

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

concerning the incident (Airprox)

between CSA590 and D-IMUB

on 30th July 2001

TMA Zurich

INVESTIGATION REPORT

AIR TRAFFIC INCIDENT REPORT (ATIR)

AIRPROX (NEAR COLLISION)

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

PLACE/ DATE/TIME TMA Zurich, 30 July 2001, 18:00 UTC

AIRCRAFT CSA 590, Boeing B735, OK-CGH, Czech Airlines
Prague - Zurich

 D-IMUB, Cessna C414, Aero-Charter L. U.
Bettermann GmbH, Arnsberg – Zürich

ATC UNIT Approach Control, Zurich

AIR TRAFFIC
CONTROLLERS APE (Approach Controller East)

 CAP (Co-ordinator)

 FIC (Flight Information Centre,
Controller Assistant)

AIRSPACE C

HISTORY

On the evening of 30 July 2001, the Czech Airlines scheduled flight CSA 590, arriving from Prague, was making its approach to Zurich. After the aircraft had first entered the RILAX holding pattern, it was taken over by the approach controller East (APE) for the purpose of radar guidance onto the instrument landing system (ILS) of runway 14. With various heading instructions the APE subsequently brought the CSA 590, taking account of the high traffic density, onto a heading of 320° and gave clearance for a stepwise descent down to 5000 FT/QNH. Shortly before he intended to instruct CSA 590 to turn to the left onto a heading of 250° in order bring it into the correct initial position for later interception of the ILS 14, both he himself and the approach co-ordinator (CAP) noticed that a slowly descending aircraft with the transponder code 42.. was approaching the TMA boundary from the north.

Because the CAP recognised that the possibility existed of an unauthorised flight into the TMA Sector 5 by this initially still unidentified aircraft, he immediately established co-ordination with the responsible controller assistant (CA) of the flight information centre (FIC). In the course of this co-ordination communication with the flight information centre, the CAP made it absolutely clear that this aircraft had to avoid the airspace C of the TMA Sector 5 and, for this purpose, should also initiate, if necessary, an orbit to the right. A little later, however, and on the basis of his observation of rate of the descent, the CAP recognised that if the aircraft - later identified as D-IMUB - maintained the present heading, it would not succeed in reaching the specified maximum altitude of 4500 FT/QNH in good time to be able to fly below the TMA Sector 5. In a further co-ordination communication, therefore, he explicitly instructed the FIC to instruct the aircraft to execute an orbit to the right.

Although the FIC, partially on his own initiative and partly in accordance with the instruction from the CAP, gave the necessary information and instructions in good time to D-IMUB, the latter subsequently penetrated the TMA Sector 5 at an altitude of approximately 5500 FT, descending. In the process, he came into conflict approximately 3 NM NW TRA with CSA 590, which at this moment was on the point of turning onto a heading of 250° on the instruction of the APE. Because the APE recognised the possibility of impending conflict, he instructed CSA 590, which was originally cleared to 5000 FT/QNH, to stop its descent at FL 60, and at the same time provided it with traffic information with respect to D-IMUB.

The two aircraft subsequently closed to a horizontal separation of 2.3 NM at the same altitude, respectively to a horizontal separation of 0.9 NM at a altitude difference of 500FT. In the process, CSA 590 made visual contact with D-IMUB.

D-IMUB was a Cessna C414, which was on a visual flight from Arnsberg to Zurich. After carrying out the orbit as instructed by the FIC, D-IMUB initially reached an altitude of 4500 FT/QNH and proceeded to fly into the TMA Sector 1 on an approximately southerly heading. Although the aircraft had also been made aware of this danger by the FIC, and of the maximum altitude of 3000 FT/QNH applicable in this sector, D-IMUB flew through the north-western corner of this sector at altitudes between 4500 and 3500 FT/QNH without, however, endangering other aircraft. The German aircraft subsequently continued its flight via Birrfeld - Bremgarten to Zurich airport.

FINDINGS

- Both aircraft were flying in Class C controlled airspace.
- CSA 590 was flying according to instrument flight rules (IFR) and was in continuous radio contact with the APE and was under its control. D-IMUB was flying in accordance with visual flight rules (VFR) and was continuously in radio contact with the FIC.
- At 17:49:01, D-IMUB first made radio contact with the FIC. At this time, it was approximately 28 NM to the north of the TMA Sector 5 limit. The usual flight and information parameters were exchanged as routine in the subsequent reporting exchange between the FIC and D-IMUB.
- At 17:55:38, D-IMUB reported that it was now at 5500 FT/QNH, descending.
- At 17:58:01, the CAP reported for the first time to the FIC, requested information about the intentions of the radar echo with the transponder code 4253 (D-IMUB) and made it clear that this aircraft should execute an "orbit to the right" if it did not accelerate its descent. D-IMUB was now approximately 3.5 NM to the north of the TMA Sector limit and flew through 6700 FT/QNH, approximately, descending.
- At 17:58:20, the FIC informed D-IMUB that it should descend to below 4500 FT/QNH within the next 2 NM in order to avoid an unauthorised flight into Zurich TMA Sector 5 and, further: "Are you able to make that? Otherwise you should turn more to the westerly side!". The pilot answered this instruction with the information: "I will descend now at two thousand or more and maybe I need one more mile".
- At 17:58:21, the APE instructed CSA 590 to stop its descent at FL 60 (this aircraft had previously been cleared to 5000 FT/QNH) and provided it with traffic information with respect to D-IMUB.
- At 17:58:31, a short-term conflict alert (STCA – optical alarm display in the case of conflict danger on the radar monitor of the air traffic controller) appeared for the first time on the radar screen of the APE. The two aircraft, D-IMUB and CSA 590, were at a horizontal separation of 3.7 NM with an altitude difference of 100 FT. Their headings were convergent.
- At 17:58:40, the CAP instructed the FIC to order D-IMUB to make an orbit to the right. The aircraft was now approximately 1.5 NM to the north of the TMA limit and flew through 6100 FT/QNH, approximately, in descent. The FIC immediately relayed this instruction to D-IMUB. The two aircraft, D-IMUB and CSA 590, were at a lateral separation of 3.0 NM with an altitude difference of 100 FT.
- At 17:59:03, D-IMUB flew into the TMA Sector 5 at an altitude of approximately 5500 FT. Shortly afterwards, the two aircraft were only 0.9 NM from one another. According to the radar display, CSA 590 maintained constantly FL 57 while D-IMUB flew through 5200 FT in descent. The altitude difference between the two aircraft subsequently increased steadily.
- At 17:59:17, the FIC enquired of D-IMUB: "D-IMUB, confirm, you're turning?", and received the reply: "D-IMUB, affirm". According to the radar display, D-IMUB had only just started to slowly introduce an orbit to the right.

- The pilot of D-IMUB stated that the Moving Map Display coupled to a GPS (Global Positioning System – satellite navigation device) had failed and, because of this, he no longer knew his precise position.
- The FIC did not impart any traffic information to D-IMUB with respect to CSA 590.
- According to the statement of the APE, there was a "lot of traffic of high complexity" at the time of the incident.
- The FIC assessed the traffic occurring on his frequency as "medium with a high co-ordination requirement".
- The participating ATCOs, CA and the pilot of D-IMUB had valid licences.
- The pilot of D-IMUB had rather limited flying experience of approximately 300 hours, of which 35 hours were on the aircraft type used. He had, however, already flown to Zurich airport frequently.

ANALYSIS

Air traffic control

Flight information centre: From her written statement, the controller assistant of the FIC assumed, on the basis of the initial exchange of reports with the pilot of D-IMUB, that the latter was aware of the airspace limitations of the Zurich TMA. The D-IMUB report that it would first descend to 5500 FT/QNH was evaluated by her as meaning that the aircraft would either soon descend again to a maximum of 4500 FT/QNH, in order to fly below the TMA Sector 5 or that it would fly to the west, but north of the TMA boundary as far as to the TMA Sector 4 in order to then turn away in the direction of Birrfeld. In the second case, 5500 FT/QNH would suffice to meet the airspace limitations. She justified not imparting traffic information to D-IMUB by the priority rating for the instruction of an orbit to D-IMUB and with the control of its execution.

Considered overall and taking account of the FIC duties and the possibilities open to the FIC, the instructions and arrangements took place expediently and expeditiously.

Approach control office: The dispositions of the two air traffic controllers responsible here were expedient and took place expeditiously. In fact, the instruction of the APE to CSA 590 to stop its descent at FL 60 was the only possible decision and therefore the correct decision for reducing the conflict. However, in the hectic atmosphere of attempting to avoid a collision, the APE apparently missed an incorrect read back of CSA 590. Whilst the ATCO instructed CSA 590 as follows: "CSA 590, stop descent level 60, please.....", CSA 590 read back: "okay, stop six ah thousand, 590".

Airmanship

CSA 590: The fact that CSA 590 presented a value of "057" (FL57) in accordance with transponder mode C altitude read out may well be attributed to the circumstance that its crew, on receiving the instruction: "stop descent level 60, please....." had

already switched their altimeters to the local QNH of 1024 hPa. As a result the crew missed the instruction to fly a flight level.

D-IMUB: The VFR single pilot operation on a complex twin-engined aircraft like the C414 places the highest demands on the capabilities of a pilot. According to his written statement, the solo pilot of D-IMUB was aware of the airspace limitations of the TMA Zurich. His original intention with respect to route consisted in turning to the west when situated to the north of the TMA boundary in order to then fly in the direction of Birrfeld-Bremgarten shortly after the eastern limit of the TMA Sector 4. For this purpose, an altitude of 5500 FT would have been suitable.

For navigation, the pilot relied on a GPS, which was coupled to a Moving Map Display. According to his statements, this display failed approximately 10 NM to the north of the TMA limit with the result that, temporarily, he no longer knew his precise position and considered himself to be much further to the west than he actually was.

However, the pilot of D-IMUB should have ensured, by regular cross-comparisons using conventional visual flight navigation techniques, that he was always aware of his precise position even in the case of the failure of on-board navigation aids. Navigational redundancy is of vital importance for all users in severely restricted airspaces like TMA Zurich.

The delayed and, in some cases incomplete reactions of the pilot to the various FIC directions and instructions made the conflict additionally severe. Obviously, his limited flight experience could scarcely suffice for the requirements of this flight and its accompanying navigational conditions.

Before penetrating the TMA sector 5 D-IMUB was flying in Class E airspace where neither radio contact nor transponder equipment are compulsory. Fortunately the pilot of D-IMUB had established radio contact with the FIC in this phase of the flight, so that measures of co-ordination were possible at all.

CAUSE

The incident may be attributed to the fact that the pilot of D-IMUB did not navigate in accordance with terrestrial reference. After the failure of his GPS-display he temporarily lost navigational control of his flight and, in spite of several directions and instructions from air navigation services, penetrated into Sector 5 of the TMA Zurich.

Berne, 5 February 2003

Aircraft Accident Investigation Bureau

Transcript of Original Tape Recording

Subject **Incident D-IMUB of July 30, 2001**

Call Signs	D-UB	→	D-IMUB	→	private
	590	→	CSA590	→	CSA Czech Airlines
	FIC	→	Zurich Flight Information Sector		
	APE	→	Zurich Arrival East Sector		
	ADC1	→	Aerodrome Control 1 (Zurich Tower)		
	T-FIC	→	Telephone Flight Information		
	T-CAP	→	Telephone Coordinator Approach		
	T-PIC	→	Telephone pilot of D-IMUB		

Frequency Zurich Flight Information Sector / FIC 124.700 MHz
 Zurich Arrival East Sector / APE 120.750 MHz
 Zurich Aerodrome Control 1 (ZRH TWR) / ADC1 118.100 MHz

The signer certifies the completeness of the present transcript

skyguide
Flugsicherungsbetrieb Zürich

ZZD

sig. Nicky Scherrer

i V. Bettina Comte

From	To	Time UTC	Communication	Observation/various
------	----	----------	---------------	---------------------

D-UB	FIC	17:49:01	Zurich Information, „von äh, schönen guten Abend“, DIMUB	
FIC	D-UB	:08	DIMUB, Zurich Information, good evening, go ahead	
D-UB	FIC	:13	„ja“, DIMUB, level 75, heading 188, and äh, I'm coming inbound for landing in Zurich, VFR	
FIC	D-UB	:23	D-UB, roger, report point of departure	
D-UB	FIC	:27	„ja“, departure is EDLA, UB --- and, äh, which äh inbound route in Zurich I have to expect?	
FIC	D-UB	:38	D-UB, it depends from which direction you would like to approach Zurich	
D-UB	FIC	:43	via Bremgarten, UB	
FIC	D-UB	:46	D-UB, roger, then expect the route number two to Zurich	
D-UB	FIC	:51	UB,* inbound to Birrfeld, then after Birrfeld to * unreadable Bremgarten	
FIC	D-UB	:59	D-UB, roger, the QNH Zurich 1024, squawk now 4253	
D-UB	FIC	:50:06	4253 and QNH 1024,UB	

10 stations in between

D-UB	FIC	:55:38	D-UB, descending to five thousand five hundred feet on QNH 1024	
FIC	D-UB	:43	D-UB, roger	

5 stations in between

FIC	D-UB	:58:20	D-UB from Zurich Information	
D-UB	FIC	:23	go ahead, UB	
FIC	D-UB	:26	D-UB, you should be below four thousand five hundred feet, äh, to avoid the TMA of Zurich, within the next two miles, are you able to make that? otherwise you should turn more to the westerly side	
D-UB	FIC	:39	D-UB, I will descend now at two thousand or more and maybe I need one more mile more	

From	To	Time UTC	Communication	Observation/various
FIC	D-UB	:47	D-UB, on request of Zurich Arrival make an orbit to the right now	
D-UB	FIC	:58:53	UB, orbit to the right	
FIC	D-UB	17:59:17	D-UB, confirm you're turning?	
D-UB	FIC	:20	D-UB, affirm	
2 stations in between				
D-UB	FIC	18:00:38	D-UB, I'm leaving five thousand five hundred feet	
FIC	D-UB	:42	roger	
3 stations in between				
FIC	D-UB	:03:12	D-UB from Zurich Information	
D-UB	FIC	:15	go ahead, UB	
FIC	D-UB	:17	D-UB, I say again, avoid strictly to enter the TMA of Zurich; you're about to enter TMA Sector one of Zurich, the maximum altitude there would be three thousand feet	
D-UB	FIC	:28	UB, and äh, , I will turn a little bit to the right	
FIC	D-UB	:31	roger, thank you, I appreciate	
D-UB	FIC	:04:47	D-UB, at three thousand five hundred feet	
FIC	D-UB	:51	roger	
D-UB	FIC	:05:14	D-UB, I think I will be now out of TMA Sector one	
FIC	D-UB	.20	affirm, you're out of TMA Sector one; the maximum altitude here is five thousand five hundred feet, but I think you will remain this altitude now?	
D-UB	FIC	:28	D-UB, affirm, I will remain three thousand five hundred feet and I will call you when approaching Bremgarten	

From	To	Time UTC	Communication	Observation/various
FIC	D-UB	:34	roger	
1 station in between				
D-UB	FIC	:08:27	D-UB, approaching Bremgarten three thousand five hundred	
FIC	D-UB	18:08:31	D-UB, squawk stand-by, contact Zurich Tower 118 decimal 1	
D-UB	FIC	:36	1181 on Tower, squawk stand-by, UB	

D-UB	ADC1	18:08:42	Zurich Tower, „schönen guten Abend“, DIMUB	
ADC1	D-UB	:47	DIMUB, Tower, „guten Abend“, go ahead	
D-UB	ADC1	:51	DIMUB, Bremgarten, three thousand five hundred feet, inbound for landing via route two	
ADC1	D-UB	:57	D-UB, roger, follow route number two, and äh QNH 1024, expect landing runway 28	
D-UB	ADC1	:09:05	D-UB, follow route two and QNH 1028** and call you „Gasometer“	** says „QNH 1028“ instead of 1024
ADC1	D-UB	:12	roger	
2 stations in between				
D-UB	ADC1	:12:07	DI-UB, crossing „Gasometer“ three thousand three hundred feet descending	
ADC1	D-UB	:13	D-UB, roger, proceed via „Chatzensee“ and report on lefthand downwind for runway 28	
D-UB	ADC1	:21	UB, proceeding via „Katzensee“, call you on lefthand downwind 28	
1 station in between				
D-UB	ADC1	:13:41	D-UB, passing „Katzensee“ on three thousand	
ADC1	D-UB	:44	D-UB, roger, number one, report on lefthand downwind 28	

From	To	Time UTC	Communication	Observation/various
D-UB	ADC1	:48	D-UB, call you on lefthand downwind 28	
4 stations in between				
D-UB	ADC1	:14:36	D-UB, lefthand downwind 28	
ADC1	D-UB	18:14:40	D-UB, roger, have you in sight, continue on downwind until advised	
D-UB	ADC1	:46	D-UB, continueing on downwind	
1 station in between				
ADC1	D-UB	:15:19	D-UB, turn left for Base and Final 28	
D-UB	ADC1	:23	D-UB, I'm turning left for Base and Final 28	
2 stations in between				
D-UB	ADC1	:16:09	D-UB, Final 28	
ADC1	D-UB	:13	D-UB, number one, continue approach	
D-UB	ADC1	:16	D-UB, continueing, I'm number one	
ADC1	D-UB	:40	D-UB, the wind 090 degrees 3 knots, cleared to land runway 28	
D-UB	ADC1	:46	cleared to land 28, UB	
2 stations in between				
ADC1	D-UB	:17:26	D-UB, turn left here, into JULIETT and contact Apron 12175, and one more request after shutting down the engines, I have a telephone number for you to call, report when ready to copy	
D-UB	ADC1	:41	UB	
ADC1	D-UB	:47	D-UB, phone number is 816 3908	

From	To	Time UTC	Communication	Observation/various
D-UB	ADC1	:56	816 3908, confirm?	
ADC1	D-UB	:59	that is correct, please give way to the Airbus, ah crossing the runway left of you, ah after that crossing, contact Apron 12175, „tschüss“	
D-UB	ADC1	:18:08	„also“, 816 3908, UB	
ADC1	D-UB	:11	correct, „tschüss“	
D-UB	ADC1	:12	„ja, tschüss“, UB	
- end -				
APE	590	17:50:40	CSA590, Zurich?	
590	APE	:42	good evening, flight level 130, holding over RILAX, KILO recieved	
APE	590	:47	thank you, right heading 180, CSA590	
590	APE	:50	right 180 heading, 590	
5 stations in between				
APE	590	:51:22	CSA590, descend to level 110 on heading 180, vectoring ILS 14	
590	APE	:28	descending 110, heading 180, vectoring 14	
13 stations in between				
APE	590	:53:34	CSA590, descend to flight level 70, reduce to two ten	
590	APE	:38	descending 70, speed two ten, 590	
12 stations in between				
APE	590	:55:43	CSA590, descend to five thousand feet, QNH 1024	
590	APE	:47	descending five thousand feet, 1024, 590	
1 station in between				
APE	590	:56:00	CSA590, turn right heading 320 for downwind	

From	To	Time UTC	Communication	Observation/various
590	APE	:04	right heading 320, 590	
6 stations in between				
APE	590	:58:01	CSA590, turn left heading 250	
590	APE	:04	left heading 250, 590	
1 station in between				
APE	590	17:58:21	CSA590, stop descent level 60 please, there is a VFR ta... target not on my frequency, at your 11 o'clock position, 64 descending	
590	APE	:31	okay, stop six ah thousand, 590	
APE	590	:35	roger, the traffic is at your 11 o'clock position, 3 miles, south, on a southerly heading, ah... now d... 60 descending	
590	APE	:45	okay, we are looking out	
1 station in between				
APE	590	:54	CSA, confirm maintaining 60?	
590	APE	:57	now maintaining 60	
APE	590	:58	thank you	
590	APE	:59:01	now we have traffic on the right side, ah..., just now below	
APE	590	:05	thank you very much, maintain level 60, call you back for descent	
590	APE	:08	okay, maintaining	
1 station in between				
APE	590	:18	CSA590, turn left heading 170, intercept localizer 14	

From	To	Time UTC	Communication	Observation/various
590	APE	:23	left 170, intercept ...lizer 14 and traffic just now at , ah... 2 o'clock, ah..., slightly below	
APE	590	:30	„ja“, äh..., that's right, maintain level 60, o..coming soon clear of the VFR target	
590	APE	:35	okay, maintaining 60 and turning left	
APE	590	:38	thank you	
1 station in between				
APE	590	:49	CSA590, you're now clear of the target, descend to four thousand feet, QNH 1024, cleared ILS approach 14	
590	APE	17:59:57	descending four thousand feet, 1024, cleared I...ILS approach 14, 590	
2 stations in between				
APE	590	18:00:31	CSA590, reduce to 180 knots	
590	APE	:35	reducing one eighty, and established localizer 14, 590	
APE	590	:38	thank you	
8 stations in between				
APE	590	:02:05	crossair, correction, CSA590, reduce to 160 knots, maintain to DME 4	
590	APE	:11	one sixty to 4 DME, 590	
6 stations in between				
APE	590	:03:18	CSA590, no more speed restrictions, contact Tower 120 decimal 22, bye-bye	
590	APE	:23	12022, bye-bye	

- end -

Src
APP

Analysis: incident D-IMUB (A4253) of July 30, 2001 Time [UTC]: 30.07.2001 18:00:17

Time [UTC]: 30.07.2001 18:00:17



TITIX

230
CRK6189
08R
M

230
SWR555R
076

3.7 NM
-100 ft
127°

2.3 NM
0 ft
128°

1.2 NM
+400 ft
128°

1.7 NM
+600 ft
142°

0.9 NM
+500 ft
114°

A4253
17:59:12

057
17:59:16

057
17:59:36

057
17:59:16

058
17:58:56

052
17:58:35

066
17:58:15

069
17:57:15

073
17:57:34

077
17:57:14

081
17:56:54

085
17:56:33

088
17:56:13

099
17:56:09

095
17:55:29

45
17:55:29

052
17:55:49

048
17:56:13

045
17:55:29

039
17:55:09

104
17:54:49

107
17:54:28

109
17:54:08

110
17:53:47

110
17:53:27

110
17:53:07

130
17:50:25

130
17:50:05

130
17:50:45

073
17:55:09

073
17:55:29

073
17:55:49

072
17:56:09

072
17:56:30

071
17:56:50

070
17:57:10

069
17:57:30

068
17:57:51

066
17:58:11

063
17:58:31

058
17:58:52

053
17:59:12

052
17:58:35

066
17:58:15

069
17:57:15

073
17:57:34

077
17:57:14

081
17:56:54

085
17:56:33

088
17:56:13

099
17:56:09

104
17:54:49

107
17:54:28

109
17:54:08

110
17:53:47

110
17:53:27

130
17:50:25

130
17:50:05

130
17:50:45

073
17:55:09

073
17:55:29

073
17:55:49

072
17:56:09

072
17:56:30

071
17:56:50

070
17:57:10

069
17:57:30

068
17:57:51

066
17:58:11

063
17:58:31

058
17:58:52

053
17:59:12

052
17:58:35

066
17:58:15

069
17:57:15

073
17:57:34

077
17:57:14

081
17:56:54

085
17:56:33

088
17:56:13

099
17:56:09

104
17:54:49

107
17:54:28

109
17:54:08

110
17:53:47

110
17:53:27

130
17:50:25

130
17:50:05

130
17:50:45

073
17:55:09

073
17:55:29

073
17:55:49

072
17:56:09

072
17:56:30

071
17:56:50

070
17:57:10

069
17:57:30

068
17:57:51

066
17:58:11

063
17:58:31

058
17:58:52

053
17:59:12

052
17:58:35

066
17:58:15

069
17:57:15

073
17:57:34

077
17:57:14

081
17:56:54

085
17:56:33

088
17:56:13

099
17:56:09

104
17:54:49

107
17:54:28

109
17:54:08

110
17:53:47

110
17:53:27

130
17:50:25

130
17:50:05

130
17:50:45

073
17:55:09

073
17:55:29

073
17:55:49

072
17:56:09

072
17:56:30

071
17:56:50

070
17:57:10

069
17:57:30

068
17:57:51

066
17:58:11

063
17:58:31

058
17:58:52

053
17:59:12

052
17:58:35

066
17:58:15

069
17:57:15

073
17:57:34

077
17:57:14

081
17:56:54

085
17:56:33

088
17:56:13

099
17:56:09

104
17:54:49

107
17:54:28

109
17:54:08

110
17:53:47

110
17:53:27

130
17:50:25

130
17:50:05

130
17:50:45

073
17:55:09

073
17:55:29

073
17:55:49

072
17:56:09

072
17:56:30

071
17:56:50

070
17:57:10

069
17:57:30

068
17:57:51

066
17:58:11

063
17:58:31

058
17:58:52

053
17:59:12

052
17:58:35

066
17:58:15

069
17:57:15

073
17:57:34

077
17:57:14

081
17:56:54

085
17:56:33

088
17:56:13

099
17:56:09

104
17:54:49

107
17:54:28

109
17:54:08

110
17:53:47

110
17:53:27

130
17:50:25

130
17:50:05

130
17:50:45

073
17:55:09

073
17:55:29

073
17:55:49

072
17:56:09

072
17:56:30

071
17:56:50

070
17:57:10

069
17:57:30

068
17:57:51

066
17:58:11

063
17:58:31

058
17:58:52

053
17:59:12

052
17:58:35

066
17:58:15

069
17:57:15

073
17:57:34

077
17:57:14

081
17:56:54

085
17:56:33

088
17:56:13

099
17:56:09

104
17:54:49

107
17:54:28

109
17:54:08

110
17:53:47

110
17:53:27

130
17:50:25

130
17:50:05

130
17:50:45

073
17:55:09

073
17:55:29

073
17:55:49

072
17:56:09

072
17:56:30

071
17:56:50

070
17:57:10

069
17:57:30

068
17:57:51

066
17:58:11

063
17:58:31

058
17:58:52

053
17:59:12

052
17:58:35

066
17:58:15

069
17:57:15

073
17:57:34

077
17:57:14

081
17:56:54

085
17:56:33

088
17:56:13

099
17:56:09

104
17:54:49

107
17:54:28

109
17:54:08

110
17:53:47

110
17:53:27

130
17:50:25

130
17:50:05

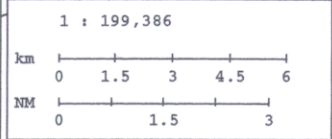
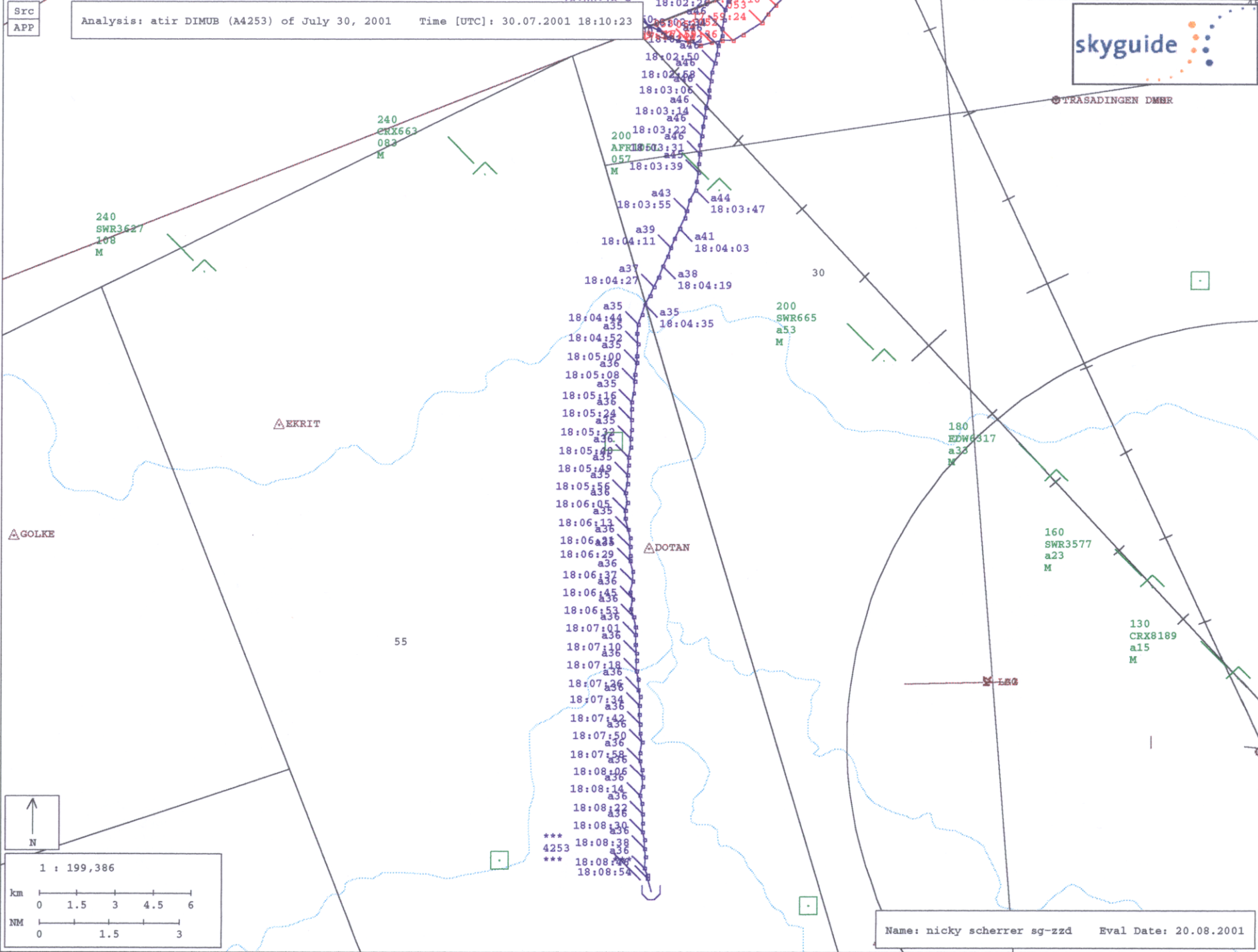
130
17:50:45

073
17:55:09

0

Src
APP

Analysis: atir DIMUB (A4253) of July 30, 2001 Time [UTC]: 30.07.2001 18:10:23



Name: nicky scherrer sg-zzd Eval Date: 20.08.2001

