deviation to the east, the lateral distance to the extended runway centreline and therefore to an approaching IFR traffic is reduced to 900 m. This reality questions a requirement for changes or adjustments of arrival and departure routes for VFR traffic.

2.3 Departure of HB-CIG

According to his statement, the pilot of HB-CIG was not familiar with Berne airport. He had made two or three IFR approaches at night. Previously, he had approached Berne once under visual flight rules.

He said he had remained with his aircraft on the western side of the Aare during the downwind and had initiated the turn to reporting point WHISKEY before flying over the river. He had flown the downwind at an altitude of 2800 to 3000 ft.

Before take-off, on his own initiative, the pilot had switched on the transponder with code 7000 in A/C mode. If aircraft HB-CIG had flown without the transponder switched on, the crew of flight DWT 501 would have had no possibility of detecting the impending conflict on their TCAS and taking appropriate avoiding action.

According to the radar recordings, from the end of the downwind HB-CIG flew on a flight path which converged slightly with the runway 14 approach axis, instead of flying along the main road in the direction of Wabern. As a result, the aircraft converged with the approaching DWT 501. The pilot of HB-CIG was obviously not aware that he had not correctly followed the published departure route. Although he had seen the Saab 2000 flying towards him, it is not comprehensible why he did not immediately turn off to the west.

However, the pilot of HB-CIG was of the opinion that there was no risk of collision and no reason to take avoiding action. He also added that he would have appreciated a traffic information concerning the approaching airliner.

The two aircraft crossed west of the MUR NDB. At this time, aircraft HB-CIG had already overflown the end of the downwind by more than 3 km.

2.4 Approach of DWT 501

At 10:42:48 UTC, flight DWT 501 reported on final approach to runway 14. Berne TWR accordingly issued landing clearance.

Shortly afterwards, the crew were made aware by the TCAS of an intruder which was in front of them and to the right. The crew received a TA – traffic advisory – and shortly afterwards reported a TCAS climb. Subsequently, DWT 501 was unable to

continue its final approach on runway 14, and this led to the visual approach being aborted by the crew. The crew's reaction was appropriate in view of the dangerous convergence.

2.5 Air traffic control

According to the statements of the two air traffic controllers, there was an average volume of traffic at the time of the incident. Apart from approaching and departing VFR traffic, there were also two IFR approaches to handle.

According to their statements, the two air traffic controllers had visually followed the departure of HB-CIG up to the right turn out. Neither of the two controllers' attention was drawn in any way to this section of the route. They then turned to other tasks and had no longer checked on the downwind. According to their statements, an aircraft departing to the west which follows the published departure routes does not constitute a problem. The transmission of traffic information to the crews of the aircraft involved in the serious incident might possibly have made the pilots observe the airspace more closely; under these circumstances, visual contact would have taken place earlier and the dangerous convergence could have been avoided.

When the crew of flight DWT 501 reported the TCAS climb to ATC, both air traffic controllers scanned the airspace in the north-westerly direction. The trainee had visual contact with DWT 501 whilst the coach noticed in the direction of Wabern a small aircraft which in his opinion was in an unusual position. However, he was not sure whether this was HB-CIG. The coach further explained that he had been unable to estimate the distance between the two aircraft.

3 Conclusions

3.1 Findings

- The serious incident took place within Berne CTR, in class D airspace.
- The incident took place about 2 NM north-west of Berne airport, west of NDB MUR.
- Runway 14 was in service at Berne airport.
- The departure route in the direction of WHISKEY follows the runway 14 downwind over the municipalities of Belp and Kehrsatz and is offset approximately 1400 m from the runway centreline. At the north end of Kehrsatz, the departure route follows the main road to Wabern and goes from there to reporting point WHISKEY.
- Pilots of VFR flight are made aware of the presence of IFR traffic in the vicinity of the airport by two aircraft symbols depicted on the Visual Approach Chart Berne; one symbol is shown to the northeast, and one to the southeast of the airport. Both are situated outside of CTR and TMA. There is no indication referring to IFR traffic within CTR/TMA.
- At the time of the serious incident, the TWR (frequency 121.025 MHz) and APP (127.325 MHz) workstations were combined.
- The TWR/APP workstation was occupied by a trainee; the latter was being monitored in his function by a coach.

- No traffic information was transmitted to the aircraft involved.
- Both air traffic controllers were in possession of appropriate licences. The coach had had a licence since 1985. The trainee had had a licence since 1997. He began his training in Berne in March 2005.
- At the time of the incident there was average traffic.
- Visual flight conditions prevailed.

3.2 Cause

The serious incident is attributable to the fact that HB-CIG deviated from the published departure procedure and this was not noticed by air traffic control.

The following factors contributed to the serious incident:

- the lack of traffic information to the aircraft involved;
- the lack of indication in regard to IFR traffic within CTR and TMA on the VFR - AREA CHART ICAO.

4 Safety recommendations and measures taken since the incident

4.1 Safety recommendations

4.1.1 Safety deficit

The pilot of a Cessna P210 type aircraft intended to make a flight under visual flight rules from Berne to Ecuwillens. Before take-off, on his own initiative the pilot had set code A7000 in A/C mode on the transponder. After taking off from runway 14, the pilot made a right turn out and should have followed the departure route to reporting point WHISKEY. However, he did not fly the departure route published in the Swiss Aeronautical Information Publication AIP VFR but flew on a heading which brought the aircraft into proximity to the approach axis for runway 14.

At the same time, a Saab 2000 type aircraft was on an instrument flight from London City to Berne. Berne APP had cleared the crew for a visual approach on runway 14. Suddenly, the pilot of the Saab 2000 reported a TCAS climb; the crew then decided to go around. The two aircraft crossed at a lateral distance of approximately 0.5 NM and an altitude difference of 200 ft. If aircraft HB-CIG had flown without the transponder switched on, the crew of flight DWT 501 would have had no possibility of detecting the impending conflict on their TCAS and taking appropriate avoiding action.

There are no indications on the VFR - AREA CHART ICAO in regard to IFR traffic within CTR and TMA.

4.1.2 Safety recommendations No. 399

The FOCA should make the necessary arrangements that the utilization of currently valid VFR arrival and departure routes within Berne CTR with simultaneous IFR approaches shall provide a deconcentration of flight routes.

4.1.3 Safety recommendations No. 400

The FOCA should make the necessary arrangements that IFR approach sectors are depicted on ICAO VFR area charts of aerodromes with mixed IFR/VFR traffic.

Berne, 26 February 2008

Aircraft Accident Investigation Bureau

This report contains the AAIB's conclusions on the circumstances and causes of the accident/serious incident which is the subject of the investigation.

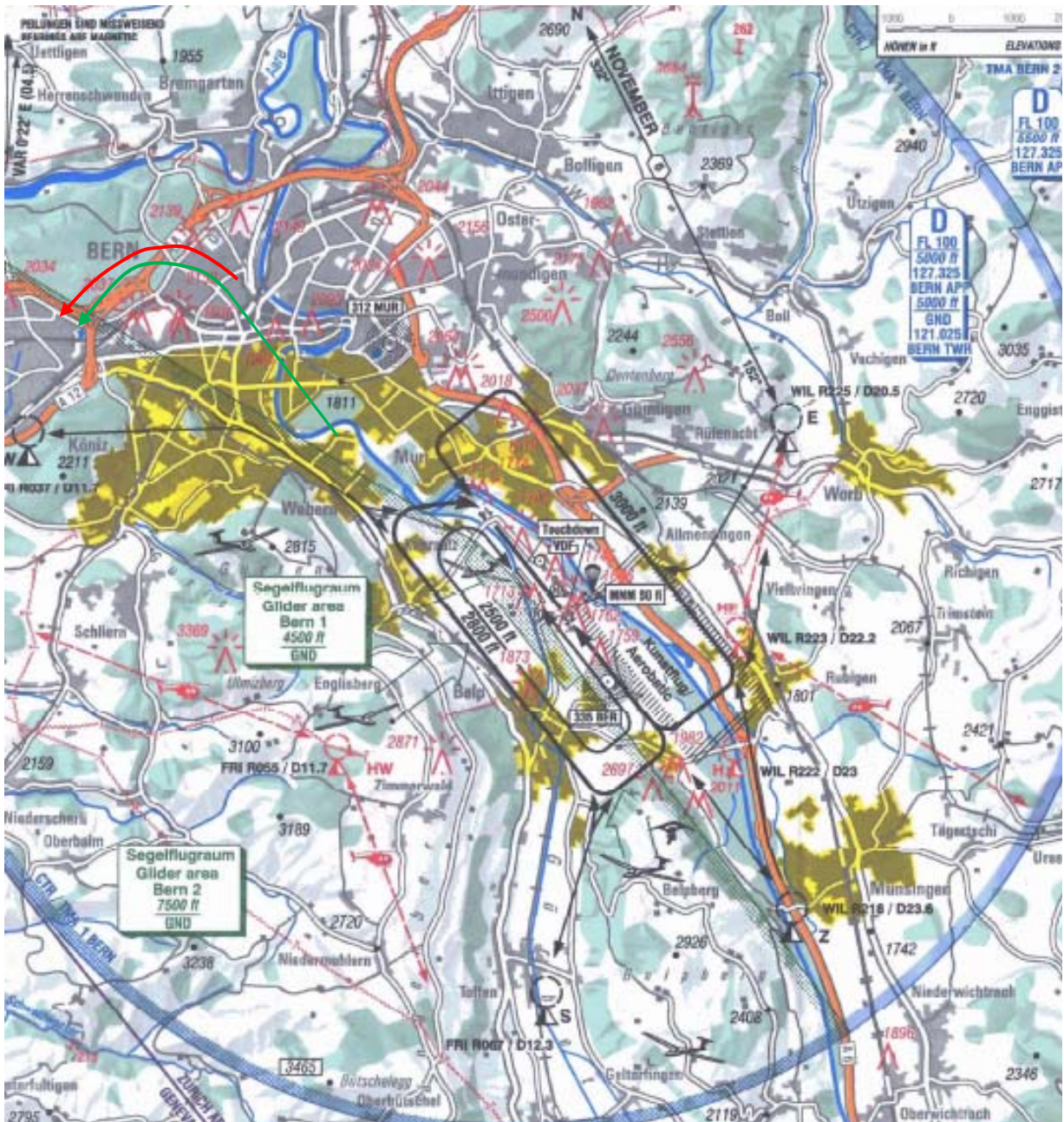
In accordance with Annex 13 of the Convention on International Civil Aviation of 7 December 1944 and article 24 of the Federal Air Navigation Law, the sole purpose of the investigation of an aircraft accident or serious incident is to prevent future accidents or serious incidents. The legal assessment of accident/incident causes and circumstances is expressly no concern of the accident investigation. It is therefore not the purpose of this investigation to determine blame or clarify questions of liability.

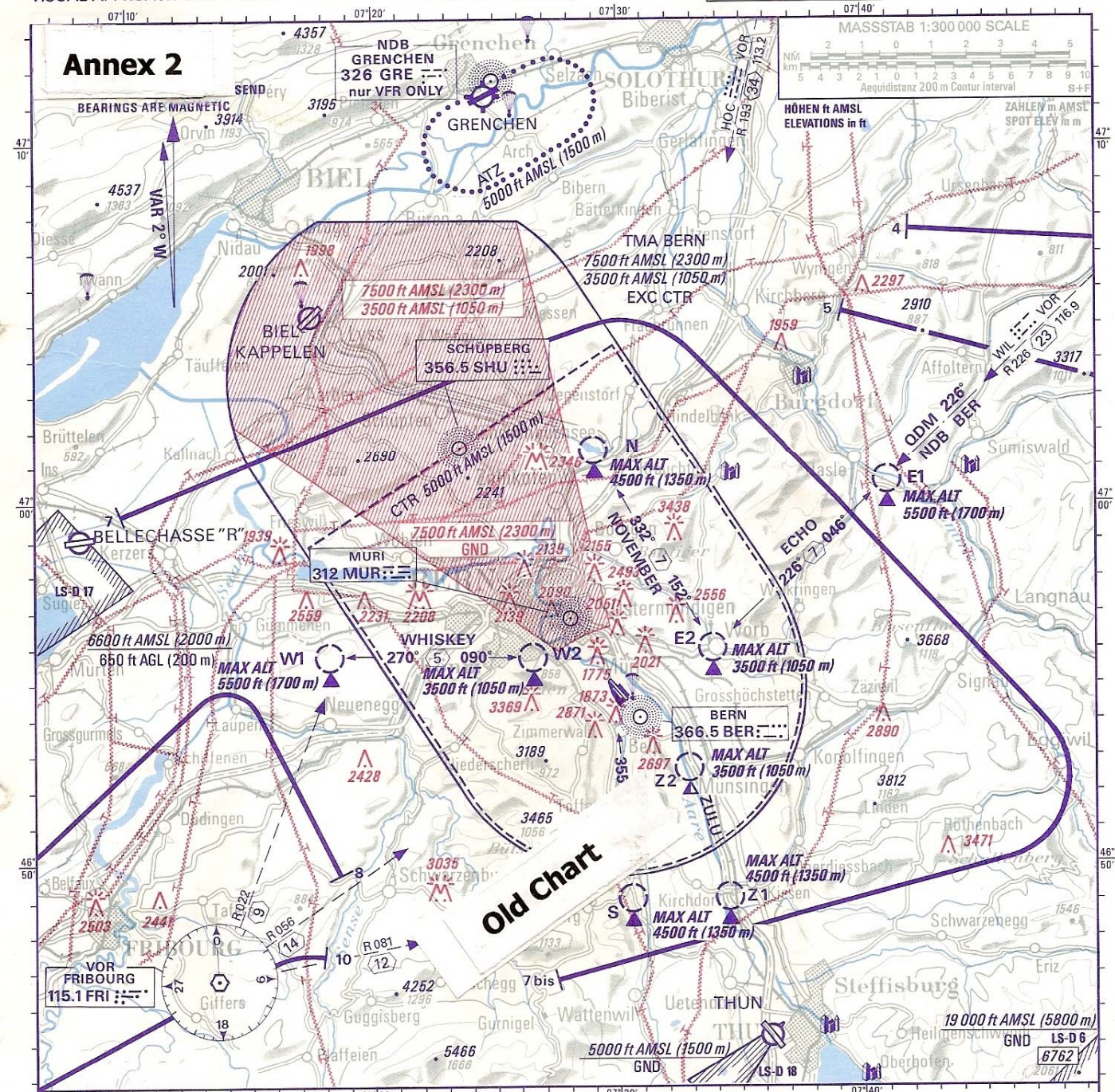
If this report is used for purposes other than accident prevention, due consideration shall be given to this circumstance.




Departure route of aircraft HB-CIG

According to radar picture of Zurich (MRT)





According to radar picture of Geneva (La Dôle)





1. Radio contact with TWR compulsory before entering CTR
2. ATC may issue any other clearances
3. Entry and exit flights via NOVEMBER, ECHO, SIERRA, ZULU, WHISKEY
4.  Compulsory REP
5.  Compulsory REP only for arrival
6.  IFR APCH-Sector:
enter only with clearance from Bern TWR
7.  MIL low level flight routes 1000 ft AGL (300 m)
165 ft AGL (50 m)

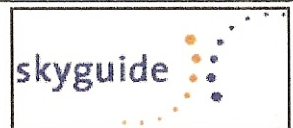
BESONDERE VORSCHRIFTEN FÜR VFR FLÜGE

1. Funkverbindung mit TWR obligatorisch vor Einflug in CTR
2. ATC kann andere Freigaben erteilen
3. Ein- und Ausflug über NOVEMBER, ECHO, SIERRA, ZULU, WHISKEY
4.  Obligatorische Meldepunkte
5.  Obligatorischer Meldepunkt nur für Anflug
6.  IFR-Anflug-Sektor:
Nur mit Freigabe von Bern TWR benutzbar
7.  MIL Tiefflugstrecke 1000 ft AGL (300 m)
165 ft AGL (50 m)

COR: AVBL LEN, RMK, OBST
COR: VAR, OBST, REP, Format

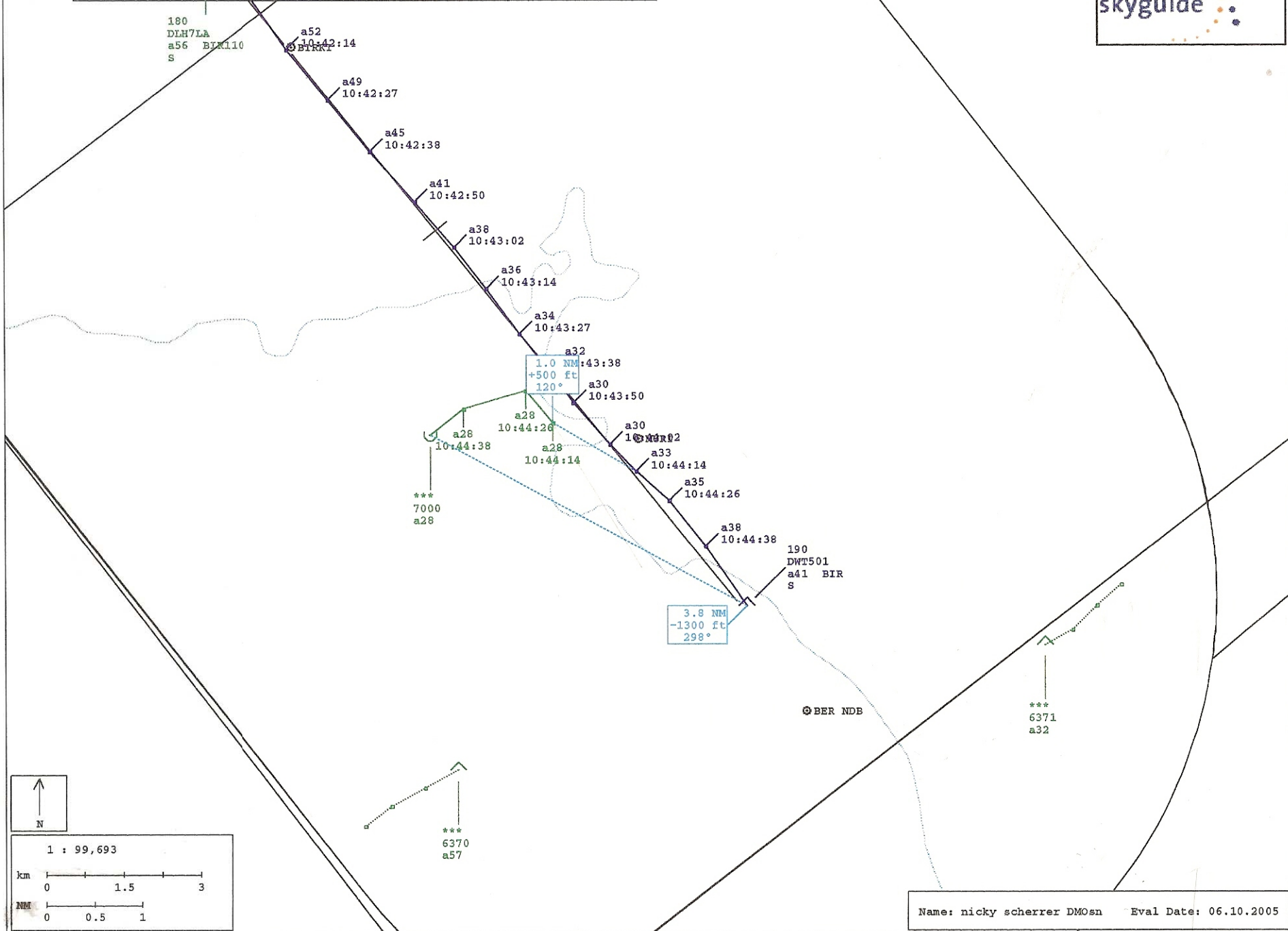
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M2+



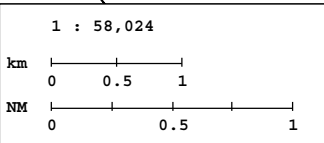
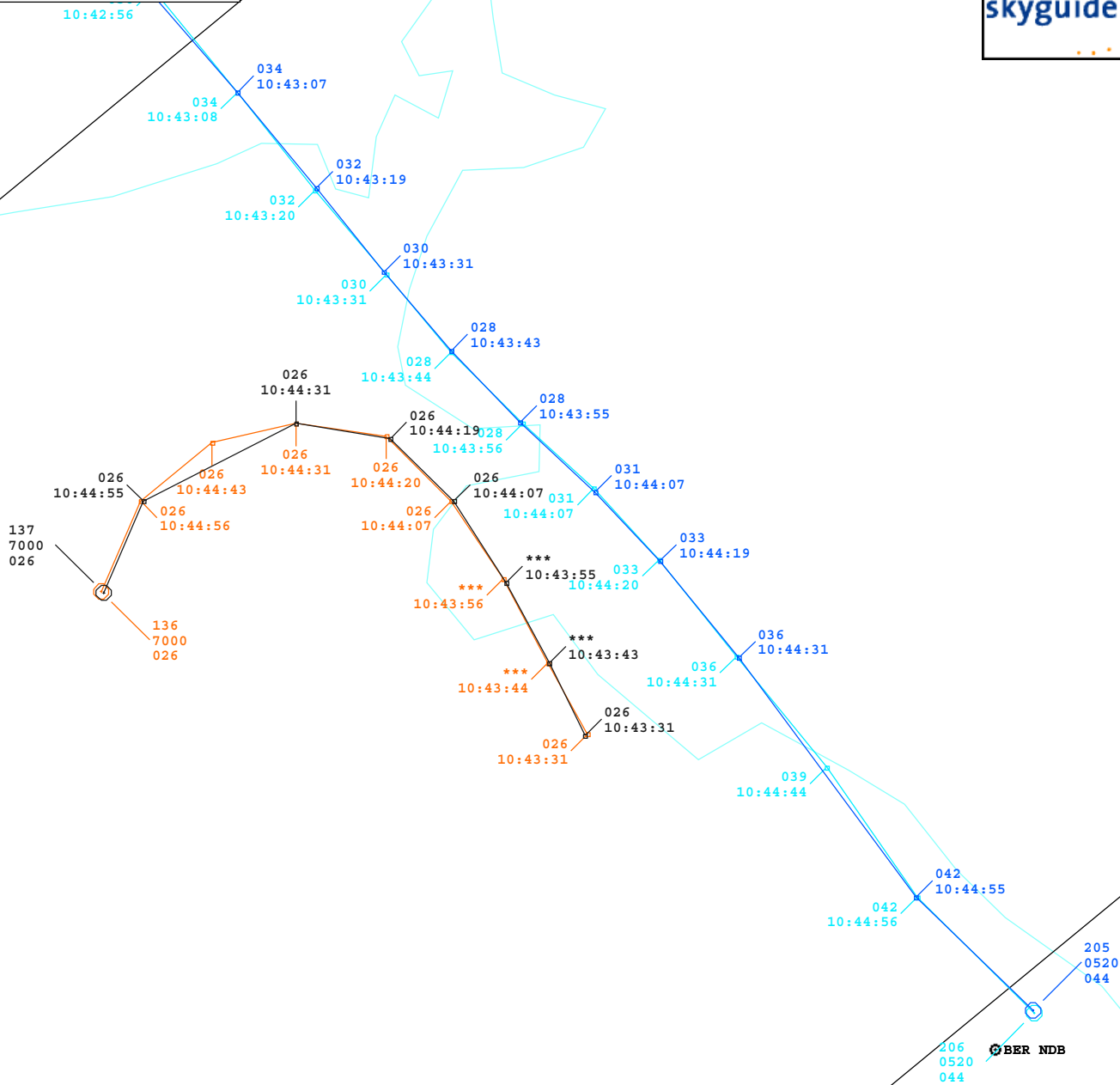
Src
ACN

Analysis: atir DWT601/HBCIG of april 29, 2005 Time [UTC]: 29.04.2005 10:44:53



Src
DL1
DLX

Analysis: DWT501 / A7000 Time [UTC]: 29.04.2005 10:45:11



Name: Ivan Rochat Eval Date: 21.09.2005

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

Investigation into the **incident** that occurred on **29.04.2005**

- Subject of transcript:	DWT501 / HBCIG
- Centre concerned:	Swiss Radar Area East
- Designation of unit:	Bern Aerodrome Control Bern Approach
- Frequency / Channel:	121.02MHz 127.32MHz
- Date and period (UTC) covered by attached extract:	29.04.2005 10:30:37 - 10:52:45 UTC
- Date of transcript:	26.05.2005
- Name of official in charge of transcription:	

- 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.

Zürich, 26.05.2005

Abbreviations

<u>Sector</u>		<u>Designation of sector</u>
ADC	-	Bern Aerodrome Control
APP		Bern Approach

<u>Aircraft</u>	-	<u>Callsign</u>		<u>Type of acft</u>	<u>Flight rules</u>	<u>ADEP</u>	-	<u>ADES</u>
501	-	DWT501	Darwin	SB20	IFR	EGLC	-	LSZB
H-IG	-	HB-CIG		P210	VFR	LSZB	-	LSGE

/ 26.05.2005

TRANSCRIPT SHEET

Occurrence: DWT501 / HBCIG of 29.04.2005



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>
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Frequency: TWR/APP Bern (coupled)

ADC	H-IG	10:30:39	Bern Tower Good afternoon, ah... Cessna Hotel Bravo Charlie India Golf, ????? parking, ah... taxi for departure ah... with information ah... Hotel and would like a ah... right cross wind to... outbound	unreadable
H-IG	ADC	:59	Hotel Bravo Charlie India Golf, Bern Tower good ah... afternoon, taxi holding point Alpha, runway one four	
ADC	H-IG	10:31:06	Taxi holding point Alpha, runway one four, Hotel India Golf	
5 stations in between				
APP	501	10:37:11	Bern grüezi, Darwin five zero one, inbound BELAR, one six thousand for level one one zero	
501	APP	:16	Darwin five zero one, Bern Arrival grüezi, continue descent to flight level ah... one one zero for the time, and continue present heading, expect vectors for ILS approach one four, number two, short delay	
APP	501	:29	Ah... roger, level one one zero, present heading, expect vec... vectors one four, Darwin five zero one, and ready for visual any time	
501	APP	:37	Darwin five ah... zero one, roger	
1 stations in between				
ADC	H-IG	:58	Hotel India Golf holding short at ah... Alpha, ready for departure, ah... right downwind to Whiskey	In the beginning two stations overlapping
H-IG	ADC	10:38:06	Hotel Whisky correction Hotel India Golf, hold position	
ADC	H-IG	:10	Hotel India Golf	

TRANSCRIPT SHEET

Occurrence: DWT501 / HBCIG of 29.04.2005



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>
1 station in between				
501	APP	10:38:37	Darwin five zero, one set course direct to LARDO	
APP	501	:41	Direct to LADOR, Darwin five zero one, any time ready for any visual approach	
501	APP	:45	Darwin five zero one descent to flight level niner zero	
APP	501	:48	Down zero niner zero, Darwin five zero one	
1 station in between				
H-IG	ADC	10:39:15	Hotel India Golf, wind calm runway one four, right turn out via Whisky, cleared for take off	unreadable
ADC	H-IG	:21	Cleared for take off ah... runway one four, right turn to Whiskey, Hotel India Golf	
1 station in between				
501	APP	:37	Darwin five zero one, descent to flight level eight zero	
APP	501	:40	Zero eight zero, Darwin five zero one	
1 station in between				
501	APP	:59	Darwin five zero one, descent to five thousand feet, the QNH one zero two one, and cleared visual approach runway one four, report two miles final	
APP	501	10:40:07	Roger one zero two one, cleared for the visual ah... one four, call you back on final, Darwin five zero one	

TRANSCRIPT SHEET

Occurrence: DWT501 / HBCIG of 29.04.2005



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>
501	APP	10:40:14	And Darwin five zero one, descent at your convenience	
APP	501	:17	Thank you	
6 stations in between				
APP	501	10:42:48	Darwin five zero one is ah... final one four	
501	APP	:52	Darwin five zero one, the wind is one niner zero degrees two knots, runway one four cleared to land	
APP	501	:58	Cleared to land one four, Darwin five zero one	
2 stations in between				
H-IG	ADC	10:43:47	Hotel Golf India, confirm on course to Whiskey?	
APP	501	:54	<i>Lufthansa seven Lima Alpha fully established</i> Darwin five zero one, TCAS climb	DWT501 cross talked DLH7LA
ADC	H-IG	:57	We are closing ah... Whiskey	
1 station in between				
501	APP	10:44:02	Darwin five zero one roger, climb is approved, do you like to join a circuit left or right hand?	
501	APP	:09	Two stations, Darwin five zero one, climb approved, do you like to join a circuit a left or right hand?	
APP	501	:14	We join a left hand circuit, Darwin five zero one	
501	APP	:17	Darwin five zero one roger, join left hand downwind for runway and report abeam Tower	

TRANSCRIPT SHEET

Occurrence: DWT501 / HBCIG of 29.04.2005



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>
APP	501	10:44:24	Left turn and then join a left hand downwind, call you back when abeam Tower, Darwin five zero one	
			2 stations in between	
501	APP	:57	Darwin five zero one, look out for traffic, two miles, east of the field, three thousand two hundred feet, turning left hand downwind	
APP	501	10:45:05	Thousand below and looking out, Darwin five zero one	
501	APP	:08	Traffic is a Cessna	
APP	501	:09	presses the PTT-button
			1 station in between	
ADC	H-IG	:29	Hotel India Golf , ah... Whiskey, ah... two thousand eight hundred	
H-IG	ADC	:34	Hotel India Golf, call you	
			1 station in between	
501	APP	:56	Darwin five zero one, climb to five thousand feet	
APP	501	15:46:00	Roger, okay now descending five thousand, Darwin five zero one	
501	APP	:20	Darwin five zero one, make four thousand feet for downwind, take you in sequence as number two behind the Lufthansa Dash, overhead the city	
APP	501	:29	Roger descending four thousand feet, Darwin five zero one, number two	

TRANSCRIPT SHEET

Occurrence: DWT501 / HBCIG of 29.04.2005



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>
1 stations in between				
501	APP	10:46:48	Darwin five zero one, confirm the Dash in sight overhead the city	
APP	501	:51	Affirm in sight	
501	APP	:53	Thank you, follow behind this number two, Dash eight will do a backtrack after landing, make a wide approach	
APP	501	:59	Roger, number two behind, Darwin five zero one, cleared visual	
2 stations in between				
H-IG	ADC	10:47:59	Hotel Golf India report position	
H-IG	ADC	10:48:04	Hotel Bravo Charlie India Golf, report position	
ADC	H-IG	:08	We are Fri... ah... Freiburg VOR, ah... Hotel India Golf	
H-IG	ADC	:14	India Golf, roger	
H-IG	ADC	:20	Hotel India Golf, remain on my frequency	
ADC	H-IG	:23	Hotel India Golf, roger	
2 stations in between				
ADC	H-IG	10:49:35	Hotel India Golf is Fribourg outbound, ah... requesting frequency change	
H-IG	ADC	:40	Hotel India Golf, frequency change approved, good bye	
ADC	H-IG	:44	Hotel India Golf, thank you	

TRANSCRIPT SHEET

Occurrence: DWT501 / HBCIG of 29.04.2005



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>
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3 stations in between

501	APP	10:50:34	Darwin five zero one, traffic Cessna, on a ah... left hand downwind, joining behind you	
APP	501	:41	Not in sight	
501	APP	:42	Roger, Darwin five zero one, wind calm, runway one four you're cleared to land	
APP	501	:46	Cleared to land one four, Darwin five zero one	

4 stations in between

501	APP	10:52:40	Darwin five zero one, backtrack approved, vacate via taxiway Charlie	
APP	501	:45	Backtrack, and vacate Charlie, Darwin five zero one	

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