

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

**concerning the incident (Airprox)**

between PGT992 and CFG667

on 15 August 2003

Over Berne

# FINAL REPORT

## AIR TRAFFIC INCIDENT REPORT (ATIR)

### AIRPROX (NEAR MISS)

THIS REPORT HAS BEEN PREPARED SOLELY 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)

The masculine form of names also applies analogously to the feminine form.

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PLACE/DATE/TIME	Over Berne, 15 August 2003, 20:08 UTC
AIRCRAFT	PGT992, Boeing B737, TC-APR, Pegasus Airlines Geneva (LSGG) – Antalya (LTAI)  CFG667, Airbus A320, D-AICB, Condor Berlin Jerez (LEJR) – Stuttgart (EDDS)

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ATS UNIT	Zurich Area Control Centre
AIR TRAFFIC CONTROLLERS	RE U1 (Radar Executive) RP U1, (Radar Planner) later RE U2

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AIRSPACE	C
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## HISTORY

PGT992 had taken off from Geneva and was on ATS Route UN871 (KORED – KUDES – BAMUR) climbing to flight level (FL) 260. The aircraft was en route to Antalya. In accordance with standard procedure, the aircraft had been handed over from UAC (Upper Airspace Centre) West in Geneva to UAC East in Zurich, approximately 2 minutes before the incident. Shortly after the initial call on the frequency of the competent radar executive (RE) of Sector U1 in Zurich, the Turkish aircraft was assigned a short-cut in an easterly direction, direct to BAMUR. Shortly afterwards it also received a further clearance to climb to FL 300. The requested cruising level for this aircraft was indicated in the flight plan as FL 330. Subsequently, it was given clearance to climb in stages to FL 350. This flight level was also coordinated with Munich as the hand-over flight level.

At practically the same time, CFG667 was also flying on ATS Route UN871 (KORED – KUDES – ARSUT), likewise in a north-easterly direction. The flight path of this Condor aircraft was south-easterly and approximately parallel, at a lateral separation of about 4 NM from that of PGT992. CFG667 was flying from Jerez (Spain) with Stuttgart as its destination airport. Its first call on the same Sector U1 frequency in Zurich took place just over a minute after the first call from PGT992. At that time it was descending and about to approach FL 300, cleared by Geneva UAC. This aircraft was also assigned a short-cut, GARMO – ARSUT direct. This then resulted in only an insignificant deviation to the north compared with the original traffic routing. In accordance with the standard hand-over procedures with Stuttgart, it was envisaged to allow this aircraft subsequently to descend in stages to FL 120. Because of the destination airports of the two aircraft, their flight paths would later intersect.

Shortly before the two above-mentioned aircraft called for the first time on the Sector U1 radar executive frequency, the two Sector U1 air traffic controllers (ATCOs) had decided in agreement with the daily operations manager (DOM) to merge Sector U1 and Sector U2. This decision was taken because the volume of traffic in both sectors was low and it was also expected to remain low at that time of day. The closure of Sector U1 and its merger with Sector U2 was completed in accordance with the customary procedures applicable at the time. This meant that the Sector U1 Radar Planner (RP) crossed over to the Sector U2 RE workstation with his control strips. During this procedure he had received an instruction from the DOM to relieve the RE of this sector and to take on this function himself. Then, after the Sector U1 RP ATCO had installed himself at this new RE U2 workstation and after the two U1 and U2 frequencies had been coupled, the above-mentioned first call from CFG667 occurred. In the meantime, the Sector U1 RE ATCO had also arrived at the new sector and was preparing, for his part, to hand over his "old" RE control strips for the now closed Sector U1 to the RP for Sector U2 which was taking over and to carry out the last update.

Suddenly the RE ATCO of the now closed Sector U1 became aware that the clearance to climb to FL 300 which he had previously issued to PGT992 whilst still at Sector U1 would shortly cause a conflict situation with CFG667 which was simultaneously descending to FL 300. A short term conflict alert (STCA) was triggered at almost the same time as this discovery. He therefore immediately requested his colleague in the RE function of the combined sector U1/U2 to stop the climb of PGT992 at FL 290. However, PGT had already passed FL 290 and was therefore requested by the ATCO to stop the climb at FL 295, in order to be able to maintain emergency vertical separation of 500 ft. Immediately after this, the RE ATCO gave PGT992 traffic information concerning CFG667 and instructed it to make a 20° left turn as an evasive manoeuvre. A little later, he also instructed CFG667 to carry out an evasive manoeuvre by making a 20° right turn. The Condor aircraft answered that it was already in a TCAS climb (TCAS – traffic alert and collision avoidance system).

All times in this report are in UTC format (Local time - 2 hours)

As a result the aircraft closed to a vertical separation of 400 ft and a simultaneous lateral separation of 1.4 NM.

Both the Condor Berlin and the air navigation services company skyguide submitted an ATIR.

## FINDINGS

- Both aircraft were flying in reduced vertical separation minimum (RVSM) Class C airspace.
- Both aircraft were in uninterrupted radio contact with the responsible air traffic controller.
- The actual conflict occurred whilst Sector U1 was being closed and merged with Sector U2. In this case no frequency change was necessary for the aircraft concerned, because the frequencies of the two above-mentioned sectors were coupled.

During this sector merger, however, a change-over of personnel occurred. The ATCO who gave PGT992 clearance to climb to FL 300 (RE U1) was not the same as the ATCO who was confronted a short time later with the conflict situation and had to resolve it (RE U2).

- At 20:05:31 PGT992 called for the first time on the RE U1 frequency as follows: "Zurich, Sir, PGT992, climbing two six zero". It received the following answer from the ATCO: "PGT992, Gruezi, identified, inbound KUDES, then BAMUR".

PGT992 control strip

PGT992	5766	<del>260</del>	<del>300</del>	<del>330</del>	KOR 2008	KUD 2017	BAM 2021
LSGG LIZUM B734	LTAI 430 45	<del>290</del>	<del>320</del>	<del>350</del>	<i>Algoi</i>		
		<del>340</del>	<del>380</del>	R330			

Kontrollstreifen PGT992

- At 20:05:57, after confirmation in the meantime of a direct routing to BAMUR, the ATCO gave the following clearance: "Sunturk 992, climb flight level three hundred". PGT confirmed this clearance correctly.
- At 20:06:43 CFG667 also called for the first time on the RE U1 frequency as follows: "Radar, guten Abend, CFG667, passing level three zero eight, descending level three hundred".

At this time, the two sectors U1 and U2 had already been merged. The RP for the closed sector U1 had installed himself at Sector U2, where he had taken over the RE function for the merged sector U1/U2. The two frequencies were coupled.

The RE ATCO for the closed Sector U1 (who had previously given PGT992 clearance to climb to FL 300) was standing next to his colleague, the RE ATCO for the merged Sector U1/U2, and was preparing to give him a last update of the traffic situation.

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CFG667	1050	300 <del>288</del>	120	KOR 2007	KUD 2016	ARS 2022
LEJR A320	EDDS 450 46	310 250	R360			

Kontrollstreifen CFG667

CFG667 control strip

- At 20:06:51 the "new" RE ATCO for the merged sector answered as follows: "CFG667, guten Abend, identified, fly GARMO, ARSUT, flight level three hundred". The Condor aircraft confirmed this clearance correctly. The hand-over flight level of FL 300 corresponded to the procedure laid down between the Geneva and Zurich UACs.
- An STCA first appeared on the RE ATCO's radar monitor at 20:07:40. At that time CFG667 had reached FL 300 in a descent and PGT992 was passing FL 288 at a rate of climb of approximately 2000 ft/min.
- At 20:07:49 the RE ATCO turned to PGT992 and queried: "PGT992?". The aircraft answered immediately, at which point the RE ATCO requested: "Stop climb at level two niner five!". At this time the flight crew of the Turkish aircraft was passing FL 293. It confirmed this instruction immediately and then received traffic information from the ATCO concerning CFG667 which was flying to its right and in the same direction. At the same time as this traffic information, the ATCO requested the Pegasus Airlines flight crew to change its heading 20° to the left. The dynamics of the climb meant that PGT992 continued to climb to FL 296 before it descended to FL 294 and finally levelled out at FL 295.

According to the statements of the CMD of PGT992 they unexpectedly received a TCAS-TA (TA – traffic advisory) at virtually the same time as the request from air traffic control (ATC) to stop their climb at FL 295, followed immediately by a TCAS-RA (RA – resolution advisory) with the command "descend descend". After aborting their climb at FL 295, they received a "clear of conflict" message from the TCAS. The F/O made visual contact with the Condor aircraft shortly afterwards and they monitored the dialogue between ATC and CFG667.

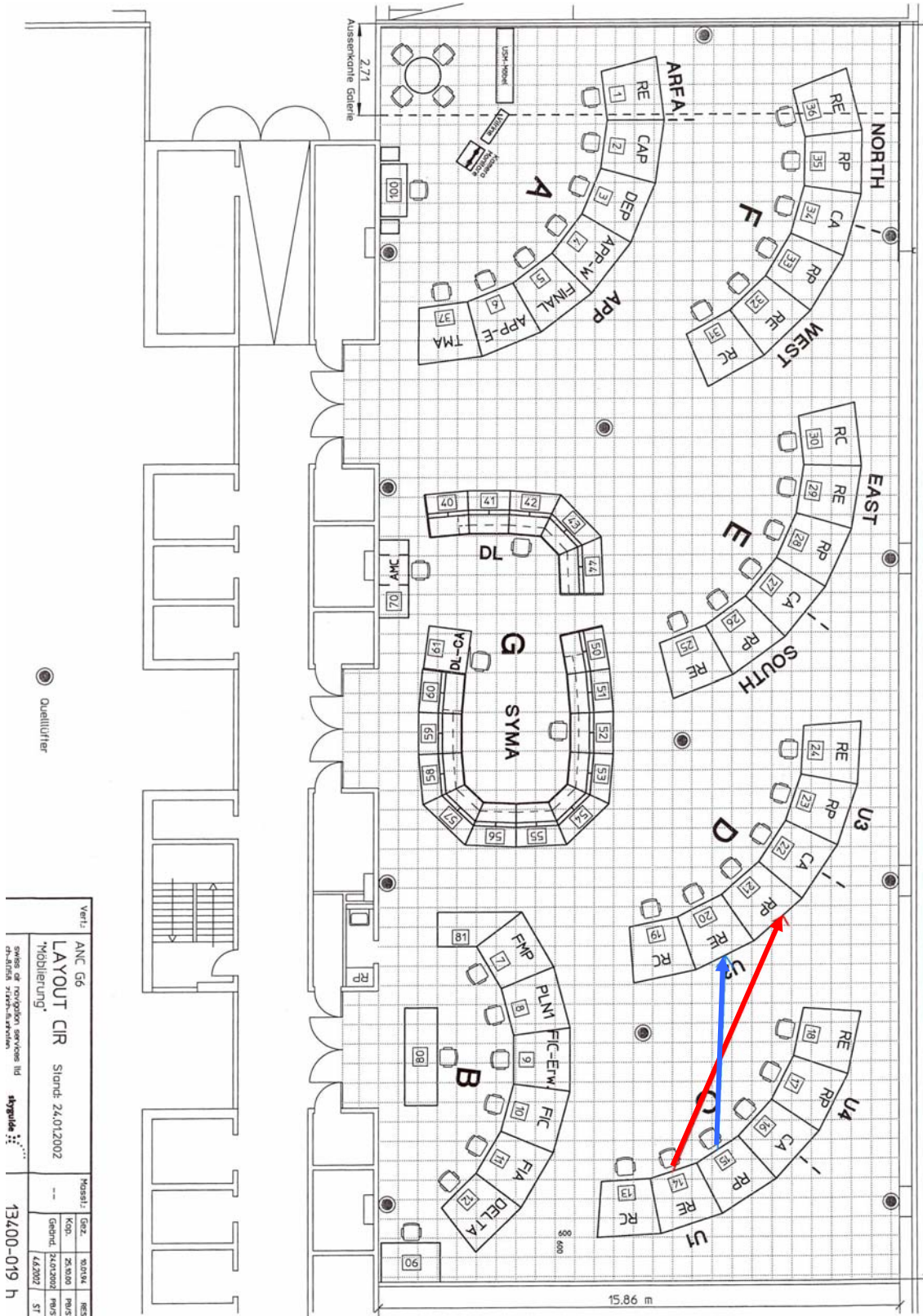
- At 20:08:13 the RE ATCO instructed CFG667 as follows: "CFG667, turn right by two zero degrees". The Condor aircraft confirmed this instruction and at the same time informed him that it had initiated a TCAS climb. Though the RE ATCO did not give CFG667 formal traffic information, he informed it that PGT992 was stopping its climb at FL 295.

The TCAS climb briefly brought the Condor aircraft to FL 313 before it stabilised its flight in accordance with a new clearance from ATC to FL 310. This resolved the conflict.

According to the statements of the CMD of CFG667 they had initially received a TCAS-TA, followed by a "soft" TCAS-RA (about 1500 ft/min). After a "clear of conflict" message received in the meantime, a "hard" TCAS-RA (more than 2000 ft/min) occurred shortly afterwards. The subsequent pronounced climb took place in accordance with the indications of their TCAS display.

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Common IFR Room (ACC) with sectors U1 and U2 and the respective ATCO workstations RE and RP, who brought their control strips "across the intersection" from the closing Sector U1 to Sector U2.



All times in this report are in UTC format (Local time - 2 hours)

- At 20:09:36 the RE ATCO cleared PGT992 to fly on directly from BAMUR to ALGOI and to climb to FL 300.
- The workload in both the sectors involved was low.
- The control strips for the two flights were available in good time and contained the necessary information.
- The altitude delimitation of ACC Zurich control sectors U1 and U2 is specified as follows:  
U1: FL 246 to FL 305;  
U2: FL 306 to FL 600 (if U3 is already closed).
- After the incident, the RE for the closed Sector U1 completed the operational internal report (OIR) and presented it to the DOM for signature. His work shift was then at an end.
- The air traffic controllers involved possessed the necessary valid licences to exercise their respective functions.

## ANALYSIS

### Opening and closing of en route control sectors

The present incident occurred during the closure of a sector, or rather the combining of two sectors. This was a delicate phase which required extensive coordination between the ATCOs involved and manipulation of several pieces of equipment (frequency changes or frequency couplings, radar screen adjustments, phase changes, etc.). It is appropriate to carry out such procedures at periods when traffic volumes are low and when incomplex traffic situations are involved.

The hand-over and closure procedure takes place in stages: after the basic redeployment decision is taken by the DOM, the RP of the closing sector, by agreement with the RE, first brings over his control strips to the RE of the sector which is taking over and gives him a briefing on the traffic situation. Then the RE for the closing sector, for his part, brings over the control strips to the RP for the new sector and gives the RE for this sector a final update on the traffic situation. At the same time the necessary frequency couplings are carried out at the new sector, in order to guarantee uninterrupted radio contact with all aircraft monitoring these two frequencies.

Of necessity during a sector closure procedure there is a brief period in which full human redundancy, consisting of the two-person team of radar executive and radar planner (plus the controller assistant – CA – who is always prescribed), does not exist. For a short time it is therefore not possible for clearances or other important actions by the ATCO who is working on his own to be subject to possible checking by a second ATCO who is present.

### Handling of the sector closure in the present case

In the present case, the rules for combining the two sectors U1 and U2 were complied with by the ATCOs concerned. As usual, the hand-over and closure procedure took place in stages. On the instructions of the DOM, the RP for the closing sector U1 himself took over the function of RE on the new Sector U2 and installed himself at the new workstation.

In the meantime, the RE who alone remained at Sector U1 gave PGT992, which was climbing, clearance to continue climbing to FL 300. In doing so, he must have overlooked the fact that this flight level had already been assigned to CFG667. The Condor aircraft was

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approaching this flight level in a descent. Both aircraft were flying on approximately parallel routes with a lateral separation of about 4 NM.

A little later, the RE for the closing sector, for his part, brought over the control strips to the RP for the new sector and was on the point of giving the RE for Sector U2 a final update on the traffic situation. This update would also have included the clearance to climb to FL 300 which he had in the meantime given to PGT992. According to the concurring statements of these two ATCOs, it was at just this point that the first call from CFG667 was made on the frequency of the combined sector U1/U2. Shortly afterwards, an STCA also appeared on the radar monitors. Both ATCOs realised that a separation violation would result.

### **Handling of the traffic situation by the Sector U1 RE ATCO**

In the present case, the Sector U1 RE was aware that CFG667 would also be calling on his sector frequency at about the same time as PGT992. From the control strips present at his workstation it was apparent that the Condor aircraft had been cleared to descend to FL 300 by the immediately preceding air traffic control unit.

A precise analysis of the traffic situation using the radar picture and the control strips would have made him aware that clearing PGT992 to climb to FL 300 would lead to a conflict with CFG667, because the lateral separation of the two aircraft was less than the required minimum radar separation of 5 NM even at the beginning of the conflict. In principle no clearances which would lead to a separation violation should be issued.

The lateral separation reduced even further over the course of the conflict, because both aircraft had previously been assigned a change in heading as a short-cut. The new routes resulting from the short-cuts converge at an acute angle.

Evidently the RE ATCO for Sector U1 had only carried out the analysis of the traffic situation using the radar picture, without taking into account the control strip data. He no doubt assumed that CFG667 would remain in Sector U2. This makes his course of action explicable.

### **Resolution of the conflict by the Sector U2 RE ATCO**

The Sector U2 RE was totally surprised by the imminent separation violation. The clearance to climb to PGT992, which caused the conflict, had previously been given by his colleague in the RE function of the closing Sector U1. He knew nothing of this. At the instant the conflict was identified, his colleague was standing next to him and was about to give him a final update on the traffic situation; this would also have included the clearance for PGT992 to climb to FL 300 which he had given.

Although the phraseology initially employed did not entirely reflect the urgency of the situation, the Sector U2 RE ATCO adjusted quickly to the dangerous situation. He stopped PGT992's climb at FL 295 with a view to ensuring emergency separation from CFG667 and gave this aircraft traffic information concerning CFG667. In addition, he assigned each aircraft an evasive manoeuvre by instructing them to change heading.

He used the signalled TCAS climb of CFG667 as an opportunity to assign FL 310 to this aircraft, which ensured that the necessary minimum vertical separation was regained. Resolution of the conflict essentially took place rapidly and in the optimal manner.

In the final analysis, the present incident had nothing to do with the sector closure but is related to the incomplete analysis of a traffic situation prior to issuing an instruction to climb. It must remain an open question whether the sector closure process and the accompanying short-term lack of human redundancy in Sector U1 contributed to the incident.

All times in this report are in UTC format (Local time - 2 hours)



## Airmanship of the two flight crews

A reduction in PGT992's rate of climb to 1000 ft/min over the last 1000 ft before reaching its cleared flight level 300, as is required according to AIC Switzerland 15/01 to avoid unnecessary TCAS alarms, would have taken some of the pressure off the time-related circumstances and improved the possibility of an ATC intervention. These guidelines according to AIC Switzerland are also included in the "Jeppesen" under "Air traffic control Switzerland".

After the TCAS alarms triggered, both flight crews reacted quickly and appropriately. In the case of PGT992 the triggering of the TCAS-RA "descend descend" coincided with the ATC instruction to stop the climb at FL 295.

CFG667 was confronted with the fact that its TCAS initially generated a "climb climb" TCAS-RA, then a "clear of conflict" message and then a further "climb climb" TCAS-RA.

This sequence is explicable by the fact that PGT992, in accordance with the ATC's instruction and the identical command from the TCAS, initially overshoot FL 295 when abruptly stopping the climb and then, as it descended back to FL 295, caused the Condor aircraft's TCAS computer to deduce that the conflict was resolved. According to the statements of the CMD of the Pegasus aircraft, during the subsequent descent back to FL 295 they also undershot this flight level and then climbed again to FL 295. This renewed climb very probably triggered the "climb climb" command to CFG667.

## Radar equipment used in ACC Zurich

The CMD of PGT992 stated that after the instruction to stop the climb at FL 295 they overshoot to FL 297 / FL 298 and during the subsequent descent back to FL 295 they dropped to FL 293 / FL 292. In contrast, the altitude analyses of the radar plot indicated an overshoot only to FL 296 and an undershoot only to FL 294.

The CMD of CFG667 stated that the "climb climb" command from their TCAS urged them to climb to FL 318. In contrast, the altitude analyses of the radar plot indicated an overshoot only up to FL 313.

These discrepancies are no doubt attributable to the fact that the radar equipment in use by the Zurich area control centre has a low refresh rate of 12 seconds. In the case of high rates of climb or descent, such as had to be applied for the evasive manoeuvres in question, it is therefore quite possible that the displayed radar altitudes lag behind the actual developments, or that such rapid cycles of movement relating to flight levels are not fully represented.

Eurocontrol's minimum requirement for the refresh rate of radar equipment for area control centres (ACC) is 8 seconds.

## CAUSES

The incident is attributable to the fact that the Sector U1 RE ATCO cleared PGT992 to climb to FL 300 without first carrying out a complete analysis of the traffic situation.

The short-term lack of human redundancy in one sector as the result of the sector closure may have contributed to the incident.

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**SAFETY RECOMMENDATION NR 287**

The Federal Office for Civil Aviation should arrange for the ATC procedural rules to be specified so that in future during a sector closure human redundancy is being ensured.

**MEASURES TAKEN**

After this incident, the management of ACC Zurich drew up hand-over checklists, the use of which is intended, among other things, to prevent relevant information being forgotten or lost. Similarly, certain regulations concerning the opening and closing of sectors have been adapted and augmented.

Berne, 3 December 2004

Aircraft Accident Investigation Bureau

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

Investigation into the **incident** that occurred on **15.08.2003**

- Subject of transcript:	<b>PGT992 / CFG667</b>
- Centre concerned:	Swiss Radar Area East
- Designation of unit:	Zurich Upper 1 Sector Radar
- Frequency / Channel:	133.050 MHz
- Date and period (UTC) covered by attached extract:	15.08.2003 20:05 - 20:11 UTC
- Date of transcript:	02.09.2003
- Name of official in charge of transcription:	Nicholas SCHERRER

- 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, 02.09.2003

Nicholas SCHERRER

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## Abbreviations

<u>Sector</u>	<u>Designation of sector</u>
U1-RE	- Zurich Upper 1 Sector Radar Executive

<u>Aircraft</u>	<u>Callsign</u>	<u>Type of acft</u>	<u>Flight rules</u>	<u>ADEP</u>	<u>ADES</u>
<b>992</b>	- <b>PGT992 Pegasus / Suntuturk</b>	<b>B734</b>	<b>IFR</b>	<b>LSGG</b>	- <b>LTAI</b>
3880	- DLH3880 Lufthansa	A320	IFR	EDDF	- LIMC
<b>667</b>	- <b>CFG667 Condor</b>	<b>A320</b>	<b>IFR</b>	<b>LEJR</b>	- <b>EDDS</b>
882	- LGL882 Luxair	B734	IFR	LGIR	- ELLX
588A	- RYR558A Ryan Air	B738	IFR	EGSS	- LIRP
1689	- SAS1689 Scandinavian	MD81	IFR	EKCH	- LIML
678	- DAN678 Maersk	B737	IFR	DTMB	- EKCH

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OZEO-sn / 02.09.2003

TRANSCRIPT SHEET

Occurrence: PGT992 / CFG667 of 15.08.2003



To Col.1	From Col.2	Time Col.3	Communications Col.4	Observations Col.5
U1-RE	992	20:05:31	"Zürich", Sir, PGT992, climbing two six zero	
992	U1-RE	:35	PGT992, "Grüezi", identified, inbound KUDES, then BAMUR	
U1-RE	992	:42	Say again, Sir	
992	U1-RE	:43	992, set course direct to BAMUR and expect higher level shortly	
U1-RE	992	:47	Direct BAMUR, 992	
992	U1-RE	:57	Sunturk 992, climb flight level three hundred	
U1-RE	992	:06:01	Climbing level three hundred, PGT992	
3880	U1-RE	:10	DLH3880, Radar one two eight zero five, "Tschüss"	
U1-RE	3880	:14	DLH3880, one two eight zero five, good-bye	
U1-RE	667	:43	Radar, "Guten Abend", CFG667, passing level three zero eight, descending level three hundred	
667	U1-RE	:51	CFG667, "Guten Abend", identified, fly GARMO, ARSUT, flight level three hundred	
U1-RE	667	:54	CFG667, direct GARMO, ARSUT, flight level three hundred	
882	U1-RE	:07:39	LGL882, set course direct to "AXENU"	Probably: "ADENU"
U1-RE	882	:43	Set ????? 882, thank you	Unreadable
992	U1-RE	:49	PGT992?	
U1-RE	992	:51	Go ahead	
992	U1-RE	:53	Stop climb at level two niner five	
U1-RE	992	:56	Stopping at two niner five	
992	U1-RE	:57	Roger, for your information, there is a traffic, 2 miles, on the right hand side. Turn left by two zero degrees	
U1-RE	992	:08:04	Turning left two zero degrees, PGT992	
992	U1-RE	:07	Confirm, your are leveling off at flight level two niner five?	

Signature of person in charge of transcription :

TRANSCRIPT SHEET

Occurrence: PGT992 / CFG667 of 15.08.2003



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>
U1-RE	992	20:08:12	Two niner five	
667	U1-RE	:13	CFG667, turn right by two zero degrees	
U1-RE	667	:17	CFG667, we are climbing, TCAS climb, right turn by two zero degrees, confirm?	
667	U1-RE	:21	Yes please, and the traffic is leveling off at two niner five	
U1-RE	667	:27	CFG667, right turn, two zero degrees, we are passing level three zero eight	
667	U1-RE	:32	Okay, thank you, if convenient, you may level off at three one zero now	
U1-RE	667	:36	CFG667, we're descending back to three one zero	
667	U1-RE	:43	Okay, thank you	
U1-RE	588A	:50	588A, maintaining flight level three seven zero, direct to Trasadingen	
588A	U1-RE	:54	588A, good evening, identified, maintain flight level three seven zero, proceed Trasadingen, ODINA	
U1-RE	588A	:58	Trasadingen, ODINA, maintaining flight level three seven zero, RYR588A	
1689	U1-RE	:09:04	SAS1689, descend to flight level two five zero	
U1-RE	1689	:09	Descending flight level two five zero, SAS1689	
1689	U1-RE	:12	Roger, two thousand feet or more, contact Milan one two seven decimal four five, bye-bye	
U1-RE	1689	:16	Two thousand or more, one two seven four five, SAS1689, bye-bye	
U1-RE	667	:20	CFG667, we are descending level three one zero and we are still on heading zero four three	
667	U1-RE	:27	Yes please, continue on the heading and maintain flight level three one zero	
U1-RE	667	:31	CFG667, descending three one zero, maintain heading	
992	U1-RE	:36	PGT992, set now course direct BAMUR, then ALGOI,	

Signature of person  
in charge of transcription :

TRANSCRIPT SHEET

Occurrence: PGT992 / CFG667 of 15.08.2003



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>
			<b>climb to flight level three zero zero</b>	
<b>U1-RE</b>	<b>992</b>	<b>20:09:41</b>	<b>BAMUR, then ALGOI, climbing three zero zero, PGT992</b>	
<b>992</b>	<b>U1-RE</b>	<b>:47</b>	<b>Roger</b>	
<b>667</b>	<b>U1-RE</b>	<b>:50</b>	<b>CFG667, set course direct to Delta Sierra four one two</b>	
<b>U1-RE</b>	<b>667</b>	<b>:56</b>	<b>CFG667, direct Delta Sierra four one two</b>	
<b>678</b>	<b>U1-RE</b>	<b>:10:13</b>	<b>DAN678, contact Rhine on one three two decimal four zero five, bye-bye</b>	
<b>U1-RE</b>	<b>678</b>	<b>:18</b>	<b>Two four zero five, DAN678, bye-bye</b>	
<b>992</b>	<b>U1-RE</b>	<b>:27</b>	<b>PGT992, turn right direct to ALGOI</b>	
<b>U1-RE</b>	<b>992</b>	<b>:29</b>	<b>Direct ALGOI, PGT992</b>	
<b>882</b>	<b>U1-RE</b>	<b>:37</b>	<b>LGL882, descend to flight level three zero zero</b>	

- end -

Src  
ACN

Analysis: TCAS PGT992/CFG667, 15.9.2003 Time [UTC]: 15.08.2003 20:08:31



⊙ BERN

△ KORED

465  
PGT992  
295 BAM330

294  
20:08:16

465  
CFG667  
308 ARS120

1.1 NM  
+1100 ft  
139°

296  
20:08:04  
1.4 NM  
+400 ft  
140°

305  
20:08:16

293  
20:07:52  
1.6 NM  
+700 ft  
141°

288  
20:07:40  
2.0 NM  
+1200 ft  
141°

284  
20:07:29

300  
20:08:04

300  
20:07:52

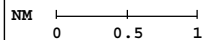
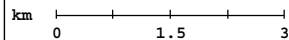
278  
20:07:17

300  
20:07:40

301  
20:07:28



1 : 99,693

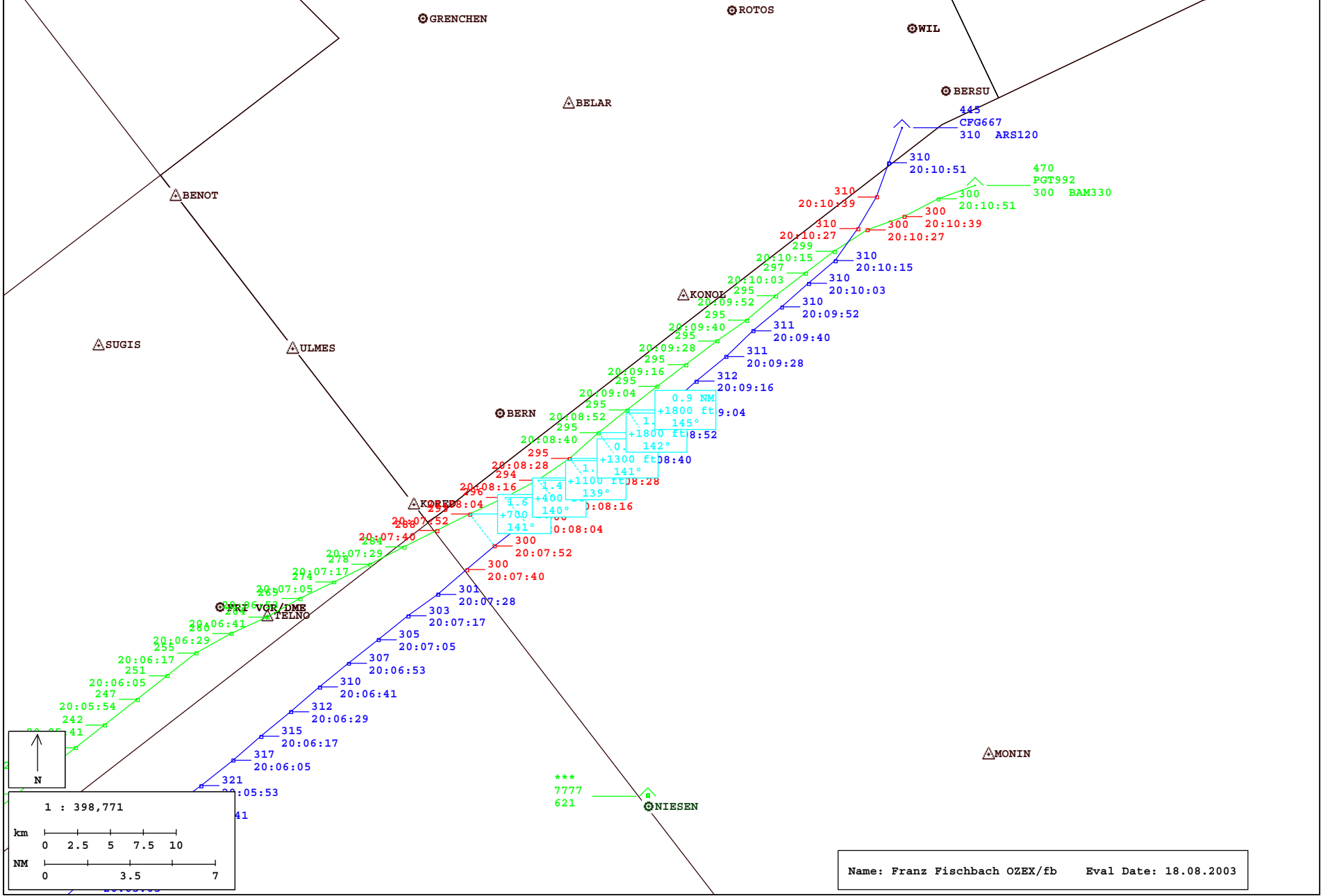


Name: Franz Fischbach OZEX/fb Eval Date: 18.09.2003



Src  
ACN

Analysis: TCAS PGT992/CFG667, 15.8.2003 Time [UTC]: 15.08.2003 20:11:11



Name: Franz Fischbach OZEX/fb Eval Date: 18.08.2003