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Aircraft Accident Investigation Bureau AAIB

Final Report No. 2076

by the Aircraft Accident

Investigation Bureau

concerning the serious incident (AIRPROX)
involving the Boeing aircraft, B737-800, registration D-AHFO
operated by TUIfly under flight number HLX 2CX
and the Piper aircraft, P46T, registration OO-NMU,
operated by Vianatura
on 29 September 2008
near SOSAL
20 NM west south-west of Fribourg

General remarks concerning 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 art 3.1 of the 9th edition, applicable from 1 November 2001, of Annex 13 to the Convention on International Civil Aviation of 7 December 1944 and article 24 of the Federal Air Navigation Act, 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 incident 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 definitive version of this report is the original in the French language

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

Final report

Aircraft

Boeing B737-800, flight HLX 2CX, registration D-AHFO

Operator: TUIfly

Owner: TUIfly

from Fuerteventura GCFV to Basel-Mulhouse LFSB

Scheduled IFR commercial flight

Piper P46T, registration OO-NMU

Operator: Vianatura

Owner: J & G N.V. Ondernemersstraat 4, 2500 Lier, Belgium

from Varese LILN to Antwerp EBAW

Private flight, IFR

Crews

HLX 2CX

CMD

not communicated

FO

not communicated

OO-NMU

CMD

not communicated

Location

near SOSAL, 20 NM west south-west of Fribourg

Date and time

29 September 2008 at 11:05 UTC

ATS unit

Swiss Radar Upper Area Control West UAC West, sectors KL1 and KL2

Terminal Control Geneva TCG, sector INE

Controllers

KL1: Radar Executive RE: Swiss citizen, born 1955

Radar Planner RP: Serbian citizen, born 1969

KL2: Radar Executive RE (coach): Swiss citizen, born 1973

Radar Executive RE (trainee): Swiss citizen, born 1970

Radar Planner RP: Swiss citizen, born 1983

INE NE: Radar controller: Swiss citizen, born 1967

Radar coordinator (coach): Swiss citizen, born 1978

Radar coordinator (trainee): Swiss citizen, born 1987

Airspace

C

Synopsis

On 29 September 2009 a serious incident occurred in Geneva-controlled airspace due to a coordination with a control sector which didn't correspond to the sector configuration at the time of the incident. Consequently an aircraft was transferred on the frequency of an inappropriate sector. It was followed by a dangerous convergence between a descending aircraft and another aircraft which was maintaining its flight level.

1 Factual information

1.1 Sector distribution and control positions at the time of the accident

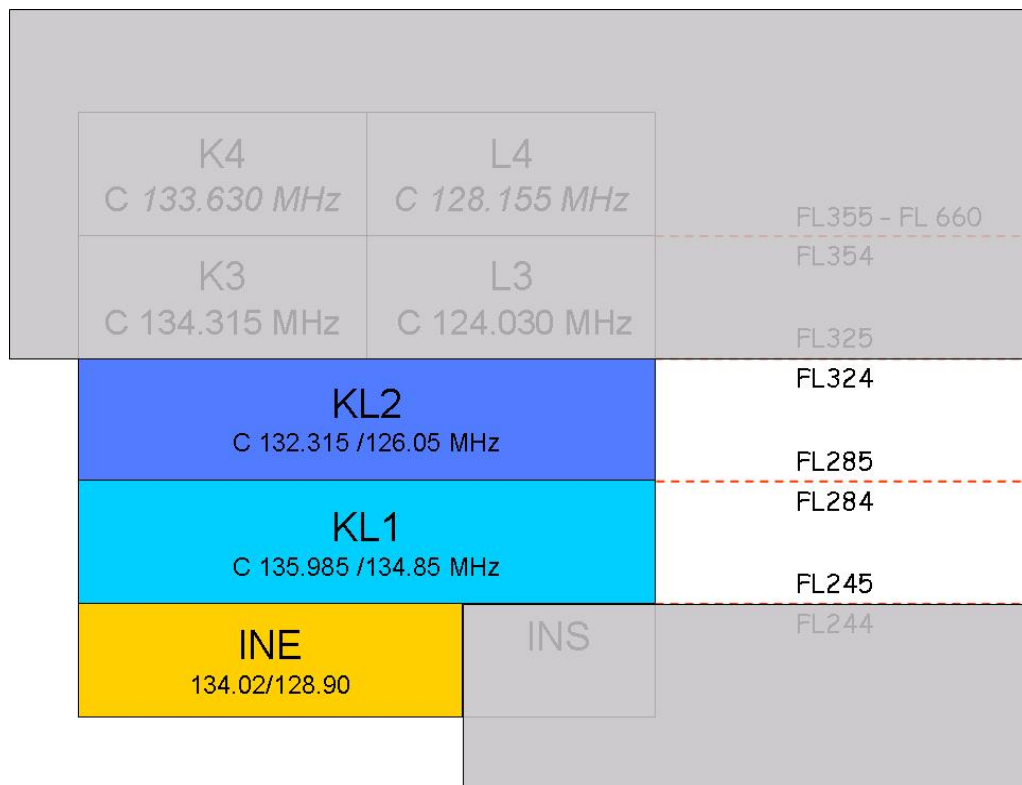


Fig. 1: Vertical profile of sectors Upper Area Control UAC West and Terminal Control Geneva TCG

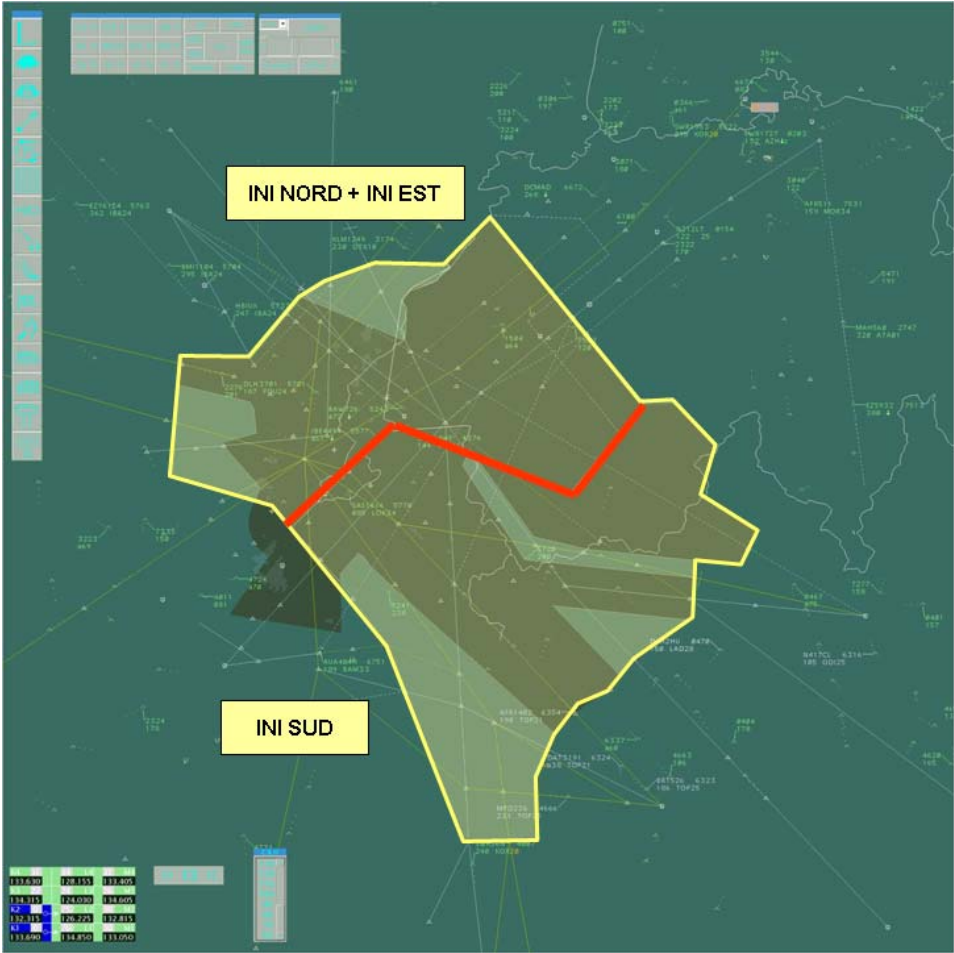


Fig. 2: Plan view of Terminal Control Geneva TCG sectors

Control sectors Upper Area Control (UAC) K1 and L1, plus K2 and L2, were combined, as KL1 and KL2 at the respective positions KL1 and L2. At Terminal Control Geneva (TCG), only sectors INI North and INI East were combined into INI NE situated at the INI Nord position.

Upper sectors KL1 and KL2 work in a stripless control environment.

The TCG INI sectors work with control strips.

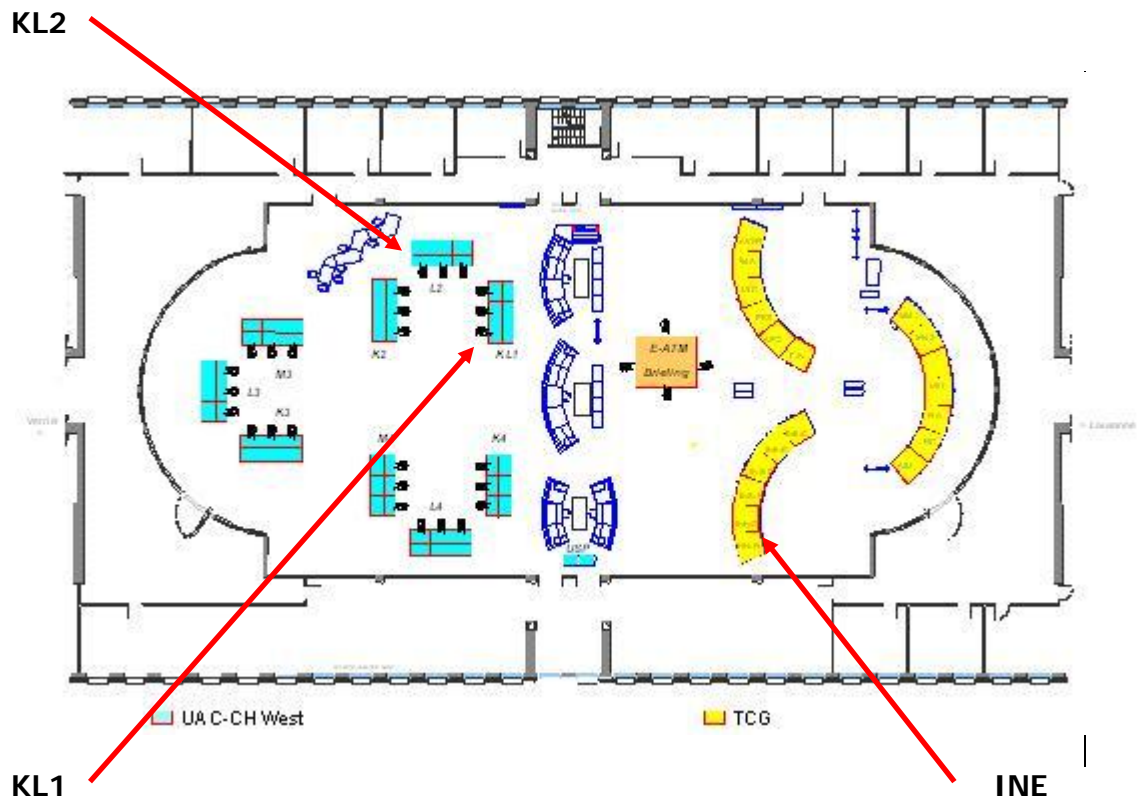


Fig. 3: Control positions in the control room

1.2 History of the incident

On Monday 29 September 2008, a P46T Malibu type aircraft, registration OO-NMU, was making a private IFR flight from Varese, Italy, to Antwerp, Belgium. Its pilot made contact with Geneva sector KL1 at 10:51:36 UTC on the 134.850 MHz frequency. He informed them that the aircraft was climbing to flight level FL 240 and that he was en route to waypoint PENDU. He added that he would like flight level FL 260 for cruising.

During this time, a B737-800, flight number HLX 2CX and radio callsign Yellow Cab 2 CX, was making an IFR flight from Fuerteventura to Basel-Mulhouse. The pilot made contact with Geneva control, sector KL2 at 10:52:12 UTC on the 126.050 MHz frequency. The aircraft had just passed La Tour du Pin LTP VOR and was passing flight level FL 310 in descent to flight level FL 300. Control identified it and cleared it to fly via points LAMUR and KONOL. The controller acting as radar executive RE was a controller undergoing requalification.

Since the destination of flight HLX 2CX was Basel, the agreements with Zurich specify that this flight should be transferred to them on its descent to flight level FL 180.

At 10:53:29 UTC, the sector KL1 RE cleared aircraft OO-NMU to continue its climb to flight level FL 250.

At 10:58:35 UTC, the pilot of flight HLX 2CX requested a direct route to waypoint BALIR. This direct route involved a left turn of about 20°. The sector KL2 RE replied that he had to ask if this was possible. For the sector KL2 radar planner, this request involved coordination with the subsequent sectors. To this end, he initiated telephone coordination with sector INI East, without, however, receiving an immediate response, given that sector INI East had to obtain agreement from Zurich.

Meanwhile, and in order to allow flight HLX 2CX to begin its descent, the sector KL1 RP responsible for the airspace below sector KL2 proposed to the latter, by electronic coordination, flight level FL 260 for this flight. (For the electronic coordinations and radar screen displays, see Annex 1, page 1).

This flight level was displayed in the radar label of sectors KL1 and KL2. The proposed flight level FL 260 was required because of the presence of aircraft OO-NMU, which was maintaining flight level FL 250 and would cross the route of flight HLX 2CX perpendicularly.

At 10:59:18 UTC, the sector KL2 RE cleared the pilot of flight HLX 2CX to descend to flight level FL 260 (Annex 2). The latter read back this clearance correctly.

Meanwhile, the sector KL2 RP initiated, by electronic means, a transfer of communication to sector INE instead of KL1 (Annex 1, page 2).

At 10:59:42 UTC, flight HLX 2CX was transferred to the frequency of sector INI NE instead of that of sector KL1. It was still descending to flight level FL 260.

The sector KL1 was expecting that flight HLX 2CX would be transferred on the frequency by the means of an electronic "flash".

The silent transfer procedure, i.e. without prior coordination, between two control sectors provides for a descending aircraft to be cleared to the next level down, called the floor level, of the sector which controls the aircraft. The transfer of communication takes place by electronic means, "flash", to the adjacent sector controlling the airspace below. The floor level of sector KL1 is flight level FL 250, not flight level FL 260 (see Annex 4).

The display of information in the radar label is not identical in sectors UAC and TCG. In particular, the cleared flight level (CFL) is shown only in "hook" mode on the radar label of the TCG sectors, i.e. when the controller rolls the cursor over the label. Moreover, at the time of the Assume of Control (AoC) manipulation on the radar label, this previously available information is suppressed (Annex 1, page 3). This display difference is due to the fact that traffic management in the TCG sectors is performed with the aid of paper control strips. Monitoring of cleared flight levels is performed by entering the data onto these strips: data is no longer entered into the system.

At the time of the first call on the sector INE frequency, the pilot of flight HLX 2CX reported he was descending to flight level FL 260.

This report did not catch the attention of the radar controller. The latter immediately performed the AoC manipulation. The radar recording showed that at the time of this manipulation there was not sufficient time for the cleared flight level to be displayed in "hook" mode.

At the time of this first call, the radar coordinators (trainee and coach) were carrying out a telephone coordination with a Zurich control sector and hence did not hear the flight level FL 260 reported by the pilot.

Immediately afterwards the pilot repeated his request for a direct route to waypoint BALIR. The controller replied that he would check: *"We'll check. I call you"*.

At this time, the radar coordinators obtained clearance for the direct route to BALIR for flight HLX 2CX.

The radar controller was not able to issue this clearance immediately because of traffic in the opposite direction.

At 11:01:02 UTC, the radar controller cleared the pilot of flight HLX 2CX to continue his descent to flight level FL 210, imposing a rate of descent of 2000 ft per minute or more. This was in order to quickly establish vertical separation with the opposing traffic and thus to be able to clear flight HLX 2CX directly to point BALIR. This clearance was read back correctly by the crew. At this time, flight HLX 2CX was descending through flight level FL 286. Aircraft OO-NMU was at flight level FL 250 on a route perpendicular to that of flight HLX 2CX. The distance between the two aircraft was approximately 15 NM, according to the radar plots.

At 11:02:19 UTC, the short-term conflict alert STCA was activated in sectors KL1 and INI NE. At this very moment the radar label of aircraft OO-NMU was displayed on the sector INI NE screens. Flight HLX 2CX was 4.3 NM from aircraft OO-NMU and was passing flight level FL 262 in descent.

The crew of flight HLX 2CX received a traffic advisory (TA) from the traffic collision and avoidance system (TCAS).

At 11:02:23 UTC, when there was a lateral distance of 3.8 NM and an altitude difference of 1000 ft between the conflicting aircraft, the pilot requested details of this traffic from control: *"Yellow Cab two Charlie X-ray, we have a traffic on the right side, how does it go?"*. The controller realised the problem and answered the pilot: *"Affirm, turn left...immediately, this traffic is unknown to my sector at level two five zero"* (Annex 2).

At 11:02:37 UTC, according an extrapolation of the radar plots, flight HLX 2CX crossed the route of aircraft OO-MNU. It was passing flight level FL 255 in descent and the lateral distance to aircraft OO-MNU was 2.5 NM. Six seconds later, according to the radar plots, the lateral distance between the two aircraft was 2.3 NM with an altitude difference of 300 ft.

At the time of activation of the STCA in sectors KL1 and INE, sector KL1 was not in radio contact with flight HLX 2CX. The KL1 RP then loudly interrogated the sector KL2 controllers to find out the level to which flight HLX 2CX was descending. It was at this time that the two sector KL1 controllers stated that flight HLX 2CX had been transferred to the INE sector frequency.

1.3 Letter of Agreement between Geneva and Zurich (extract)

Eastbound flights

<i>Flights</i>	<i>FL restrictions</i>	<i>Restrictions / Remarks</i>
<i>ARR LFSB/LFSM/LFGA/LFGB</i>	<i>maxFL 180</i>	<i>LoR FL200-</i>

LoR: Line of responsibility

Ref.: ATMM UAC West, section ENR

1.4 Extracts from the ATMM TCG

Tasks and responsibilities – radar executive (RE) and radar planner (RP)

The collective tasks (.....) are performed in close co-operation between the RE and RP controllers. However, RE primarily ensures the monitoring of the frequency(ies). RP primarily ensures co-ordination with other sectors or adjacent centres, and ensures the monitoring of any additional frequencies such as the emergency or UHF frequencies.

Ref.: Section ATC, General Working Methods and Working Methods

1.5 Silent inter-sector coordinations

1.5.1 *Silent transfer coordination*

The silent transfer is a tacit coordination that may be performed when an aircraft changes control unit or leaves a geographical sector, according to the following principles:

- *The receiving sector has not performed any active coordination and, by doing so, has shown that it requires radio contact with the aircraft concerned;*
- *The transferring controller has cleared the aircraft to the upper/lower limit of his sector and the aircraft is following a standard route;*
- *When the aircraft is clear of all other traffic, the transferring sector will send it to the receiving sector's frequency;*
- *When instructing the aircraft to change frequency, the transferring sector shall carry out a "FLASH" procedure, which changes the colour of the aircraft's radar symbol and label on the receiving sector's screen. This will show the receiving sector that a silent transfer is being carried out;....*

Ref. ATMM UAC West and TCG, section ATC, coordination procedures, para. C.1.2 Silent transfer coordination (Annex 3)

1.6 Air traffic controllers

1.6.1 Sector KL2

The radar executive RE, coach and trainee:

The trainee came on duty at 08:00 UTC. He occupied the sector KL2 RE position about 30 minutes before the incident. The trainee was a controller in the requalification phase. He had worked in another control centre for several years. They judged the workload to be rather low. The two controllers realised there was a problem with flight HLX 2CX at the time of an intervention by a sector KL1 controller who asked them the flight level to which flight HLX 2CX was descending. There was no STCA alert in the sector.

The coach stated that it is very difficult to follow the actions undertaken by a trainee in view of the speed of the manipulations with the mouse.

The radar planner RP:

The RP came on duty at 07:50 UTC. He occupied the sector KL2 RP position from 10:50 UTC. He judged the workload to be low.

He stated that he became aware of a problem well after the incident since flight HLX 2CX was no longer being displayed on the sector screens.

1.6.2 Sector KL1

The radar executive RE:

The RP came on duty at 04:50 UTC. He occupied the sector KL1 RE position from about 50 minutes before the time of the incident. He judged the workload to be average.

He stated that he became aware of the conflict when flight HLX 2CX descended below flight level FL 260 without having called on the frequency. He added that he did not know the frequency this flight was on.

The radar planner RP:

The RP came on duty at 07:40 UTC. He occupied the sector KL1 RP position from about an hour before the time of the incident. He judged the workload to be low.

He stated that he became aware of the conflict at the time the STCA alarm was triggered: "*When the STCA went on, around FL 256 of the HLX*".

1.6.3 Sector INI NE

The radar controller

The radar controller came on duty at about 05:00 UTC. He occupied this position for just over an hour before the incident occurred. He judged the workload and complexity to be average.

He became aware of the conflict at the time of the STCA alert and when the radar label of aircraft OO-NMU appeared on his screen. He then ordered the pilot of flight HLX 2CX to perform an avoiding manoeuvre.

The radar coordinator, coach and trainee

The trainee came on duty at 04:40 UTC. He occupied the position for about an hour before the incident. They judged the workload and complexity to be low.

The two controllers became aware of the conflict at the time of the STCA activation and when the radar label of aircraft OO-NMU appeared on the screens of their sector. The coach then requested information about it from sector KL1.

1.7 Statements of the flight crews

Flight HLX 2CX

The air safety report (ASR) by the crew of flight HLX 2CX mentions that when passing flight level FL 260 the traffic collision avoidance system (TCAS) issued a traffic advisory (TA). An intruder flying below them was approaching from the right; the converging lateral and vertical speeds were high. The pilot stated that he asked control for details about this aircraft. Control responded with an avoiding instruction, which the crew executed immediately. He also reduced the rate of descent.

The crew stated that they had received traffic advisory but not a resolution advisory (RA).

Aircraft OO-NMU

AIRCRAFT OO-NMU was on a private flight. The pilot was alone at the controls. The pilot stated that visual flying conditions prevailed in the region of the incident. He did not realise that there had been an incident.

Aircraft OO-NMU was not equipped with a TCAS.

1.8 Meteorological conditions

Source: MeteoSwiss. Original text in German.

A high-pressure zone centred over the Atlantic was affecting the meteorological situation above the Alps.

Forecasts and hazards

AIRMET / SIGMET

No AIRMET or SIGMET was published on that day.

SWC, Windcharts

SWC, Windcharts, valid 12:00 UTC

The Significant Weather Chart (FL100 – FL450) published by WAFC London did not show any restrictions in the region of the incident.

The FL240 windchart forecast westerly winds at 35 kt and a temperature of -27 °C in the region of the incident.

Measured and observed values

Radio probes

The indicated values refer to the altitude of the incident (FL250)

Probe	Time	Direction and wind strength	Temp. °C	Dewpoint °C
Payerne	12Z	290 / 25	-28	-43

Radar image

No precipitation echo is recognisable in the region of the incident.

Satellite image

No cloud is detectable in the region of the incident.

Conclusion

On the basis of the available information, it is possible to conclude that at the time of the incident the following meteorological conditions prevailed in SOSAL airspace at FL250:

Cloud: 2-3/8 at approximately 30,000 ft MSL

Weather: -

Visibility: over 50 km

Wind: direction west north-west, 25 kt

Temp./Dewpoint: -28°C / -43°C

Barometric pressure: -

Position of the sun: azimuth 174°, elevation 41°

Hazards: no perceptible hazards.

2 Analysis

2.1 Air traffic control aspects

As provided for in the letter of agreement between the Marseilles and Geneva control centres, flight HLX 2CX, destination Basel, entered Geneva-controlled airspace at flight level FL 300. It then successively crossed the Geneva sectors, KL2, KL1 and INE to enter Zurich-controlled airspace, descending to flight level FL 180.

Aircraft OO-NMU was transferred from the Milan control centre to the Geneva control centre climbing to flight level FL 200. Given that the pilot wanted flight level FL 260 as his cruising level, sector INI South cleared this aircraft to flight level FL 240 before making a communication transfer to sector KL1. The controller in this sector gave the pilot an initial clearance to flight level FL 250 and, later, to flight level FL 260. At the time of the incident, aircraft OO-NMU was maintaining flight level FL 250 and was on the sector KL1 frequency.

2.1.1 Sector KL2

The radar planner RP

The pilot of flight HLX 2CX reported on the sector KL2 frequency as he was descending to flight level FL 300 and was expected to continue his descent. With this in mind, sector KL1 proposed flight level FL 260 to sector KL2.

In the meantime, the pilot of flight HLX2 CX requested a direct route to BALIR. The task of coordinating this request with the adjacent sector concerned was the responsibility of the RP. With a view to simplification and fluidity, he transmitted this request directly to the sector INI NE coordinator by telephone without informing the adjacent sector KL1,

Following this telephone coordination, the RP initiated the transfer of communication of HLX 2CX towards the sector INI NE by the "flash" action which triggers the automatic display of the frequency of that sector, i.e. sector INE, on the radar label of flight HLX 2CX.

Such a transfer of communication to a non-adjacent sector, in this case INI NE, occurs frequently as long as the coordinated flight level is the floor level of the adjacent sector, KL1.

However, a transfer of communication with a flight level different from the floor level of the adjacent sector is not a common occurrence.

The radar executive RE, consisting of the coach and trainee

Following receipt of the proposed flight level FL 260 by sector KL1, the RE (trainee) cleared flight HLX 2CX to descend to this flight level. After observing the frequency entered by the RP, the RE transferred flight HLX 2CX to this frequency.

2.1.2 Sector KL1

Flight HLX 2CX was to cross the sector KL1 flight levels. Aircraft OO-NMU was stabilised at flight level FL 250. To ensure their vertical separation, the RP proposed flight level FL 260 for flight HLX 2CX to sector KL2.

The procedure stipulates that flight HLX 2CX be transferred to the sector KL1 frequency when entering its vertical limits.

At the time the STCA alert was triggered, flight HLX 2CX was passing flight level FL 262 in descent. Despite the fact that the flight had not yet reported on their frequency, the controllers had no reason to be concerned. For them, the cleared flight level was flight level FL 260, as confirmed by the CFL indication on the radar label. This fact is not unusual, as the time between entry into the vertical limits of the sector, i.e. FL 284, and passing flight level FL 262 is approximately one minute. However, from the instruction to change frequency to its implementation there may, for various reasons, be a time lapse of the same order of magnitude.

The controllers realised there was a conflict only at the moment when flight HLX 2CX continued its descent below flight level FL 260. They had no possibility of intervening quickly, as they had no radio contact with the flight.

At that moment it was evident that flight HLX 2CX would pass in front of aircraft OO-NMU with loss of separation but with no risk of a collision. This is why the RE gave no instruction to aircraft OO-NMU.

Sector INI NE

The radar controller

At the time of the first call from flight HLX 2CX, the pilot transmitted his clearance to descend to flight level FL 260. This information did not catch the attention of the radar controller. He probably expected that this flight would be transferred to him in accordance with the silent transfer procedure, i.e. descending to flight level FL 250.

The radar controller performed the AoC function at the time of the first call; because of the speed of this manipulation, the label did not go to "hook" mode; consequently the CFL was never displayed on the screen.

Since aircraft OO-NMU was flying in sector KL1, it was unknown to sector INE. It was only when the STCA alert was triggered that its label appeared on the

sector's screens. When the radar controller then realised that a loss of separation with flight HLX 2CX was inevitable, he instructed the latter to take avoiding action to the left. The effect of this was to increase the distance between the two aircraft.

The radar coordinators, coach and trainee

At the time of the first call from flight HLX 2CX, the trainee was carrying out a telephone coordination with a Zurich control sector. The coach was wearing the headset in order to monitor the content of this coordination. Consequently, neither the coach nor the trainee heard the details of this initial call.

Since the controller's and radar coordinator's specifications are not identical, there is no full redundancy for monitoring the frequency in a control sector (see section 1.4).

2.2 Flight management aspects

2.2.1 Aircraft OO-NMU

- According to the statement of the pilot of aircraft OO-NMU, he did not notice the loss of separation, either vertical or lateral. This was despite the visual flying conditions. Aircraft OO-NMU was not equipped with a TCAS system, as this was not prescribed.
- The pilot could not hear the radiotelephone conversations between flight HLX 2CX and the sector INE radar controller because he was in contact with sector KL1.
- The pilot correctly obeyed the ATC instructions received, maintaining the assigned route and flight level.

Flight HLX 2CX

- The flight crew correctly read back and obeyed the ATC instructions received.
- The crew became aware of the potential conflict independently, at the moment the "traffic, traffic" message was activated by the TCAS system. They immediately requested information from control.
- The flight crew then received an instruction to turn left, with no precise indication of the heading. The crew carried out the requested manoeuvre without delay. In addition, on their own initiative, they rapidly reduced their rate of descent to 900 ft/min, then 0 ft/min (Annex 5). This action thus contributed to the following two factors:
 - A vertical separation of 300 ft was maintained throughout the conflict.
 - No resolution advisory (RA) was issued by the TCAS.

In view of the above, we are able to deduce that the flight crew acted appropriately during the incident.

3 Conclusions

3.1 Findings

- The controllers of the Geneva sectors concerned were in possession of appropriate licences.
- Flight HLX 2CX and aircraft OO-NMU were flying according to instrument flying rules.
- At the time of the incident, control sectors INI North (134.025 MHz) and INI East (128.900 MHz) were combined.
- At the time of the incident, flight HLX 2CX was on the Geneva Terminal Control sector INE frequency.
- At the time of the incident, aircraft OO-NMU was on the Geneva UAC sector KL1 frequency.
- The workload and complexity were deemed to be low to medium by the controllers in charge of sectors KL2 and INI, and low to average in sector KL1.
- At 10:59:18 UTC, the controller cleared the crew of aircraft HLX 2CX to descend to flight level FL 260. The crew correctly read back the clearance and implemented it.
- At 10:59:42 UTC, flight HLX 2CX was transferred to the frequency of sector INE.
- At 11:01:02 UTC, control issued the pilot of flight HLX 2CX clearance to descend to FL 210 at a minimum rate of descent of 2000 ft/min. The pilot read back the clearance correctly.
- At 11:02:19 UTC, the short-term conflict alert STCA was activated in sectors KL1 and INE.
- At 11:02:23 UTC, the pilot of flight HLX 2CX informed control of the presence of traffic on his right. Control instructed the pilot to turn left immediately.
- The pilot of flight HLX 2CX stated that they had received a traffic advisory (TA) but not a resolution advisory (RA).
- Flight HLX 2CX was equipped with a TCAS.
- Aircraft OO-NMU was not equipped with a TCAS.
- At 11:02:43 UTC, according to the radar plots, the lateral distance between the two aircraft was 2.3 NM with an altitude difference of 300 ft.

3.2 Cause

The serious incident is due:

- to a coordination with a control sector which didn't correspond to the sector configuration at the time of the incident. Consequently an aircraft was transferred to an incorrect frequency.
- and to the fact that the cleared flight level reported by the pilot at the time of the first call on the frequency was not noticed by the receiving sector.

Contributing factor:

The use of two different working methods in sectors UAC and TCG.

4 Safety recommendations and measures taken after the incident

4.1 Safety deficit

A first aircraft was approaching Geneva-controlled airspace at flight level FL 300 and called on the corresponding sector frequency. Since its destination was Basel, its flight profile implied that it would descend through three successive control sectors, i.e.:

- the first sector, sector of entry into Geneva airspace
- the intermediate sector
- the third sector, exit sector from Geneva airspace.

A second aircraft was flying in the intermediate sector and maintaining flight level FL 250. It was in contact with the intermediate sector and was following a route perpendicular to the first aircraft.

To ensure separation from the second aircraft flying at flight level FL 250, whose trajectory was perpendicular to and conflicting with the first aircraft, the first sector received from the intermediate sector a proposed flight level FL 260 for the aircraft destination Basel. This proposition was made by electronic coordination. The first sector then cleared the pilot of the first aircraft to begin his descent to flight level FL 260 and entered it into the system. This cleared flight level was automatically displayed on the radar label of the first sector and the intermediate sector, but not on that of the third sector.

The pilot of the aircraft destination Basel requested a direct, shorter route. The first sector informed the third sector of this, but not the intermediate sector, and immediately afterwards transferred the descending aircraft to the third sector. This transfer was made by electronic means.

The standard procedure for a direct transfer of communication from the first to the third sector without prior coordination implies:

- that the lowest flight level of the intermediate sector, i.e. flight level FL 250 was available.
- that this flight level was proposed by the intermediate sector to the first sector

The proposed and cleared flight level was flight level FL 260. The conditions for such a communication transfer were therefore not met.

At the time of the first call on the third sector's frequency, the pilot of the first aircraft reported his cleared flight level. This information did not catch the attention of the third sector controller. He was expecting that this aircraft would descend to flight level FL 250 in accordance with the procedure described above.

The label of the second aircraft was not visible on the third sector's screens as it was flying in the intermediate sector. The controller cleared the pilot of the first aircraft to continue his descent to flight level FL 210.

A dangerous convergence of the two aircraft ensued.

The system does not trigger an alert for cases of non-standard inter-sector coordination.

The working methods and the presentation of data on the radar screens of sectors UAC and TCG are not the same.

4.2 Safety recommendations No. 421

The Federal Office of Civil Aviation must demand that both the working methods and the presentation of data on the radar screens of sectors UAC and TCG are the same.

The Federal Office of Civil Aviation must demand that alerts are implemented in the cases of non-standard inter-sector electronic coordination.

Payerne, 26 May 2010

Aircraft Accident Investigation Bureau

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 art 3.1 of the 9th edition, applicable from 1 November 2001, of Annex 13 to the Convention on International Civil Aviation of 7 December 1944 and article 24 of the Federal Air Navigation Act, 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 incident investigation. It is therefore not the purpose of this investigation to determine blame or clarify questions of liability.

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Annex 1

Radar pictures and electronic co-ordinations



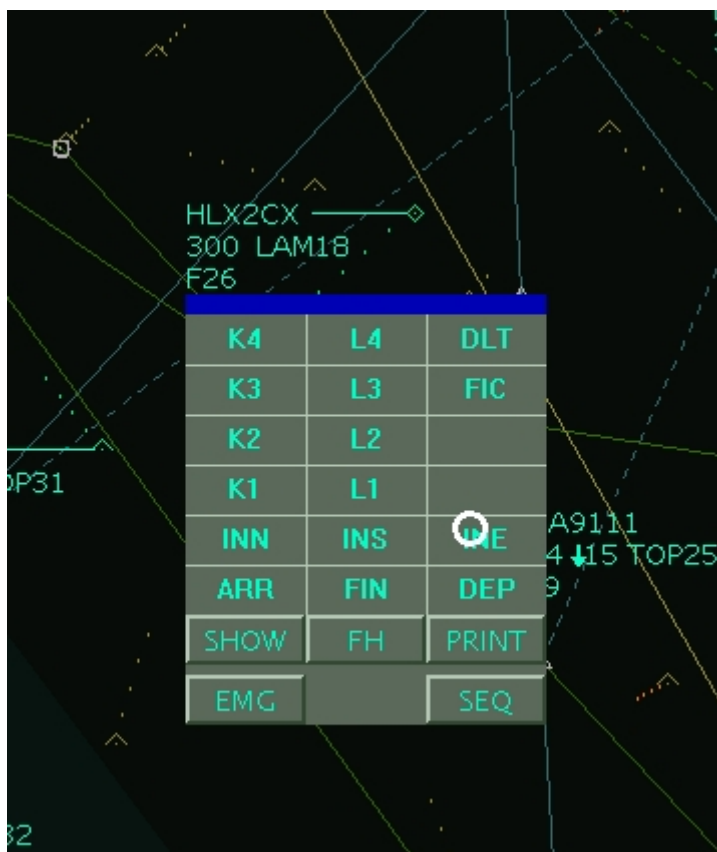
Co-ordination window

- 1 click on the sfl - *suggested flight level* field of the label to open the co-ordination window
- 2 click on f26 (FL 260)
- 3 click on L2

The radar planner of sector KL1 has suggested (by executing mouse clicks) flight level FL 260 for flight HLX 2CX to the controllers of the regrouped sector KL2



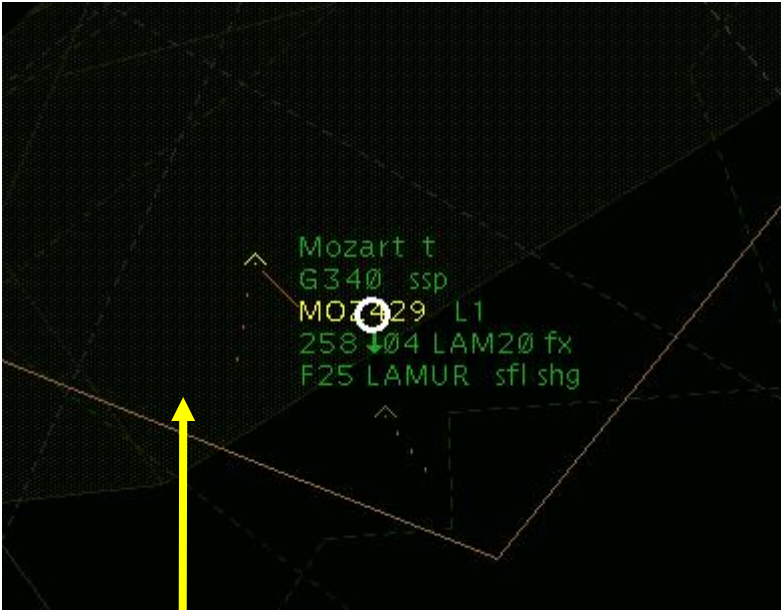
The flight level suggested by the controllers of sector KL1 is displayed on the label of flight HLX 2CX on the radar screens of sector KL2. The call sign and the suggested flight level are displayed in blue colour.



Window SI *special input* permits to select a sector for a transfer on communication – in the present case by a click on the INE field.



Display on the radar screens of sector KL2. The sector to which the aircraft is to be transferred shows on the radar label of the aircraft concerned.

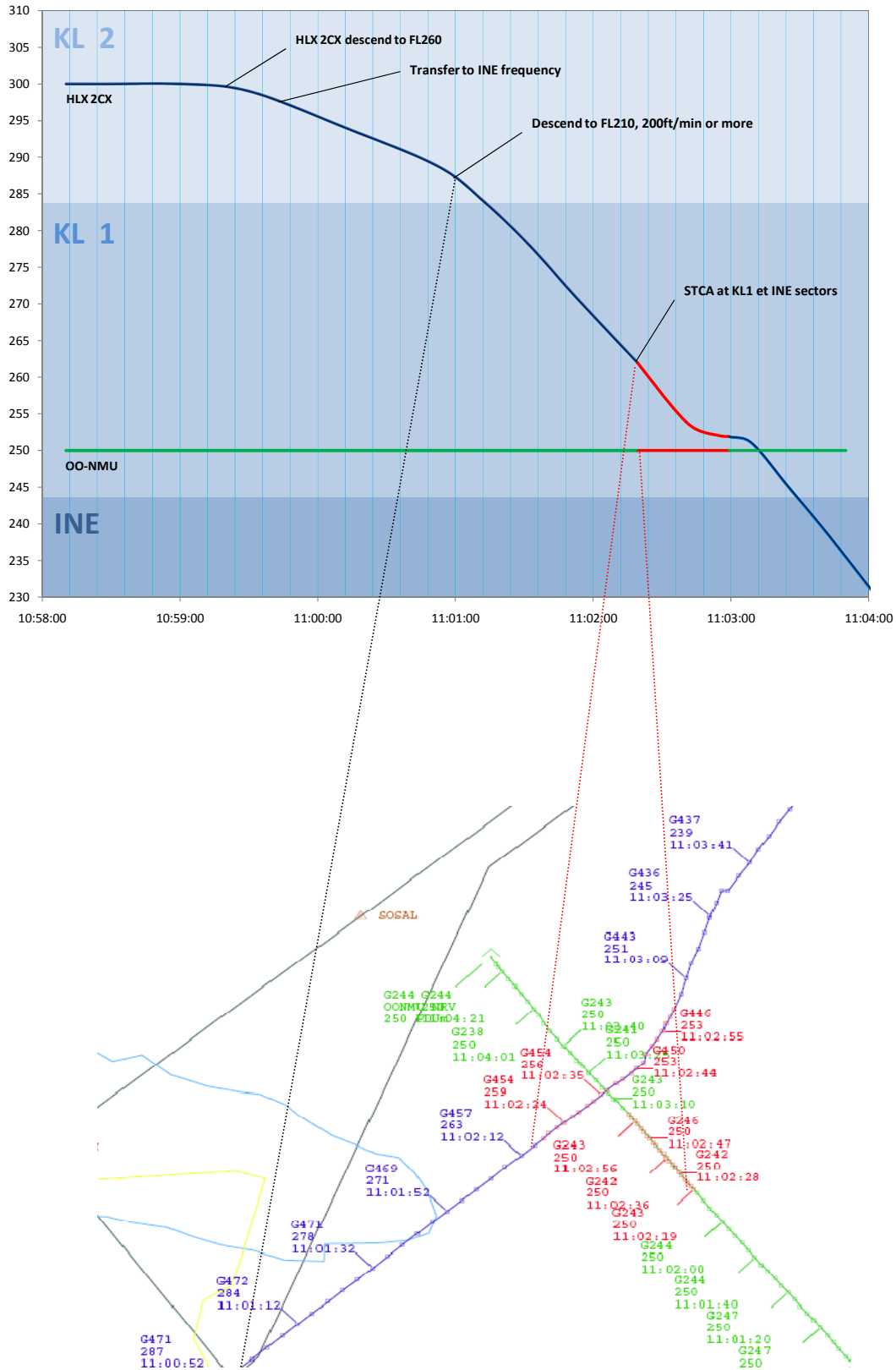


An aircraft is in the «hook» mode prior to AoC at sector INE. The cleared flight level (FL 250) is displayed on the radar label.



The same aircraft in AoC at sector INE. The cleared flight level (FL 250) is not displayed any more on the radar label. It is replaced by « cfl ».

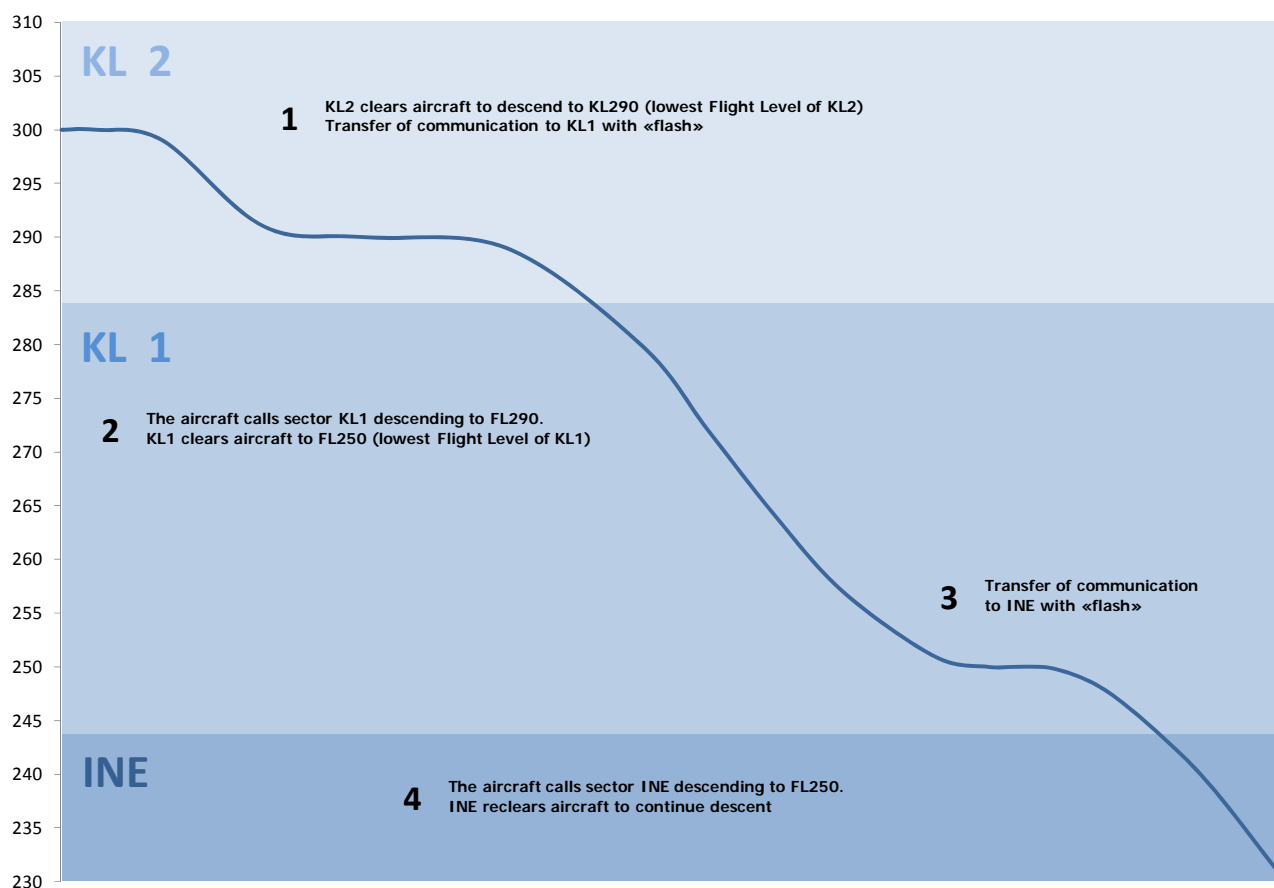
Flight profile, clearances and alerts



Annex 3

Silent transfer of an aircraft descending from one sector to the following

The sector that doesn't receive a suggested flight level clears the aircraft to the lowest flight level of his sector and sends it – clear of conflict – in contact to the adjacent sector using the "flash" method to show the receiving sector that the aircraft is going to call on his frequency.



Annex 4

Silent transfer across a sector without transfer of communication

On his own initiative, provided there is no conflicting traffic within the sector, KL1 can suggest to KL2 to descend an aircraft across his sector to the lowest flight level with a transfer of communication directly to INE

