



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

concerning the incident (Airprox)

between AFR606 and FUA304P

on 29th October 2000

10 NM W/NW TRA DVOR/DME

FINAL REPORT
AIR TRAFFIC INCIDENT REPORT (ATIR)
AIRPROX (NEAR COLLISION)

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

| | |
|------------------------|--|
| PLACE/DATE/TIME | 10 NM W/NW TRA DVOR/DME 29 October 2000 10:39 UTC |
| AIRCRAFT | 1. AFR606, Airbus A310, F-GEMC, AIR FRANCE Paris-Charles de Gaulle – Dubai International 2. FUA304P, Boeing B734, EC-GNZ, FUTURA AIRWAYS Laage (D) – Palma de Mallorca |

| | |
|--------------------------------|---|
| ATC UNIT | Area Control Centre Zurich |
| AIR TRAFFIC CONTROLLERS | RE-U2 (Radar Executive UPPER 2) RE-U2 (Radar Planning UPPER 2) |

| | |
|-----------------|---|
| AIRSPACE | C |
|-----------------|---|

HISTORY

On Sunday, 29 October 2000, AFR606 was on a scheduled flight from LFPG (Paris-Charles de Gaulle) to OMDB (Dubai International). The aircraft was already in cruise flight at FL 330. The pilot made contact at 10:31:45 with Zurich Upper 2, 134.605 MHz. Coming from BEGAR, he flew in the direction of TRASADINGEN (TRA) and was allocated the route TRA – ALGOI from the air traffic controller. Five minutes later, as AFR606 approached the radio beacon TRA, he was given the instruction to turn 10° to the left. At 10:38:42, the air traffic controller instructed AFR606 to fly again on own navigation to ALGOI. A few seconds later, the pilot of AFR606 reported that he had a TCAS-RA (Traffic Collision Avoiding System – Resolution Advisory) and that he would climb. The air traffic controller informed the pilot that another aircraft with a heading south would cross his flight path 5 NM in front of him.

At the same time, FUA304P was on a charter flight from ETNL (Laage) to LEPA (Palma de Mallorca). The aircraft was in cruise flight at FL 330 and – arriving from TANGO – was flying into the Zurich airspace; it made contact at 10:29:36 with Zurich Upper 2, 134.605 MHz. The pilot obtained permission to fly on via OLBEN – BENOT – MILPA. The pilot of FUA304P reported again at 10:39:05 and informed the air traffic controller that he had another aircraft near him at a distance of 3 NM. The pilot was then informed by the air traffic controller that the other aircraft would pass 4 NM behind him at FL 330. FUA304P replied that he had the other aircraft in visual contact.

The separation between the two aircraft fell below the required minimum. Both aircraft were in cruise flight at the same flight level and approached one another to a horizontal distance of 3.7 NM.

FINDINGS

- Both AFR606 and FUA304P were in continuous radio contact with Zurich radar (Sector UPPER 2) on the frequency of 134.605 MHz.
- Both aircraft were in transit flight through the Zurich region at FL 330.
- The aircraft were flying on IFR (Instrument Flight Rules) in the controlled airspace class "C".
- AFR606 first received a TCAS-TA (Traffic Advisory) and subsequently a TCAS-RA (Resolution Advisory) with the instruction to climb. The pilot climbed to FL 336.
- FUA304P received a TCAS-TA but never a TCAS-RA and had therefore no reason to carry out a avoiding manoeuvre.
- At the time of the incident, visual meteorological conditions were present with a strong west wind.
- FUA304P had continuous visual contact with AFR606.

- The radar controller was aware, in good time, of the crossing problem between the two aircraft in the vicinity of TRA.
- The conflict solution by the air traffic controller consisted in turning AFR606 10° to the left.
- The STCA alarm (Short Term Conflict Alert) was triggered at the air traffic controller's workstation.
- At the time of the incident, there was a high level of traffic with great complexity.
- According to the radar plot, there was a sufficiently large radar separation (approximately 8 NM) between the two aircraft at the time at which they crossed.
- The radar separation fell below the minimum, down to 3.7 NM, only after each aircraft had crossed the flight path of the other.

ANALYSIS

Aircraft crossing operations at the same level in the TRA region are part of the standard duties of the air traffic controller during his work on the UPPER 2 sector. There was no difference in the present case. The traffic arrangements by the RE (Radar Executive) took place in the usual and efficient routine manner even though there was a very high traffic level.

Both the RE and the RP (Planning controller) had recognised the impending crossing problem between the two aircraft in good time. It was clear to them that AFR606 and FUA304P would cross in the vicinity of TRA.

The measures to ensure that the two aircraft would cross without difficulty could only be introduced by the RE relatively late because there was very little manoeuvring area available for a conflict management. In fact, three aircraft were approaching TRA VOR from the north at small separations and all at FL 330.

When it became clear to the RE that, because of the strong west wind (approximately 50 knots), there would be a conflict situation between AFR606 and FUA304P, he decided to permit AFR606 to turn 10° to the left and considered that he had solved the problem by this intervention. FUA304P did then, in fact, cross the flight path of AFR606 at a distance of approximately 8 NM. Although the two aircraft had already passed each other according their flight path, their distance decreased further because of the crossing angle until the separation finally fell below the minimum - to 3.7 NM.

The intervention of the pilot of AFR606, on the basis of a TCAS-RA, to climb as far as FL 336 then also took place at a time when the two aircraft had already crossed but their horizontal separation decreased further. It was already too late for a further heading correction by the RE. His only possibility was to inform AFR606 about the position of the other aircraft (Traffic Information).

The RE later expressed himself to the effect that, despite the very complex traffic situation, a heading correction of 15-20° would have been possible for AFR606 and

would also have been appropriate. By means of this measure, he would have been able to prevent the incident despite the unfavourable crossing angle and the strong west wind. Because of the high level of traffic and various co-ordination duties, the RP was busy with relieving the working load of the RE during the whole period. He only became aware of the crossing problem again due to the occurrence of the STCA. After he had heard on the radio that the RE had undertaken a course correction for AFR606, however, there was no need for any further measures by him.

CAUSE

The incident may be attributed to a faulty estimation of the crossing point between AFR606 and FUA304P by the radar controller. During the crossing of the two aircraft, this led to a controlled falling short of the required radar separation between the two aircraft.

Contributory factors were:

- the very high traffic level and the very complex traffic situation.
- the unfavourable crossing angle and the underestimation of the strong west wind by the controller.

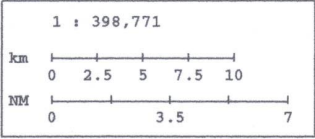
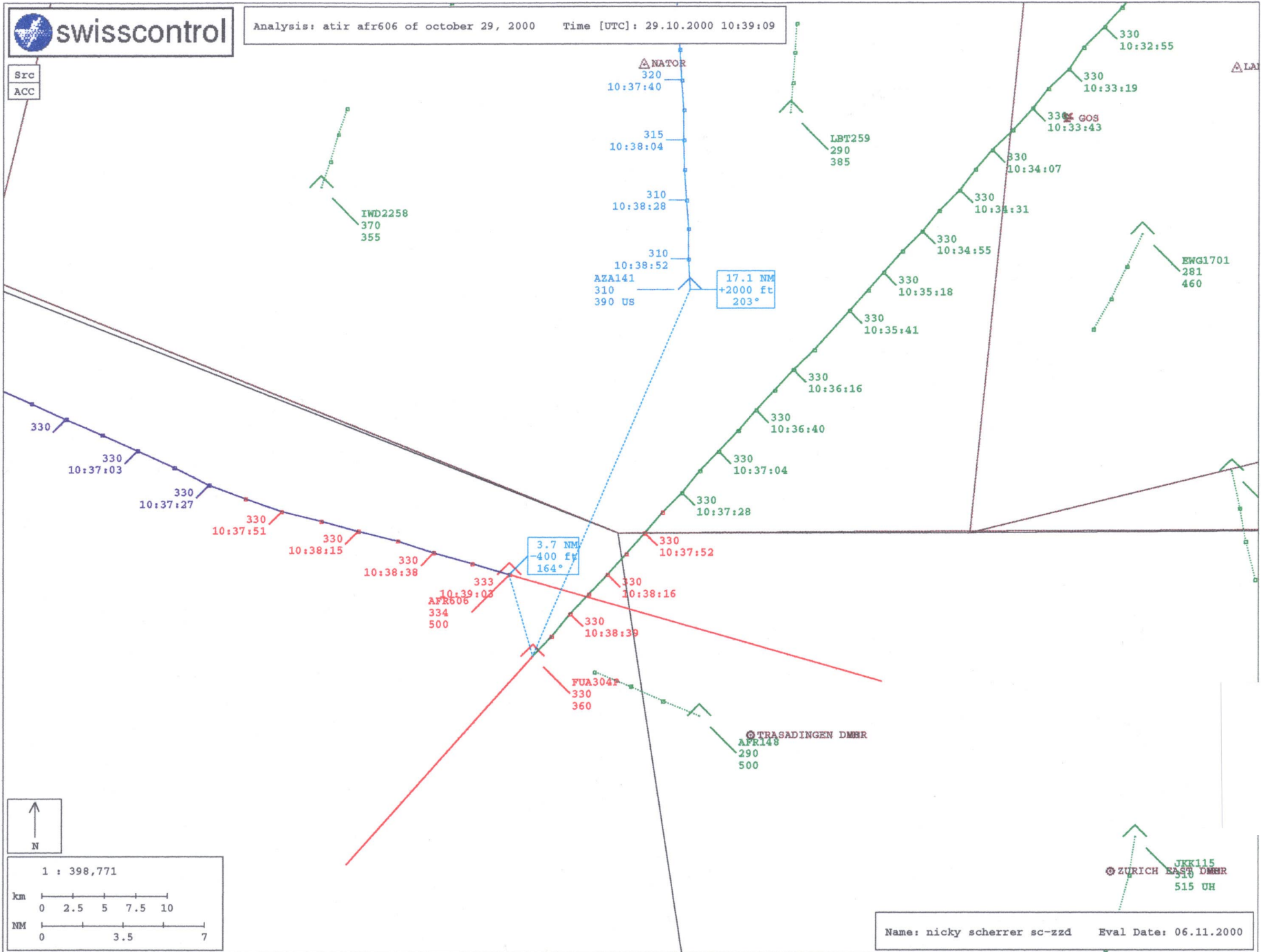
Berne, 22 February 2002

Aircraft Accident Investigation Bureau




Analysis: atir afr606 of october 29, 2000 Time [UTC]: 29.10.2000 10:39:09

Src
ACC



Name: nicky scherrer sc-zzd Eval Date: 06.11.2000

 **swisscontrol**
Flugsicherungsbetrieb Zürich
CH-8058 Zürich-Flughafen

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Zürich-Flughafen, 10.11.2000
ZZD/SN

Transcript of Original Tape Recording

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Subject **ATIR AFR606 of october 29, 2000**

| | | | | | |
|---------------------------------|-----|---|----------------|---|------------|
| Abbreviations and Call Signs | 606 | → | AFR606 | → | Air France |
| | 304 | → | FUA304P | → | Futura |
| | U2 | → | Zurich Upper 2 | | |

Frequency Zurich Upper 2 Radar 134,60 MHz

The signer certifies the completeness and correctness of the present transcript.

swisscontrol
Flugsicherungsbetrieb Zürich



Nicky Scherrer

| From | To | Time UTC | Communications | Observations |
|-----------------------|------|----------|---|-------------------------------|
| 304 | U2 | 10:29:36 | „Züri, Guten Tag“, FUA304P, flight level 330 | |
| U2 | 304 | :43 | Say again, Zurich | |
| 304 | U2 | :30:02 | Zurich, FUA304P, „Guten Tag“ | |
| U2 | 304 | :07 | FUA304P, identified, route OLBEN - BENOT | |
| 304 | U2 | :13 | Understand to OLBEN, and then? | |
| U2 | 304 | :22 | BENOT | |
| U2 | 304 | :24 | FUA304P, route OLBEN – MILPA | |
| 304 | U2 | :30 | OLBEN – MILPA, FUA304P, thank you | |
| 2 aircraft in between | | | | |
| 606 | U2 | :31:45 | Zurich, AFR606, good morning, 330 | |
| U2 | 606 | :50 | AFR606, good morning, identified, Trasadingen – ALGOI | |
| 606 | U2 | :53 | AFR606, Trasadingen – ALGOI | |
| 7 aircraft in between | | | | |
| U2 | 606 | :37:18 | AFR606 left by ten degrees | |
| 606 | U2 | :21 | Left ten degrees, AFR606 | |
| 3 aircraft in between | | | | |
| U2 | 606 | :38:42 | AFR606, own navigation to ALGOI | |
| 606 | U2 | :49 | 606, we have TCAS resolution, so we climb | |
| U2 | 606 | :52 | AFR606, the traffic passing five miles ahead of you, now on your one o'clock, range five miles, heading south | |
| 606 | U2 | :58 | Yes, but we have TCAS, so we make a ...* prox | *unreadable, could be airprox |
| 304P | U2 | :39:05 | Zurich, FUA304P? | |
| U2 | 304P | :07 | Go ahead | |

| From | To | Time UTC | Communications | Observations |
|------|------|----------|--|--------------|
| 304P | U2 | 10:39:09 | Yes, we have traffic three miles close to us | |
| U2 | 304P | :13 | FUA304P, the traffic is passing four miles behind you at 330 | |
| 304P | U2 | :19 | We got the traffic insight, 304P | |
| U2 | 304P | :21 | 304P, roger, set course direct to MILPA now | |
| 304P | U2 | :25 |*, 304P, | *unreadable |

- end -