

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

concerning the incident (Airprox)

between ANS8934 and FPG566

on 2nd march 2001

in the region of the VOR SPR (St-Prex)

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 INCIDENT INVESTIGATION
(ART. 24 OF THE AIR NAVIGATION LAW)

PLACE In the region of the VOR of SPR (St-Prex)

DATE / TIME 2 March 2001 / 19:03 UTC

AIRCRAFT 1: ANS8934; Canadair Regional Jet (CRJ2), Barcelona – Geneva
2: FPG566; Falcon 2000 (F2TH), London-Heathrow – Geneva

ATS SERVICE Approach Control

CONTROLLER Arrival Controller

AIRSPACE C

HISTORY

On Friday 2 March 2001 at 19:03 UTC, flight FPG 566 from London-Heathrow to Geneva, a Falcon 2000 type aircraft making a non-scheduled commercial flight, was on its final approach on the path of runway 23 at Geneva. Since the weather was bad, for the second time it made a VOR/DME type instrument approach, because the ILS was out of service.

A Canadair Regional Jet type aircraft of the Air Nostrum company, flight 8934, a commercial flight from Barcelona to Geneva, was on the right hand downwind in the region of GLA beacon and was awaiting the base turn to make its final approach.

Outbound traffic was located on the route of the Canadair Regional Jet which was authorised to descend through its altitude.

To avoid this conflicting traffic, the "Arrival" approach controller decided to turn the aircraft right to join the left hand downwind whilst maintaining the altitude of 7000 ft.

As a result of the choice of this new route, it was obliged to cross the approach path, in front of flight FPG566 in final approach, which maintained an altitude of 7000 ft before intercepting the descent trajectory for a VOR/DME approach.

The controller instructed flight FPG566 to descend to an altitude of 6000 ft, asking it to execute this instruction quickly.

Throughout the manoeuvre of flight ANS8934, the controller noted that the aircraft was continuing its descent through the altitude of 7000 ft until it reached 5400 ft.

The two aircraft crossed perpendicular to the approach path with a minimum separation of 1 NM and 300 ft.

The pilot of the Canadair advised the radar control that he is climbing to 7000 ft.

The controller was surprised that he left the altitude of 7000 ft without authorisation and pointed this out to him.

A corresponding ATIR was lodged by the Control Tower operations manager.

FINDINGS

- The runway in service at Geneva was runway 23.
- The 18:50 UTC weather report was as follows: wind 300 degrees at 1 knot, visibility 2400 metres, light snowfalls, clouds: few at 700 ft, overcast at 4000 ft, temperature 0 degrees, dew point 0 degrees, atmospheric pressure 990 hectopascals, no changes expected.
- It was night-time.
- There was a strong west wind at altitude (220°/ 40kts).
- The ATIS was informing pilots of the operational VOR/DME type approach.
- The ILS localizer (LLZ) was out of service.
- The localizer was declared out of service at 18:14 because of a snowstorm.

- At 19:05 the Skyguide technical service was on the spot for reactivation (removing snow from the antenna network).
- At 21:42, the installation was put back in order by the technical service.
- There was heavy inbound traffic.
- ANS8934 was on right hand downwind, heading 040° and was authorised to descend from flight level 130 to an altitude of 7000ft.
- A departing aircraft represented an unresolved conflict with the inbound traffic.
- The conflicting outbound traffic was in front of ANS8934, on its route, climbing slowly to flight level 090 at a distance of approximately 12 NM.
- At 19:04, a change of operator (handover) at the Arrival position took place.
- At 19:05:24, a traffic separation action was undertaken by the controller, who turned ANS8934 to the right on an EAST heading (090°).
- At this moment, the conflicting traffic was 5.5 NM in front of him at an altitude of 7000 ft (equivalent to 45 seconds due to the high closing speed).
- The minimum separation between these two aircraft was complied with.
- At 19:06:36, the controller turned ANS8934 onto heading 140° perpendicular to the approach path.
- Flight ANS8934 was nearing the altitude of 7000 ft, descending, at a distance of 3 NM from the axis of runway 23.
- Flight FPG566, the Falcon 2000, was at this time 20 NM away, on the path of runway 23, at the altitude of 7000 ft.
- The STCA alarm (short term conflict alert) was triggered.
- Some ten seconds later, the controller cleared FPG566 down to the altitude of 6000 ft, asking it to make a rapid descent.
- The pilot of flight FPG566 signalled that his TCAS was informing him of the presence of the conflicting traffic.
- At 19:07:02, FPG566 was on the approach path at a distance of 1 NM from the VOR of SPR, still stabilised at the altitude of 7000 ft.
- At 19:07:02, ANS8934 was at a distance of 2.1 NM from the VOR of SPR, at the altitude of 7000 ft.
- At 19:07:24, the pilot of flight ANS8934 signalled in a questioning manner that he had traffic in sight.

- The controller replied to him that this traffic was lower, instructing him to maintain his heading.
- According to the recording of the radar plots, flight FPG566 was at this time about 500 ft higher.
- According to the report by the pilot of flight ANS8934, it was at this time that he followed the TCAS resolution advisory which was instructing him to take evasive action by starting an immediate descent.
- According to the statement by the pilot of flight FPG566, the red symbol (RA Intruder) of his TCAS appeared then disappeared very quickly.
- The minimum distance between the two aircraft as they crossed was 1 NM and 300 ft. Flight ANS8934 crossed the approach path 0.5 NM behind flight FPG566 approximately 600 ft below.
- At 19:08:16, the pilot of flight ANS8934 signalled that he was climbing to 7000 ft without mentioning that he had followed a TCAS resolution advisory.
- The controller reminded him that he had been authorised at 7000 ft.
- Skyguide lodged an ATIR ATC report.
- The pilot of flight ANS8934 lodged a report.
- The report of the pilot of flight ANS8934 contains numerous cases of vagueness concerning authorised levels and headings. This is probably due to him forgetting the facts, since the report was drawn up, at our request, almost three months after the incident. However, the description of the incident matches the findings.

ANALYSIS

The incident between the FA2000 FPG566 and the Canadair Regional Jet ANS8934 took place following a series of events, all of which had a causal relationship.

At the time of the operator handover at the Arrival position the vertical separation between flight ANS8934 and a departure traffic was not assured, for some unexplained reason. The controller who took over the position had to resolve this problem by taking an immediate tactical decision. He changed the approach sequence of arriving aircraft, in a dense traffic situation. When a divergent heading of 090° was assigned to ANS8934, he achieved separation from the conflicting departure traffic, but on the other hand he created a different problem with an incoming aircraft, given its converging heading.

With the evident aim of getting flight ANS8934 to cross the approach path in order to join the left hand downwind, the controller then assigned to it a heading perpendicular to this path (heading 140°). The controller did not inform the aircraft of these intentions at the time of the radar guidance. As soon as flight ANS8934 turned right onto heading 140°, the STCA (short term conflict alert) alarm tripped because of the convergence of the track of flight FPG566, which was on the approach path at 7000

ft, at the same altitude. The controller's immediate reaction was to bring flight FPG566 down to 6000 ft to ensure vertical separation. The controller insisted that it descend quickly, without giving the reason (due to traffic/avoiding action) in order to indicate its urgency. The pilot did not react immediately to this injunction, waiting to intercept the ideal descent trajectory for a VOR/DME approach, approximately 2 NM ahead of him. He did not worry unduly about the situation and simply signalled that he had information on visible traffic on his TCAS screen.

At this moment, under pressure, the controller clearly did not have time to foresee the deterioration of the situation.

Given the perpendicular routes of the two aircraft, they closed very quickly. The descent without warning of flight ANS8934, dictated by the resolution advisory of his TCAS, is probably due to the urgency of the situation. The aircraft descended to an altitude of 5400 ft.

From that point the situation was no longer able to be controlled by the controller, who signalled the conflicting aircraft as being lower, whereas it was higher. Only the TCAS resolution advisory was able to prevent an aggravation.

ANS8934 signalled the traffic in sight, expressing himself quickly and in a questioning tone. According to the pilot's report, he wished to obtain essential traffic information before following the TCAS resolution advisory. He probably did not have visual contact with the traffic but mentioned traffic information visible on the TCAS screen. Avoiding action on sight does not seem to have been possible.

Flight FPG566 did not have the traffic in sight but had a TCAS traffic advisory. The fact that he only noticed the red square symbol (RA Intruder) very quickly is explained by the extremely rapid crossing of the aircraft on perpendicular tracks. Thanks to the TCAS, the distance between the two aircraft was not less than 0.5 NM and 600ft.

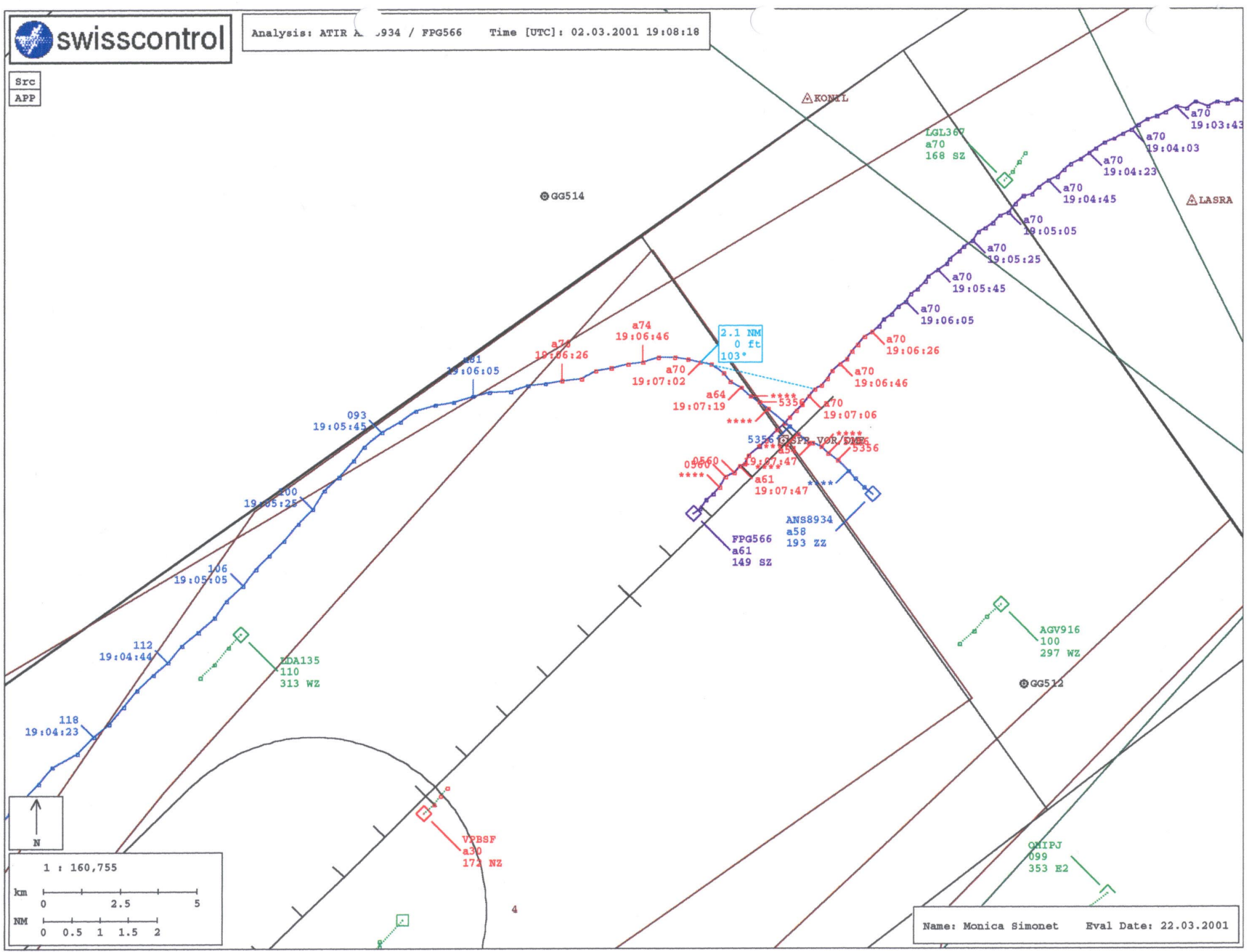
CAUSE

The incident is due to the approach controller's lack of precision in applying a vertical separation between two aircraft on converging tracks, under radar guidance.

Factor influencing the course of the incident:

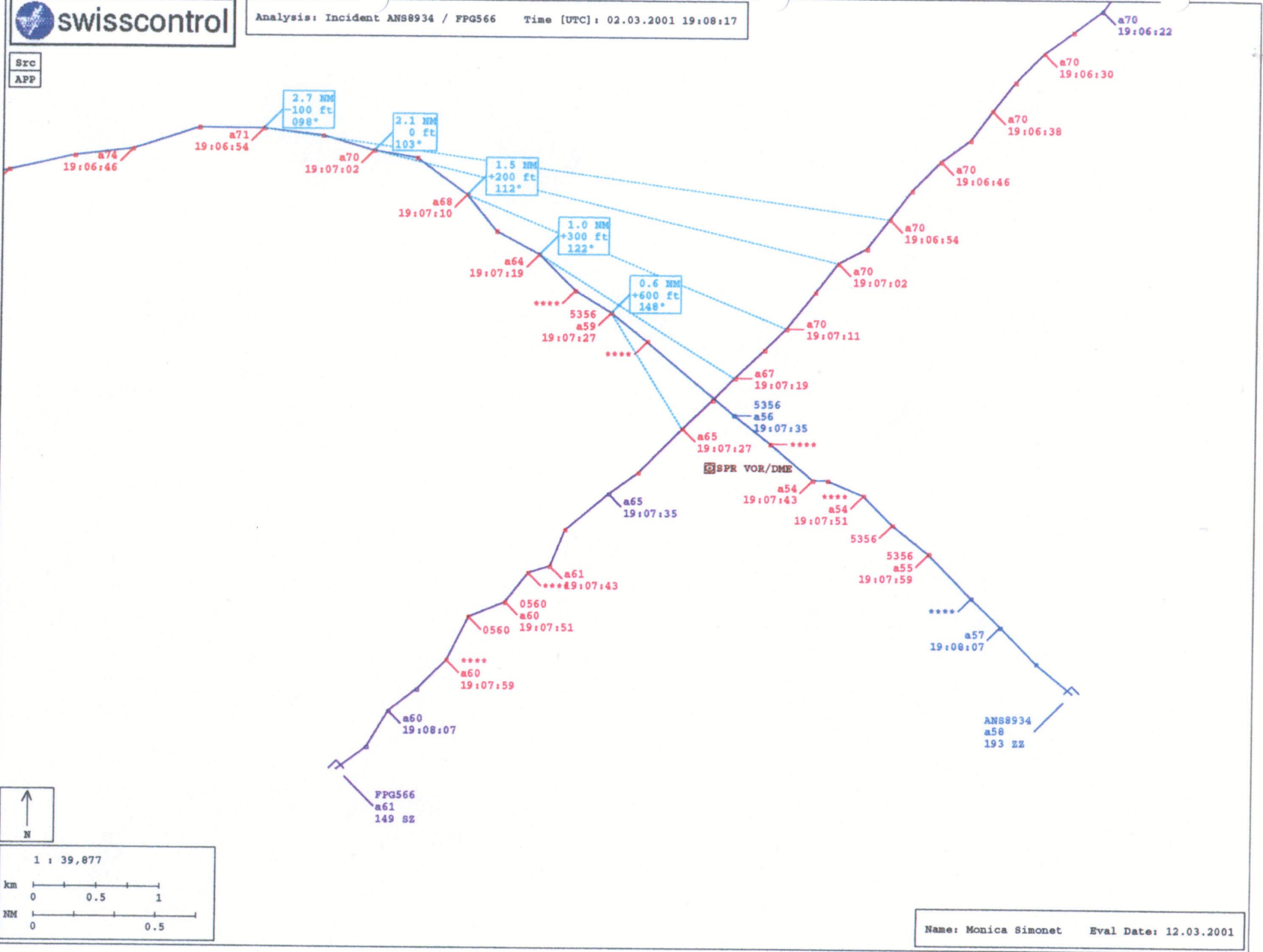
the operator handover at a controller position during a confused traffic situation and with heavy traffic.

Src
APP



Name: Monica Simonet Eval Date: 22.03.2001

Src
APP



**TRANSCRIPT OF TELEPHONY
OR RADIOTELEPHONY COMMUNICATIONS TAPE-RECORDING**

Investigation into the **incident** that occurred on **March 2nd 2001**

- Subject of transcript: **ANS8934 / FPG566**

- Centre concerned: Geneva

- Designation of unit: Arrivals

- Frequency: 131.32 MHz

- Date and period covered by attached extract: March 2nd 2001
18:56 - 19:18 UTC

- Date of transcript: March 26th 2001

- Name of official in charge
of transcription service: Monica Simonet

- Certificate by official in charge of Analysis Department:

I hereby certify:

- That the accompanying transcript of the telephony or radiotelephony communication tape-recording, retained at the present time in the premises of Analysis Department, has been made under my supervision.
- That it was 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, March 26th 2001

M. Simonet



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Abbreviations

ARR - Geneva Arrivals

566 - **TAG Aviation 566**

8934 - **Nostru Air 8934**

VSF - VPBSF

5382 - Lufthansa 5382

367 - Luxair 367

CNV - CSDNV

916 - Air Glaciers 916

135 - Lauda Air 135

F2TH

CRJ2

GLF4

CRJ1

E145

H25B

BE20

CRJ1

IFR flight

IFR flight

IFR flight

IFR flight

IFR flight

IFR flight

IFR flight

IFR flight

EGLL

LEBL

LGAT

EDDL

ELLX

EHAM

LSZH

LOWW

- **LSGG**

- **LSGG**

- LSGG

- LSGG

- LSGG

- LSGG

- LSGG

- LSGG

GED/ 30/07/2002

TRANSCRIPT SHEET

To Col.1	From Col.2	Time Col.3	Communications Col.4	Observations Col.5
Frequency 131.32 MHz: Geneva Arrivals				
ARR	566	18:56:12	XXXXX re-bonsoir, TAG aviation cinq cent soixante-six, sept mille pieds au cap zéro cinquante.	Probably "Arrivées" (FPG566 is on its second approach after an overshoot)
566	ARR	18	TAG cinq cent soixante-six bonsoir, je vous rappelle.	
ARR	566	20	Oui.	
566	ARR	22	Et quel est votre cap, TAG cinq cents, cinq cent soixante-six ?	
ARR	566	25	Zéro cinquante.	
566	ARR	26	Compris, à droite cap zéro soixante.	
ARR	566	29	Zéro soixante, cinq soixante-six.	
ARR	8934	34	Arrival, Air Nostrum eight nine three four, XXXXX.	Could be as well : "bonjour" as "bonsoir"
8934	ARR	36	Air Nostrum eight nine three four good evening, descend to level one five zero.	
ARR	8934	40	One five zero, eight nine three four.	
VSF	ARR	44	Victor Sierra Foxtrot speed one eight zero knots.	
ARR	VSF	47	One eight zero now, Victor Sierra Fox.	
5382	ARR	18:57:03	Lufthansa five three eight two contact Tower on one one eight decimal seven, good-bye.	
ARR	5382	07	Lufthansa five three eight two, one one eight point seven, au revoir.	
367	ARR	26	Luxair three six seven descend to flight level niner zero.	
ARR	367	29	Descending flight level niner zero, Luxair three six seven.	
566	ARR	31	TAG cinq six six, quelle est votre vitesse ?	
ARR	566	34	Nous avons deux cents nœuds, Monsieur.	
566	ARR	36	Réduisez vers cent quatre-vingts nœuds, s'il vous plaît.	
ARR	566	18.57:38	Cent quatre-vingts.	

Signature of
person in charge


TRANSCRIPT SHEET

<u>To</u> <u>Col.1</u>	<u>From</u> <u>Col.2</u>	<u>Time</u> <u>Col.3</u>	<u>Communications</u> <u>Col.4</u>	<u>Observations</u> <u>Col.5</u>
8934	ARR	18:58:03	Air Nostrum eight nine three four descend to flight level one three zero.	
ARR	8934	07	One three zero, eight nine three four.	
367	ARR	10	Luxair three six seven report speed ?	
ARR	367	12	Heu, current speed is .. two fifty.	
367	ARR	15	Roger, reduce one eight zero.	
ARR	367	17	Reducing one eight zero, Luxair three six seven.	
CNV	ARR	48	Charlie November Victor maintain one six zero knots to four miles.	
ARR	CNV	51	One six zero knots, Charlie XXXXX XXXXX.	Probably: "November Victor".
916	ARR	55	Air Glaciers neuf cent seize descendez le niveau de vol cent, unité zéro zéro.	
ARR	916	59	Descends niveau cent, Air Glaciers neuf cent seize.	
8934	ARR	18:59:09	Air Nostrum eight nine three four continue present heading, vectors for the right hand down wind.	
ARR	8934	13	Okay present heading, XXXXX vectors, eight nine three four.	Probably: "expecting"
VSF	ARR	24	Victor Sierra Foxtrot turn left heading three four zero for base.	
ARR	VSF	27	Left turn three four zero, Victor Sierra Fox.	
VSF	ARR	19:00:04	Victor Sierra Foxtrot turn left heading two six zero, intercept the final track, cleared for VOR/DME approach runway two three, and I call you back for further descent.	
ARR	VSF	13	Two six zero, join the in..., inbound course, cleared to VOR/DME runway two three, Victor Sierra Fox.	
CNV	ARR	20	Charlie November Victor contact Tower on one one eight decimal seven, good-bye.	
ARR	CNV	23	One one eight decimal seven, XXXXX.	Probably: "good night"
367	ARR	19:00:26	Luxair three six seven make a right turn, I confirm right turn heading zero five zero.	

Signature of
person in charge


TRANSCRIPT SHEET

<u>To</u> <u>Col.1</u>	<u>From</u> <u>Col.2</u>	<u>Time</u> <u>Col.3</u>	<u>Communications</u> <u>Col.4</u>	<u>Observations</u> <u>Col.5</u>
ARR	367	31	Right turn on heading zero five zero, Luxair three six seven.	
???	ARR	42	Victor..., disregard.	
566	ARR	19:01:32	<i>TAG cinq cent soixante-six vitesse cent soixante nœuds, virez à gauche cap trois quarante pour la base.</i>	
ARR	566	37	<i>Cent soixante nœuds, trois quarante pour la base, cinq soixante-six.</i>	
VSF	ARR	19:02:00	Victor Sierra Fox descend seven thousand feet, QNH nine nine zero.	
ARR	VSF	03	Seven thousand, nine nine zero, Sierra Fox.	
VSF	ARR	06	Confirm speed one six zero ?	
ARR	VSF	09	We're one eighty, XXXXX XXXXX XXXXX, to one sixty.	Could be: "is which you called was for"
VSF	ARR	11	That's my mistake, affirm, descend one six, correction: reduce one six zero knots.	
566	ARR	22	<i>TAG cinq cent soixante-six virez à gauche cap deux six zéro, interceptez le track final pour l'approche VOR/DME piste vingt-trois.</i>	
ARR	566	30	<i>D'accord, deux six zéro pour XXXXX, intercepter track final VOR/DME vingt-trois pour cinq cent soixante-six.</i>	Probably: "une"
ARR	367	38	Heading zero five zero, Luxair three six seven.	
367	ARR	40	Roger.	
8934	ARR	43	Air Nostrum eight nine three four turn right heading zero four zero for down wind.	
ARR	8934	47	Okay, zero four zero right, eight nine three four.	
135	ARR	19:03:01	Lauda one three one descend to flight level one one zero.	
ARR	135	04	Leaving one two zero down one one zero, Lauda one three five.	
8934	ARR	19:03:11	Air Nostrum eight nine three four descend to seven thousand feet, QNH nine nine zero.	
ARR	8934	17	Seven thousand feet, nine nine zero QNH, eight nine three four.	

Signature of
person in charge


TRANSCRIPT SHEET

<u>To</u> <u>Col.1</u>	<u>From</u> <u>Col.2</u>	<u>Time</u> <u>Col.3</u>	<u>Communications</u> <u>Col.4</u>	<u>Observations</u> <u>Col.5</u>
ARR	VSF	23	And Bravo Sierra Foxtrot approaching Saint-Prex, understand cleared the approach.	
VSF	ARR	27	That's correct.	
916	ARR	19:04:30	Air Glaciers nine one six turn left heading zero six zero.	Another controller is taking over
ARR	916	34	Left, zero six zero, Glaciers nine one six.	
367	ARR	39	Luxair three six seven turn right heading two zero zero, intercept final track for VOR/DME approach.	
ARR	367	45	Turning right on heading two zero zero, intercept heading for final track two zero, heu two three, sorry, and VOR approach.	
ARR	8934	19:05:09	Genève, Air Nostrum eight nine three four, we're maintaining two four zero, the speed.	
8934	ARR	13	Roger, reduce to ... one eight zero knots.	
ARR	8934	15	One eight zero, eight nine three four.	
8934	ARR	24	Air Nostrum eight nine three four turn right on heading zero nine zero.	
ARR	8934	29	Turning right, zero nine zero, eight nine three four.	
135	ARR	44	Lauda one three five turn right heading zero four zero.	
ARR	135	47	Right turn heading zero four zero, Lauda one three five.	
367	ARR	59	Luxair three six seven descend to seven thousand, one zero, correction, niner niner zero.	
ARR	367	19:06:05	Descending seven thousand feet, niner niner zero QNH, three six seven.	
8934	ARR	36	Air Nostrum eight niner three four turn right on heading .. one four zero.	
ARR	8934	19:06:42	One four zero, eight nine three four.	
566	ARR	45	TAG five six six descend to six thousand.	
ARR	566	47	Six thousand.	
566	ARR	49	Expedite descent please.	

Signature of
person in charge


TRANSCRIPT SHEET

To Col.1	From Col.2	Time Col.3	Communications Col.4	Observations Col.5
ARR	566	50	Oui, on a l'trafic sur l'TCAS.	
916	ARR	19:07:03	Air Glaciers neuf cent seize cap zéro cinquante.	
ARR	916	05	Cap zéro cinquante, neuf cent ...	
VSF	ARR	19	Victor Sierra Fox contact Tower, one one eight decimal seven, good-bye.	
ARR	VSF	23	Eighteen seven, good night.	
ARR	8934	24	Geneva, Air Nostrum eight nine three four, we have a, the traffic in sight, please ?	The pilot speaks rapidly
8934	ARR	29	Heu, it's below, continue heading one four zero.	
ARR	8934	32	Okay, one four zero.	
135	ARR	36	Lauda one three five is speed two three zero heu still convenient for you, or may we reduce ?	
ARR	135	41	You may reduce to one eight zero knots.	
135	ARR	43	Reducing one eight zero, Lauda one three five, and maintaining one one zero.	
ARR	8934	19:08:16	Climbing seven thousand, eight nine three four.	
8934	ARR	23	Bu.., you were cleared to seven thousand feet !	
ARR	8934	25	Seven thousand feet.	
8934	ARR	41	Air Nostrum eight nine three four turn left heading zero five zero, main.., and maintain seven thousand feet.	
ARR	8934	19:08:47	Okay, zero five zero and seven thousand, eight nine three four.	
916	ARR	54	Air Glaciers neuf cent seize descendez à sept mille pieds, QNH neuf neuf zéro, et virez à gauche cap trois cent vingt pour la base.	
ARR	916	19:09:03	Cap trois cent vingt, descend sept mille pieds, "on" neuf neuf zéro, neuf cent seize.	
566	ARR	13	TAG cinq six six contactez la Tour, cent dix-huit sept, au revoir.	
ARR	566	17	Bonne soirée Monsieur.	

Signature of
person in charge


TRANSCRIPT SHEET

To Col.1	From Col.2	Time Col.3	Communications Col.4	Observations Col.5
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Frequency 131.32 MHz: Geneva Arrivals, for ANS8934 only

				ARR in contact with: - LGL367 - AGV916 - LDA135 - AGV916
8934	ARR	19:10:37	Air Nostrum eight nine three four turn left heading three two zero, base leg.	
ARR	8934	41	Okay, three two zero, eight nine three four, XXXXX.	Probably: "merci"
8934	ARR	19:11:22	Air Nostrum eight nine three four continue left turn heading two six zero, intercept final track two three for fin., heu VOR/DME approach.	
ARR	8934	30	Okay, two six zero, intercept the VOR/DME approach, Air Nostrum eight nine three four.	
8934	ARR	40	Air Nostrum eight nine three four, speed one sixty knots.	
ARR	8934	43	One sixty, eight nine three four.	ARR in contact with: - LDA135 - LGL367 - VPBSF - LDA135
8934	ARR	19:12:53	Air Nostrum eight nine three four cleared VOR/DME approach, speed one sixty knots to six miles.	
ARR	8934	09:12:59	Okay, clear VOR/DME approach and one sixty... six miles, Air Nostrum eight nine three four.	
				ARR in contact with: - LDA135 - VPBSF - HBIEE 3x - AGV916 - HBIEE - LDA135 - HBIEE - VPBSF
8934	ARR	19:18:35	Air Nostrum eight nine three four contact Tower, one one eight decimal seven, good-bye.	
ARR	8934	39	One one eight seven, good-bye, eight nine three four.	

Signature of
person in charge



TRANSCRIPT SHEET

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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Signature of
person in charge

