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Swiss Confederation

Büro für Flugunfalluntersuchungen BFU  
Bureau d'enquête sur les accidents d'aviation BEAA  
Ufficio d'inchiesta sugli infortuni aeronautici UIIA  
Uffizi d'investigaziun per accidents d'aviatica UIAA  
Aircraft Accident Investigation Bureau AAIB

# **Final Report No. 1932 by the Aircraft Accident Investigation Bureau**

**concerning the serious incident (airprox)**

between PGA 410, Embraer E145, CS-TPL

and JM 737, McDonnell Douglas DC9-30

on 7 April 2004

15 NM south of the Passeiry VOR

OMASI, UACC West

Federal Palace North, CH-3003 Berne

## Final Report

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 is used in this report regardless of gender for reasons of data protection.

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**Place/date/time** OMASI, UACC West, 07.04.2004,13:34 UTC

**Aircraft** PGA 410, Embraer E145, CS-TPL, Portugalia Airlines  
Flight from Lisbon P (LPPT) to Basel-Mulhouse F (LFSB)  
JM 737, McDonnell Douglas DC9-30, US Navy  
Flight from Ramstein D (ETAR) to Sigonella I (LICZ)

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**Crews**

PGA 410	CMDR
	FO
JM 737	CMDR
	FO

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**ATS unit** Swiss Radar Area West, UACC

**Controllers**

Radar operator L3/K3

Coordinator L3/K3 (coach)

Coordinator L3/K3 (requalification)

Radar operator L2

Coordinator L2

**Airspace** **A**

## 1 History of the incident

On Wednesday 7 April 2004, a US Navy aircraft type DC9-30, flight JM 737, was making a military flight from Ramstein to Sigonella. At 13:20:13 UTC, the pilot called Geneva coupled sectors L3/K3 on frequency 134.315 MHz. He was at flight level FL 330 and was flying direct to waypoint GILIR. The radar operator identified him and cleared him on route TUROM – MILPA – GIRKU – TORINO, at flight level FL 330. He informed him that he would call him back for a higher flight level.

At the same time, an aircraft type E 145, flight PGA 410, of the Portugalia Airlines company was making a scheduled flight from Lisbon to Basel-Mulhouse. It was on the Marseille YY frequency of 128.780 MHz. The aircraft was maintaining flight level FL 340. The agreements (letter of agreement LoA) between Marseille and Geneva specify that aircraft with Basel-Mulhouse as their destination must be stable at flight level FL 300 maximum when passing waypoint SOPOL, i.e. before entering the Geneva control area.

At 13:32:17, flight PGA 410 passed waypoint SOPLO at flight level FL 340; crossing with the route of flight JM 737 would take place after approximately 2 minutes flying time. At this time, the radar coordinator for sector L3/K3, in the professional requalification phase under the supervision of a coach, called the Marseille radar coordinator to inform him that this aircraft should be at flight level FL 300. After agreeing with his radar operator, the Geneva radar coordinator instructed the Marseille radar coordinator to bring flight PGA 410 down immediately to flight level FL 300 at a rate of descent of 2500 ft/min. The Marseille controller initially refused as he could see traffic at flight level FL 330 on his radar screen. This traffic was flight JM 737, whose route was perpendicular to and convergent with that of flight PGA 410. The Geneva coordinator then informed him that the latter was climbing to flight level FL 350.

In fact, at 13:32:51, the sector L3/K3 radar controller had instructed the pilot of flight JM 737 to climb to flight level FL 350 directly towards waypoint MEDAM. He asked him if he could climb at a rate of 2000 ft/min: "*Can you give me... two thousand*" and to turn left onto heading 130. The pilot correctly read back FL 350 and the heading 130 but not the rate of climb. He left flight level FL 330 approximately 30 seconds after receiving the clearance to climb.

At 13:33:26, the radar controller asked the pilot of flight JM 737 for his rate of climb. The pilot responded with 1500 ft/min. The radar controller then instructed him to turn left immediately onto heading 125 and to maintain flight level FL 330. The pilot read this back correctly and informed him that he was leaving flight level FL 337 for flight level FL 330. He added that he could see the opposite traffic at flight level FL 340.

A little later, at 13:33:34, the Marseille radar controller instructed flight PGA 410 to descend immediately to flight level FL 300, but did not impose a rate of descent of 2500 ft/min as requested by the Geneva controller. Flight PGA 410 was 13 NM from the crossing point with the route of flight JM 737. It left flight level FL 340 for FL 300 about 30 seconds after the clearance, when flight JM 737 was at flight level FL 337.

At 13:33:52, when flight JM 737 was at a distance of 9 NM from the crossing point with the route of flight PGA 410, the Geneva sector L3/K3 Short Term Conflict Alert (STCA) was triggered.

The Geneva radar coordinator, still in telephone contact with the Marseille coordinator, informed him that, in the meantime, flight JM 737 was descending again to flight level FL 330 and asked him to maintain flight PGA 410 at flight level FL 340.

Without waiting, the Marseille radar controller asked the pilot of flight PGA 410 for his flight level; the latter replied "*About 340 descending now 300, PGA410*". The radar controller instructed him to turn right 30 degrees and to climb back to flight level FL 340, informing him of the conflicting traffic. The pilot answered: "*Have in TCAS*".

At 13:34:17, according to the radar recordings, the aircraft were 38 seconds from the crossing point, on converging routes. The altitude difference was 300 ft. The ground speed of PGA 410, which was descending towards FL 300, was 490 KT, and that of JM 737, which was descending towards FL 330, was 525 KT.

A few seconds later, the pilot of flight JM 737 announced that he was maintaining flight level FL 330 and that he had the traffic in sight. The radar controller cleared him direct Torino (TOP) VOR.

At 13:34:29, the Marseille coordinator announced that flight PGA 410 was climbing back to flight level FL 340 and asked the Geneva controller for the frequency to which he was to hand it over. The Geneva coordinator replied: "*To my frequency, 124.03*".

According to the radar recordings, flight JM 737 crossed the route of flight PGA 410 at 13:34:55. The lateral and vertical distances between the two aircraft were 2 NM and 900 ft respectively.

At 13:35:37, the pilot of flight PGA 410 contacted coupled sector L3/K3. Approximately 7 minutes later, for information, he informed the controller on duty that when they were at level FL 340 they had been cleared to flight level FL 300 and had had a traffic advisory with an aircraft 200 feet below them. The controller replied that he was aware of this and that he would be submitting a report.

Between 13:00 and 14:00, 31 flights were handled by sector L3/K3, 16 of them between 13:20 and 13:40.

## 2 Analysis

The Airprox incident between PGA 410 and JM 737 developed and was aggravated when each of the two aircraft was under the responsibility of different control sectors, the respective coordinators of which were in telephone contact to try to resolve the problem of conflicting convergence.

Analysis of the radar recordings shows that, following the successive clearances given by the sectors concerned, the two aircraft involved were on converging trajectories; this led to a perpendicular crossing at a lateral distance of 2 NM. From the time they crossed, the vertical trajectories were divergent; the altitude difference reached about 900 feet, whereas it was only 500 feet some 20 seconds earlier (see annex 1).

### 2.1 Air traffic control aspects

Flight JM 737, which was at flight level FL 330 in contact on sector frequency L3/K3, was to climb to flight level FL 350, a flight level coordinated with the adjacent Rome control centre.

PGA 410, which was maintaining flight level FL 340, was, however, expected by Geneva control centre at flight level FL 300. According to the organisation of the Geneva control sectors, this flight did not concern sector L3/K3. Nevertheless, the controllers for this sector had noticed it on their radar screen, given that it was in their assigned altitude range.

According to the statements of the Geneva controllers, Marseille control sometimes forgets to clear aircraft to descend to the specified level or is late giving this clearance.

At sector L2, the controllers had also seen on their radar screen that flight PGA 410 was maintaining flight level FL 340. The prospect of a late descent did not cause any problems for them.

To resolve the potential conflict situation caused by flight PGA 410 which was at an unexpected flight level in a busy traffic environment, the sector L3/K3 radar controller's strategy was to get flight JM 737 to climb as quickly as possible. He instructed his coordinator to telephone Marseille to get PGA 410 to start descending immediately to flight level FL 300. However, he did not think that about one minute would elapse between this request and the moment at which flight PGA 410 would carry it out.

At the same time, the Geneva radar controller instructed flight JM 737 to climb to flight level FL 350: "*JM 737, climb now flight level 350, direct MEDAM*", and then asked the question: "*Can you give me two thousand?*" JM 737 correctly read back the flight level, but did not mention the rate of climb. The formulation used to ask if he was able to climb at a rate of 2000 ft/min was not appropriate; the question should have been asked before the clearance to climb was given.

At 13:33:34, the Marseille radar controller instructed flight PGA 410 to descend to flight level FL 300: "*Portugalia 410 immediately descend level 300*", but without imposing on it the 2500 ft/min rate of descent requested by the Geneva coordinator. The commander's report also mentions that he started his descent at a rate of 1000 ft/min.

While flight JM 737 was at flight level FL337 and about 8 NM from the crossing point, the sector L3/K3 radar controller, realising that the situation was becoming critical, took the decision to get flight JM 737 to descend again. Still in telephone contact with Marseille and in the course of a tense discussion, the Geneva radar coordinator informed the controller on the line that flight JM737 was descending back to flight level FL 330 and insisted that flight PGA 410 should maintain flight level FL 340.

While flight PGA 410 was descending to flight level FL 300, the Marseille radar controller instructed it to turn right 30°, thereby initiating a hasty evasive action. At the time of this transmission, he instructed the pilot to climb back to flight level FL 340 in accordance with the request from Geneva control. When he had issued traffic information, the pilot reported that he could see it on his TCAS: "*Have in TCAS*".

The Marseille coordinator then informed Geneva by telephone that the aircraft was climbing back to flight level FL 340 and acknowledged that he had made a mistake by having the aircraft descend too late.

The three L3/K3 sector controllers recognised that it would have been preferable to wait for the two aircraft to cross before imposing a change in the flight level. The incident could have been avoided in this way. It is clear that the change in the flight level of these two aircraft, whose routes were going to cross, on different frequencies and control centres, presented a high risk of collision.

According to the radar controller's statements, the workload was thought to be high at the time of the incident. The transcription of the radiotelephone communications confirms this fact.

## 2.2 Flight management aspects

The requests for information necessary for the investigation which were sent to the US Navy by the AIIB elicited no response. On the other hand, the Portugalia Airlines company did send the investigator the internal company report which the commander of flight PGA 410 submitted at the time of the incident.

### Aspects relating to the management of flight JM 737

As the conflict developed, flight JM 737 was being controlled by sector L3/K3. The flight crew correctly obeyed the successive instructions from the controller to climb to flight level FL 350, to turn left twice and then to maintain flight level FL 330 due to an opposite traffic which was at FL 340. He reported that he had this traffic in sight when, according to the radar recordings, he was 4.8 NM from, and 500 feet below the Embraer PGA 410. The AAIB does not know if the US Navy DC9-30 was equipped with an onboard collision avoidance system. The flight crew never reported to ATC that they were carrying out a TCAS avoiding action.

### Aspects relating to the management of flight PGA 410

Flight PGA 410 was being controlled by Marseille sector YY. The reaction of its flight crew to the immediate descent instruction, judged slow by the controller, certainly caused him to modify his initial vertical separation strategy; this involved having the traffic descend to the level usually expected for the hand-over to Geneva control. Analysis of the radar recordings shows that PGA 410 started its descent at an average rate of 1000 ft/min which, if it had continued, would have led to a vertical separation from JM 737 close to 0 feet at the crossing point.

The aircraft was equipped with an onboard collision avoidance system. At no time did its pilot report a TCAS avoiding action on the frequency; he used the words "*Have in TCAS*" in response to essential traffic information issued by the controller at the time of the clearance to climb back to flight level FL 340. Given the particular configuration of the conflict and the lack of information on the TCAS indications, it is difficult to come to a conclusion about the type of resolution advisories issued. In his internal company incident report, the commander of flight PGA 410 stated that "*a climb was initiated in response to TCAS*". It is probable that a traffic advisory ("TRAFFIC") was issued during the intense radiotelephone exchanges which took place between the controller and PGA 410 during which the flight crew were asked again to climb to level FL 340. Afterwards, it is possible that a climb resolution advisory ("ADJUST V/S") was issued at the moment the pilots stopped their descent to regain the requested flight level.

## 2.3 Human aspects

The sector L3/K3 radar controller had started work at 06:50. In his statement, he declared that on the morning of 7 April there was a lot of work and that he had already been faced earlier with a similar incident which turned out to have no safety consequences. After his break, he was grateful to be able to occupy the position of TSI trouble shooter IFREG ((Intégration des Fonctions de REGulation), the only ACC position, according to his statement, which provided a little respite. The supervisor then asked him to take on the function of radar controller for sector L3/K3 because of the shortage of personnel that day and because of a late arrival. He agreed, while insisting that he should be replaced as soon as the controller who was absent at the time arrived. The traffic load was very high; however, it was not possible to uncouple the two sectors, again because of the shortage of personnel. Despite three repeated

requests, the radar controller had to remain at this sector until the end of his duty shift. The incident took place about a quarter of an hour before the end of his shift and it was not possible for him to be replaced after this event, as prescribed.

### 3. Conclusions

#### 3.1 Findings

- The incident took place at 13:34, 5 NM north-east of OMASI, in class A airspace, between flight levels FL 330 and FL 340.
- At the time of the incident, according to the radar recordings, the minimum lateral distance was 2 NM and the minimum altitude difference was 900 feet.
- At the time of the incident, flight JM 737 was being controlled by Geneva sector L3/K3 and flight PGA 410 by Marseille sector YY.
- According to the log for the Flow Management Position (FMP), changes in sector organisation had been made because of a shortage of personnel. Sectors L3 and K3 were coupled.
- The workload was judged to be very high by the radar controller and average by the radar coordinator and his coach.
- The radar coordinator who was working under the supervision of a coach was in possession of the appropriate licence but was not able to work alone because of an extended absence (of more than 30 days).
- The radar controller as well as the coach were in possession of the appropriate licences.
- The aircraft on flight PGA 410 was equipped with a TCAS; on the other hand, it was not possible to determine if aircraft JM 737 had one.
- The ATC unit submitted an Air Traffic Incident Report (ATIR).
- Weather: QAO-A1 09:00-15:00 UTC  
FL300 280/080 FL340 280/070 FL390 280/060

#### 3.2 Cause

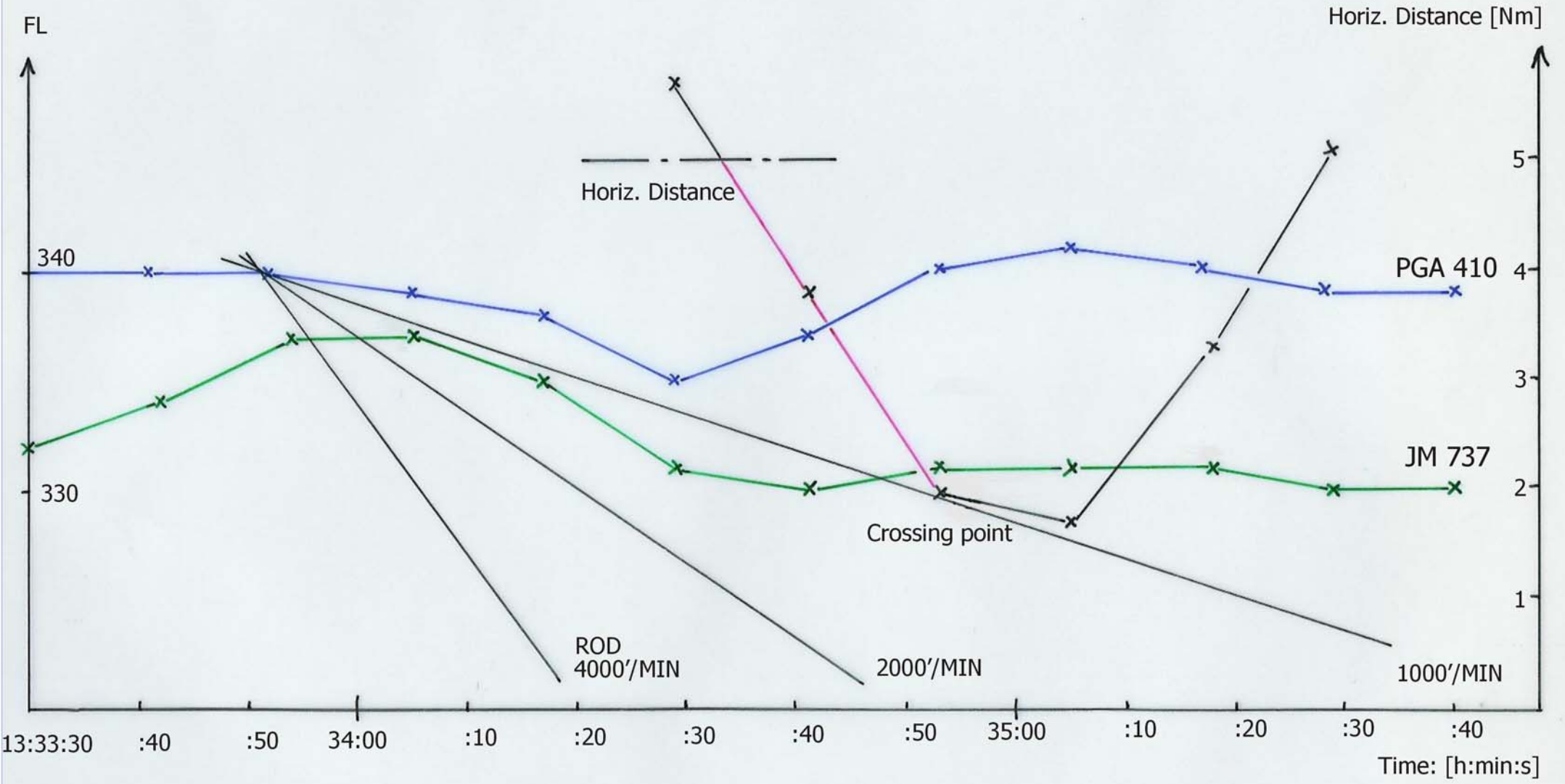
The incident is due to inappropriate actions taken by the ATC services involved during changes of flight levels, in a situation of heavy traffic.

Berne, 5 June 2007

Aircraft Accident Investigation Bureau

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Airprox PGA 410 / JM 737 - Horizontal and vertical distances





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

Investigation into the **incident** that occurred on **07.04.2004**

- Subject of transcript:	<b>PGA410 / JM737</b>
- Centre concerned:	Swiss Radar Area West
- Designation of unit:	Upper Area, sector L3 & L2
- Frequency / Channel:	124.030 MHz & 12505 MHz
- Date and period (UTC) covered by attached extract:	07.04.2004 13:20 - 13:43 UTC
- Date of transcript:	30 April 2004
- Name of official in charge of transcription:	Ivan Rochat

- 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, 30 April 2004



Ivan Rochat

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## Abbreviations

Sector                      Designation of sector

L3                      -      Swiss Radar Area West, Upper Area, sector L3 & K3

<u>Aircraft</u>	-	<u>Callsign</u>	<u>Type of acft</u>	<u>Flight rules</u>	<u>ADEP</u>	-	<u>ADES</u>
<b>737</b>	-	<b>JM737</b>	<b>DC93</b>	<b>IFR</b>	<b>ETAR</b>	-	<b>LICZ</b>
205	-	Alitalia 205	A321	IFR	EGLL	-	LIRF
7597	-	Saudia 7597	B74S	IFR	LFPG	-	LIRA
1052	-	French Post 1052	B733	IFR	LIPY	-	LFPG
557	-	Air Portugal 557	A319	IFR	EDDM	-	LPPT
887	-	Eurocypria 557	B738	IFR	EGKK	-	LCPH
LBY	-	LXGBY	H25B	IFR	LIML	-	LFPB
LRA	-	LXPRA	LJ60	IFR	LIML	-	LFPB
16T	-	Lufthansa 16T	A306	IFR	LEMD	-	EDDF
75H	-	Lufthansa 75H	CRJ2	IFR	LFBO	-	EDDM
2598	-	Speedbird 2598	B734	IFR	EGKK	-	LIPX
666	-	Condor 666	A320	IFR	EDDF	-	LEMG
2602	-	Speedbird 2602	B734	IFR	EGKK	-	LIRP
7LR	-	British 7LR	E145	IFR	LIRP	-	EGCC
468	-	Alitalia 468	A319	IFR	LIMC	-	EDDL
<b>410</b>	-	<b>Portugalia 410</b>	<b>E145</b>	<b>IFR</b>	<b>LPPT</b>	-	<b>LFSB</b>
2578	-	Speedbird 2578	B734	IFR	EGKK	-	LIMF
DFB	-	DCFFB	LJ60	IFR	EDSB	-	LFMD

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OGEY / 30 April 2004

## TRANSCRIPT SHEET

Occurrence: PGA410 / JM737 of 07.04.2004



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>
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**Coupled Frequencies: 124.030 MHz & 134.315 MHz, sector L3 & K3**

L3	737	13:20:13	Control, bonjour, Juliett Mike seven three seven, flight level three three zero, direct GILIR.	
737	L3	18	Juliett Mike seven three seven, bonjour, identified, ... cleared TUROM - MILPA - GIRKU - Torino, flight level three three zero, call you back for higher.	
L3	737	27	We'll maintain three three zero, cleared to Roma via Torino.	
737	L3	32	To TUROM, this is a right turn and a track from your position is two two seven.	
L3	737	38	Ah, roger, TUROM and then... to... Torino, Juliett Mike seven three seven.	
737	L3	43	Affirm.	
205	L3	58	Alitalia two zero five, Roma now, one three zero decimal one eight zero, au revoir.	
L3	205	13:21:03	Three zero one eight zero, bye-bye, two zero five.	
7597	L3	13:22:17	Saudia seven five niner seven, report your heading.	
L3	7597	20	Heu..., we are on heading one two five.	
7597	L3	22	Roger, continue heading one two five.	
L3	7597	24	Continue heading one two five, Saudia seven... five nine seven.	
L3	1052	29	Swiss... good afternoon, French Post one zero five two, three four zero.	
1052	L3	34	French Post one zero five two, good afternoon, squawk five seven two six.	
L3	1052	38	Five seven two six on the squawk, one zero five two.	
1052	L3	49	French Post one zero five two, maintain flight level three four zero, AOSTA - MOLUS - GALBI - TINIL.	
L3	1052	57	Three four zero, AOSTA... - MOLUS - TINIL..., one zero five two, thank you.	

Signature of person  
in charge of transcription :

TRANSCRIPT SHEET

Occurrence: PGA410 / JM737 of 07.04.2004



To Col.1	From Col.2	Time Col.3	Communications Col.4	Observations Col.5
557	L3	13:23:25	Air Portugal five five seven, contact now Marseilles, channel one three three decimal two three five.	
L3	557	30	One three three two three five, Air Portugal five five seven, bye-bye.	
557	L3	34	Bye.	
887	L3	37	Eurocypria eight eight seven, contact Rome, one three zero, one eight zero.	
L3	887	42	One three zero one eight zero, thank you, bye-bye.	
887	L3	45	Bye.	
LBY	L3	13:24:20	Lima Bravo Yankee, contact now Radar, one two eight decimal one five five, goodbye.	
L3	LBY	26	Two eight one five five, Lima Yankee, bye.	
LBY	L3	29	XXXXX.	Noise
L3	LRA	33	Swiss Radar, good afternoon, Lima X-ray Papa Romeo Alfa, climbing to three two zero.	
LRA	L3	38	Lima X-ray Papa Romeo Alfa, bonjour, identified, call you back for higher.	
L3	16T	47	Swiss, good afternoon, Lufthansa one six Tango, flight three four zero, direct OMASI.	
16T	L3	52	Lufthansa one six Tango, good afternoon, flight level three four zero, ... MOLUS - BERSU.	
L3	16T	58	MOLUS - BERSU, Lufthansa one six Tango, maintain flight level three four zero.	
L3	737	13:25:05	<b>And control, Juliett Mike seven three seven, confirm ????? flight after TUROM.</b>	Unreadable
737	L3	09	<b>After TUROM, MILPA - GIRKU - MEDAM - Torino.</b>	
L3	737	16	<b>MILPA - GIRKU - MEDAM - Torino, Juliett Mike seven three seven, thank you.</b>	
737	L3	21	XXXXX.	Microphone noise

Signature of person in charge of transcription :

TRANSCRIPT SHEET

Occurrence: PGA410 / JM737 of 07.04.2004



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>
16T	L3	13:26:10	Lufthansa one six Tango, to permit another aircraft to descend..., make it ten degrees to the left.	
L3	16T	18	Ten degrees to the left, new heading zero three zero, Lufthansa one six Tango.	
16T	L3	22	Roger, confirm heading zero three zero?	
L3	16T	24	Affirm.	
16T	L3	25	Roger.	
L3	75H	28	Radar, good afternoon, Lufthansa seven five Hotel, level three six zero, on course MOLUS.	
75H	L3	33	Lufthansa seven five Hotel, bonjour, report heading.	
L3	75H	38	Lufthansa seven five Hotel, the heading zero three seven now.	
75H	L3	42	Roger, make it heading... zero four five.	
L3	75H	45	Right turn heading zero four five, Lufthansa seven five Hotel.	
LRA	L3	52	Lima Romeo Alfa, direct ORSUD.	
L3	LRA	55	To ORSUD..., Lima Romeo Alfa, thank you.	
LRA	L3	13:57:04	Lima Romeo Alfa, climb to flight level three eight zero.	
L3	LRA	07	Climb three eight zero, Romeo Alfa.	
7597	L3	29	Saudia seven five niner seven, own navigation Torino.	
L3	7597	33	Heu..., own navigation Torino, Saudia seven five nine seven.	
75H	L3	13:28:31	Lufthansa seven five Hotel, start descent now flight level three two zero.	
L3	75H	36	Lufthansa seven five Hotel, we're leaving level three six zero descending level three two zero.	
75H	L3	41	And rate of descend..., thousand five hundred or greater.	
L3	75H	45	One thousand five hundred or more, Lufthansa seven five Hotel.	

Signature of person in charge of transcription :

TRANSCRIPT SHEET

Occurrence: PGA410 / JM737 of 07.04.2004



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>
L3	520	13:28:49	Radar bonjour, Avcon five two zero, passing flight level two seven zero, climb flight level two..., three five zero, on course to TUROM.	
520	L3	57	Avcon five two zero, bonjour, identified, call you back for higher.	
L3	520	13:29:00	XXXXX.	Microphone noise
520	L3	07	Avcon five two zero, continue climb flight level three six zero.	
L3	520	10	And flight level three six zero, Avcon five two zero.	
LRA	L3	13	Lima X-ray Papa Romeo Alfa, contact Radar, one two eight one five five.	
L3	LRA	17	One two eight one five five, Lima Romeo Alfa, bye.	
L3	2598	24	Radar, hello, Speedbird two five nine eight, flight level three three zero, maintaining.	
2598	L3	29	Speedbird two five nine eight, bonjour, identified, maintain flight level three three zero, MOKIP - PERAK - Saronno.	
L3	2598	35	Roger, read MOKIP - PERAK - Saronno, flight level three three zero, maintaining, Speedbird two five nine eight.	
666	L3	51	Condor triple six, Marseilles, channel one three three two three five.	
L3	666	55	Condor triple six, one three three decimal two three five, bye-bye.	
666	L3	58	Au revoir, Monsieur.	
2602	L3	13:30:19	Speedbird two six zero two, for descent clearance, Radar, one two six decimal zero five, goodbye.	
L3	2602	23	One two six zero five, Speedbird two six zero two, goodbye.	
75H	L3	33	Lufthansa seven five Hotel, own navigation to SOSAL then KORED.	
L3	75H	37	Lufthansa seven five Hotel, direct SOSAL then KORED.	

Signature of person  
in charge of transcription :

TRANSCRIPT SHEET

Occurrence: PGA410 / JM737 of 07.04.2004



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>
16T	L3	13:30:48	Lufthansa one six Tango, resume own navigation direct BERSU.	
L3	16T	52	Fly direct BERSU, Lufthansa one six Fo, Tango.	
L3	75H	13:31:01	And Luf, ... Lufthansa seven five Hotel, just to confirm, after SOSAL, KORED?	
75H	L3	07	After SOSAL, BERSU.	
L3	75H	09	BERSU, Lufthansa seven five Hotel, thank you.	
520	L3	17	Avcon five two zero, for higher level, Radar, one three three six three zero.	
L3	520	22	One three three six three zero, au revoir, five two zero.	
7597	L3	33	Saudia seven five niner seven, Rome, one three zero one eight zero.	
L3	7597	41	One three zero one eight zero, good day.	
7597	L3	44	Good day, Sir.	
L3	7LR	47	Swiss, good day, British seven Lima Romeo, climbing flight level three two zero towards AOSTA.	
7LR	L3	52	British seven Lima Romeo, good afternoon, identified, call you back for higher.	
L3	7LR	57	XXXXX.	Microphone noise
7LR	L3	13:32:15	British seven Lima Romeo, climb to flight level three six zero.	
L3	7LR	19	Three six zero, seven Lima Romeo.	
<b>737</b>	<b>L3</b>	<b>51</b>	<b>Juliett Mike seven three seven, climb now flight level three five zero, direct MEDAM.</b>	
<b>L3</b>	<b>737</b>	<b>56</b>	<b>Copied, climb now flight level three five zero, direct MEDAM, Juliett Mike three, seven three seven.</b>	
<b>737</b>	<b>L3</b>	<b>13:33:01</b>	<b>Can you give me... two thousand?</b>	
<b>737</b>	<b>L3</b>	<b>13</b>	<b>Juliett Mike seven three seven, left turn heading... one... three zero.</b>	

Signature of person in charge of transcription :

TRANSCRIPT SHEET

Occurrence: PGA410 / JM737 of 07.04.2004



To Col.1	From Col.2	Time Col.3	Communications Col.4	Observations Col.5
L3	737	13:33:16	Roger, left turn heading one three zero.	
737	L3	26	Juliett Mike seven three seven, what's the rate of climb now?	
L3	737	29	Roger, rate of climb now, one thousand five hundred feet.	
737	L3	32	Roger, immediate left turn, please, one two five, heading.	
L3	737	36	Immediate left turn, one two five.	
737	L3	44	Juliett Mike seven three seven, maintain flight level three three zero.	
L3	737	47	Maintaining flight level three three zero, in the descent now from three three seven to three three zero.	
737	L3	53	We have a traffic, opposite..., three four zero.	
L3	737	56	Ah, roger and the heading?	
737	L3	57	One two five.	
L3	737	59	Heading one two five, will that keep us out of Swiss airspace?	
737	L3	13:34:02	Yes.	
737	L3	03	Affirm.	
L3	737	04	XXXXX.	Microphone noise
L3	468	05	Swiss Radar, bonjour, Alitalia four six eight, maintaining flight level three three zero, radar heading two niner four.	
468	L3	13	Alitalia four six eight, call you back.	
L3	737	20	Juliett Mike seven three seven is now three three zero.	
L3	737	34	????? Juliett Mike seven three seven has traffic in sight.	Unreadable
737	L3	38	Roger and maintain flight level three three zero.	
L3	737	40	Three three zero.	

Signature of person in charge of transcription :



TRANSCRIPT SHEET

Occurrence: PGA410 / JM737 of 07.04.2004



To Col.1	From Col.2	Time Col.3	Communications Col.4	Observations Col.5
737	L3	13:35:25	<b>Juliett Mike seven three seven..., proceed now direct ... Torino now.</b>	
L3	737	30	<b>Direct Torino now, Juliett Mike seven three seven, thank you.</b>	
75H	L3	13:36:17	Lufthansa seven five Hotel, contact Radar, one three two eight one five.	
L3	75H	22	One three two eight one five, Lufthansa seven five Hotel, goodbye Madam.	
16T	L3	26	Lufthansa one six Tango, contact Radar on... one three four six zero five.	
L3	16T	32	One three four decimal six zero five, Lufthansa one six Tango, bye.	
L3	410	37	<b>Heu..., Control, good afternoon, Portugalia four one zero, heading zero seven five, maintaining three four zero.</b>	
410	L3	43	<b>Portugalia four one zero, bonjour, continue heading.</b>	
L3	410	46	<b>Maintaining heading zero seven five, Portugalia four one zero.</b>	
L3	468	50	Swiss Control, Alitalia four six eight, still on heading two niner four.	
468	L3	53	Yes, continue heading.	
L3	468	55	Continue, four six eight, ??????	Unreadable
L3	2578	13:37:41	Radar, hello, Speedbird two five seven eight, flight level three five zero, routing MOKIP.	
2578	L3	46	Speedbird two five seven eight, bonjour, maintain flight level three five zero, call you back for lower.	
L3	2578	50	XXXXX.	Microphone noise
L3	468	56	Swiss Radar, Alitalia four six eight, any chance to climb flight level three eight zero?	
468	L3	13:38:02	Station calling, say again.	

Signature of person in charge of transcription :

TRANSCRIPT SHEET

Occurrence: PGA410 / JM737 of 07.04.2004



To Col.1	From Col.2	Time Col.3	Communications Col.4	Observations Col.5
L3	468	13:38:04	It's Alitalia four six eight on... radar heading two niner four, maintaining three three zero, requesting climb three eight zero XXXXX.	Could be "if possible"
468	L3	10	Yes, I call you back as soon as possible, this is traffic so continue this heading.	
L3	468	15	Maintaining, four six eight.	
<b>410</b>	<b>L3</b>	<b>21</b>	<b><i>Portugalia four one zero, now... left turn zero two zero.</i></b>	
<b>L3</b>	<b>410</b>	<b>25</b>	<b><i>Left turn zero two zero, Portugalia four one zero.</i></b>	
<b>410</b>	<b>L3</b>	<b>53</b>	<b><i>Portugalia four one zero, left turn heading three six zero.</i></b>	
<b>L3</b>	<b>410</b>	<b>56</b>	<b><i>Left turn heading three six zero, Portugalia four one zero.</i></b>	
<b>410</b>	<b>L3</b>	<b>13:39:01</b>	<b><i>Portugalia four one zero, further left heading three five zero, descend to flight level two eight zero now.</i></b>	
<b>L3</b>	<b>410</b>	<b>08</b>	<b><i>Descend flight level three, ... confirm flight level?</i></b>	
<b>410</b>	<b>L3</b>	<b>13</b>	<b><i>Flight level two eight zero and... left turn heading three five zero.</i></b>	
<b>L3</b>	<b>410</b>	<b>17</b>	<b><i>Descend level two eight zero, left turn heading three five zero, Portugalia four one zero.</i></b>	
468	L3	25	Alitalia four six eight, climb to flight level three six zero.	
L3	468	28	Climbing level three six zero, Alitalia four six eight.	
468	L3	33	Alitalia four six eight, right turn heading... three... four zero.	
L3	468	37	Turning right heading three six zero, Alitalia four six eight.	
<b>737</b>	<b>L3</b>	<b>47</b>	<b><i>Juliatt Mike seven three seven, climb to flight level three five zero now.</i></b>	
<b>L3</b>	<b>737</b>	<b>51</b>	<b><i>Okay, three five zero now, Juliatt Mike seven three seven, thanks.</i></b>	
DFB	L3	54	Delta Fox Bravo, descend to flight level three three zero now.	

Signature of person in charge of transcription :

TRANSCRIPT SHEET

Occurrence: PGA410 / JM737 of 07.04.2004



To Col.1	From Col.2	Time Col.3	Communications Col.4	Observations Col.5
L3	DFB	13:39:57	Roger, we leave three five zero, descend three three zero for Fox Bravo.	
7LR	L3	13:40:07	British Lima Romeo, contact Radar, one two eight one five five.	
L3	7LR	11	One two eight one five five, British seven Lima Romeo, ciao.	
468	L3	50	Alitalia four six eight, own navigation direct PENDU.	
L3	468	53	Direct PENDU, ????? Alitalia four six eight.	Unreadable
<b>410</b>	<b>L3</b>	<b>13:41:04</b>	<b>Portugalia four one zero, heu... are you on a heading three five zero?</b>	
<b>L3</b>	<b>410</b>	<b>08</b>	<b>Portugalia ... four one zero, we are descending level two eight zero on heading three five zero.</b>	
<b>410</b>	<b>L3</b>	<b>16</b>	<b>Roger, further left heading three four zero.</b>	
<b>L3</b>	<b>410</b>	<b>19</b>	<b>Heading three four zero, Portugalia... four one zero.</b>	
<b>737</b>	<b>L3</b>	<b>30</b>	<b>Juliett Mike seven three seven, contact Rome, one three zero decimal one eight zero.</b>	
<b>L3</b>	<b>737</b>	<b>35</b>	<b>One three zero decimal one eight zero, au revoir.</b>	
<b>737</b>	<b>L3</b>	<b>38</b>	<b>XXXXX.</b>	Microphone noise
DFB	L3	54	Delta Fox Bravo, descend to flight level two niner zero.	
L3	DFB	57	Descend level two nine zero, Fox Fox Bravo.	
<b>L3</b>	<b>410</b>	<b>13:42:20</b>	<b>Swiss, Portugalia four one zero?</b>	
<b>410</b>	<b>L3</b>	<b>22</b>	<b>Yes.</b>	
<b>L3</b>	<b>410</b>	<b>24</b>	<b>Go ahead, Portugalia four one zero.</b>	
<b>410</b>	<b>L3</b>	<b>27</b>	<b>Okay, just to inform you when we were at level three four zero, we were cleared to level three zero zero and we had a traffic advisory with an airplane two hundred feet below us, okay, just to inform you.</b>	
<b>L3</b>	<b>410</b>	<b>38</b>	<b>Yes, we know that..., I'm gonna file a report, anyway.</b>	
<b>410</b>	<b>L3</b>	<b>41</b>	<b>Okay, thank you.</b>	

Signature of person in charge of transcription :

TRANSCRIPT SHEET

Occurrence: PGA410 / JM737 of 07.04.2004

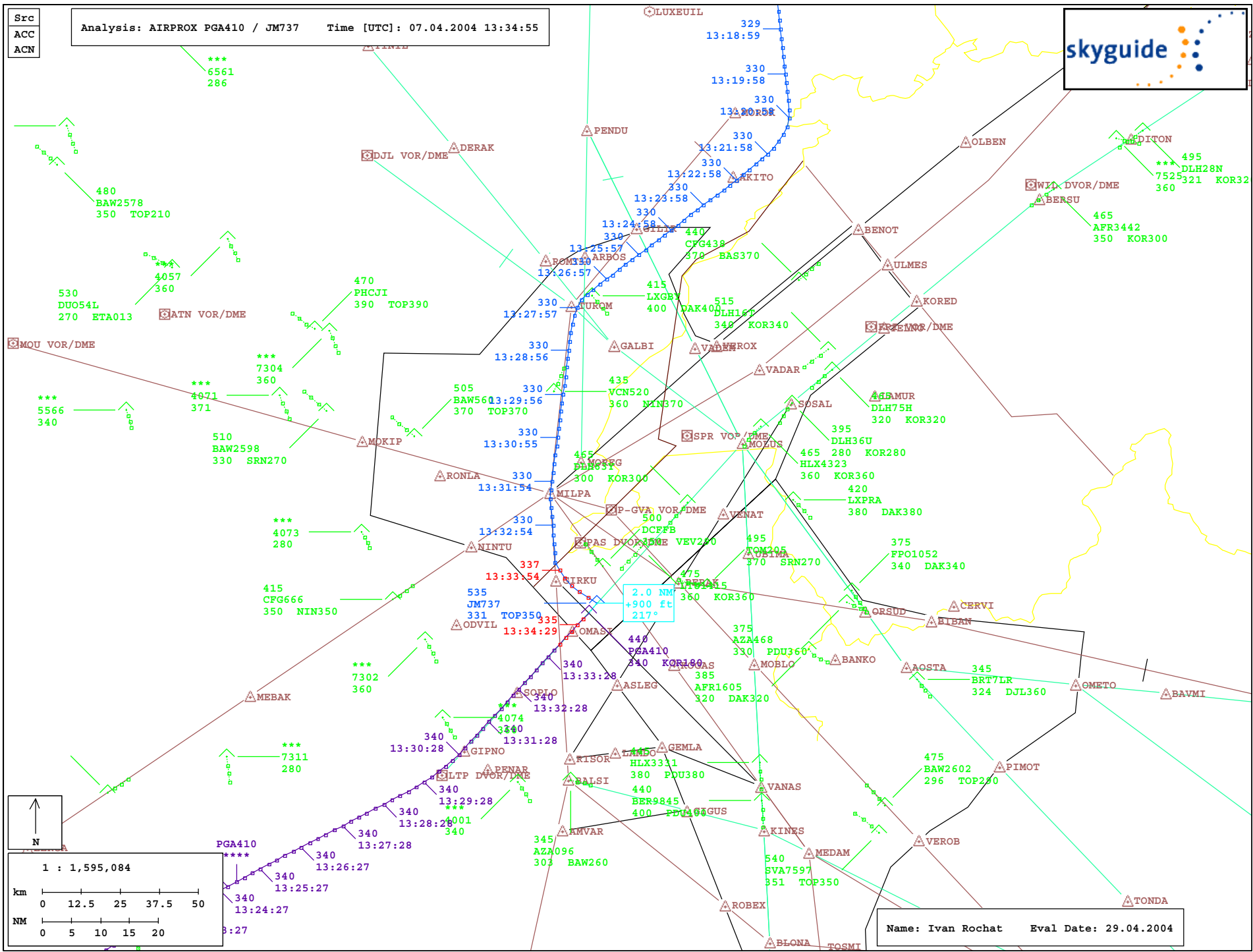


To <u>Col.1</u>	From <u>Col.2</u>	Time <u>Col.3</u>	Communications <u>Col.4</u>	Observations <u>Col.5</u>
410	L3	13:43:03	<i>Portugalia four one zero, now right turn to KORED.</i>	
L2	410	06	<i>Direct KORED, Portugalia four one zero.</i>	
410	L3	12	<i>Portugalia four one zero, continue descent flight level two four zero.</i>	
L3	410	15	<i>Continue descent two four zero, Portugalia four one zero.</i>	
410	L3	19	<i>Portugalia four one zero, continue with radar now, one two six zero five.</i>	
L3	410	24	<i>One two six zero five, we have... one, one two six zero five, Portugalia four one zero, bye.</i>	
410	L3	30	<i>Bye-bye.</i>	

Signature of person  
in charge of transcription :

Src  
ACC  
ACN

Analysis: AIRPROX PGA410 / JM737 Time [UTC]: 07.04.2004 13:34:55

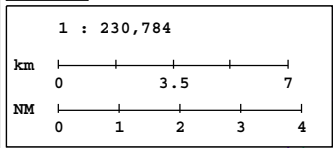
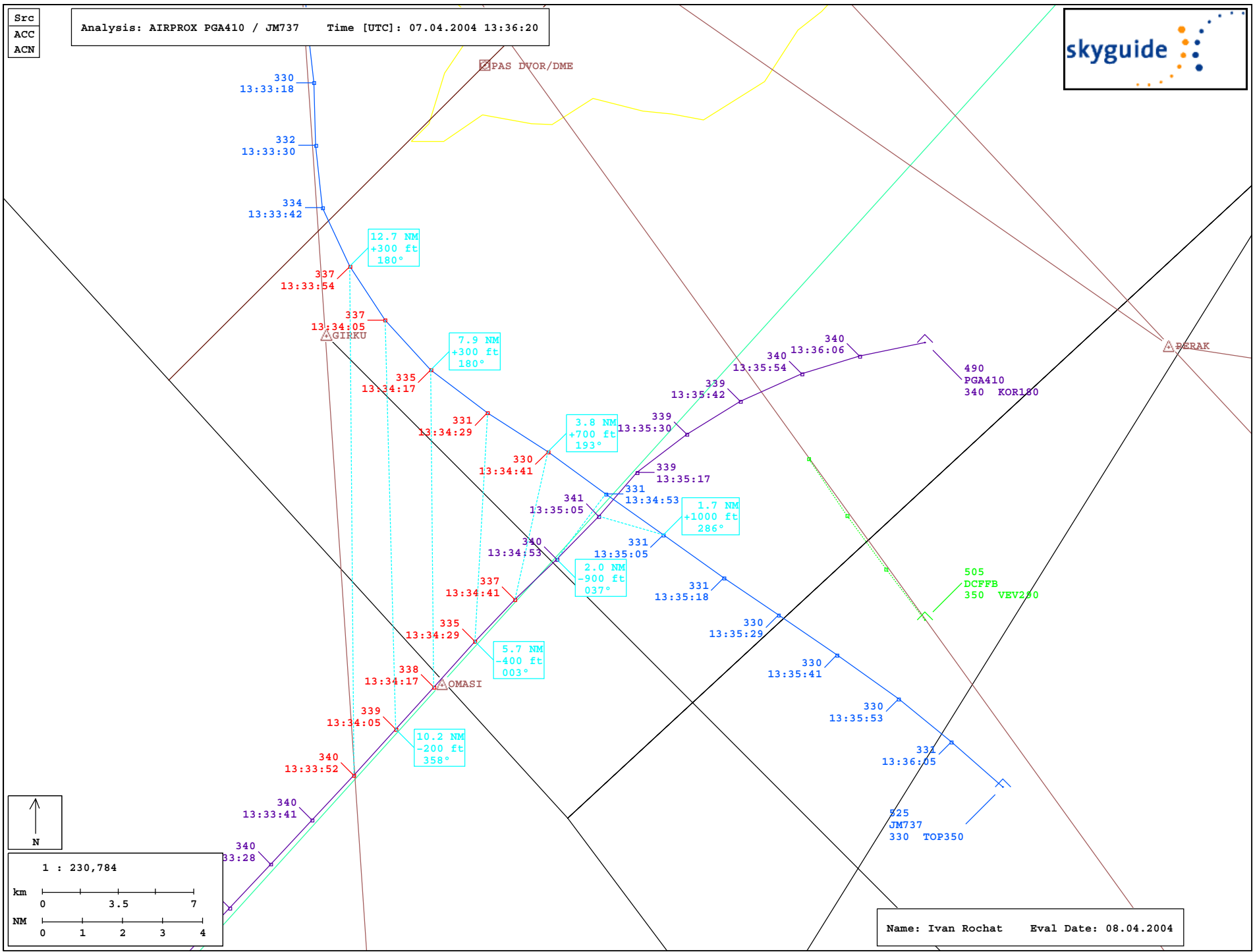


2.0 NM  
+900 ft  
217°

Name: Ivan Rochat Eval Date: 29.04.2004

Src  
ACC  
ACN

Analysis: AIRPROX PGA410 / JM737 Time [UTC]: 07.04.2004 13:36:20



Name: Ivan Rochat Eval Date: 08.04.2004