COMISIÓN DE INVESTIGACIÓN DE ACCIDENTES E INCIDENTES DE AVIACIÓN CIVIL

Report IN-034/2018

Incident involving an Airbus A-320-214 aircraft, registration EC-HQL, operated by Vueling Airlines, and a Boeing 737-800 aircraft, registration CN-RNU, operated by Royal Air Maroc, in the airspace of the Barcelona CTR, Spain (control zone) on 6 July 2018



GOBIERNO DE ESPAÑA

MINISTERIO DE FOMENTO

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Foreword

This report is a technical document that reflects the point of view of the Civil Aviation Accident and Incident Investigation Commission (CIAIAC) regarding the circumstances of the accident object of the investigation, and its probable causes and consequences.

In accordance with the provisions in Article 5.4.1 of Annex 13 of the International Civil Aviation Convention; and with articles 5.5 of Regulation (UE) n° 996/2010, of the European Parliament and the Council, of 20 October 2010; Article 15 of Law 21/2003 on Air Safety and articles 1., 4. and 21.2 of Regulation 389/1998, this investigation is exclusively of a technical nature, and its objective is the prevention of future civil aviation accidents and incidents by issuing, if necessary, safety recommendations to prevent from their reoccurrence. The investigation is not pointed to establish blame or liability whatsoever, and it's not prejudging the possible decision taken by the judicial authorities. Therefore, and according to above norms and regulations, the investigation was carried out using procedures not necessarily subject to the guarantees and rights usually used for the evidences in a judicial process.

Consequently, any use of this report for purposes other than that of preventing future accidents may lead to erroneous conclusions or interpretations.

This report was originally issued in Spanish. This English translation is provided for information purposes only.

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Abbreviations

0 / //	Sexagesimal degrees, minutes and seconds
°C	Degrees centigrade
ACP	Area control procedural rating
ACS	Area control surveillance rating
ADI	Aerodrome control instrument rating
ADV	Aerodrome control visual rating
AESA	Spain's National Aviation Safety Agency
AIR	Air control endorsement
APP	Approach control procedural rating
APS	Approach control surveillance rating
ATC	Air traffic control
ATPL	Airline transport pilot license
CPL	Commercial pilot license
CTR	Control zone
ft	Feet
GMC	Ground movement control endorsement
GMS	Ground movement surveillance endorsement
h	Hours
hPa	Hectopascals
IAS	Indicated Airspeed
ICAO	International Civil Aviation Organization
IFR	Instrument flight rules
ILS	Instrumental Landing System
IR	Instrument rating
Km	Kilometers
Kt	Knots
LAD	Azimut Distance line
LEBL	ICAO code for the Barcelona-El Prat Airport
LECB	ICAO code for the Barcelona Control Center
m	Meters
METAR	Aviation routine weather report (in aeronautical weather code)

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N/A	Not affected
NM	Nautical miles
OCN	Oceanic control endorsement
PAC	Conflict caution alert
PAR	Precision approach radar
QNH	Altimeter sub-scale setting to obtain elevation when on the ground
RAD	Aerodrome radar control endorsement
RNAV	Area navigation
S	Seconds
SRA	Surveilance radar approach
STCA	Short-term conflict alert
TCL	Terminal control endorsement
ТМА	Terminal control area
TWR	Control tower
UTC	Coordinated universal time
VAC	Conflict violation alert

Synopsis

Aircraft #1:

Owner:	AerCap Ireland Limited
Operator:	Vueling Airlines
Aircraft:	Airbus A-320-214, registration EC-HQL
Persons on board:	6 crew and 178 passengers, no injuries
Type of flight:	Commercial air transport – Scheduled –International– Passenger
Phase of flight:	Approach
Type of operation:	IFR

Aircraft #2:

Royal Air Maroc
Royal Air Maroc
Boeing 737-800, registration CN-RNU
6 crew and 118 passengers, no injuries
Commercial air transport – Scheduled –International– Passenger
Approach
IFR
6 July 2018 at 12:29 ¹
In the Barcelona CTR (control zone) airspace, Spain
30 October 2018

¹. Time reference used in this report is local time. UTC reference is local time – 2 hours.

Summary of event:

On Friday, 6 July 2018, there was a loss of separation between an Airbus A-320-214 operated by Vueling Airlines, and a Boeing 737-800 operated by Royal Air Maroc, in the airspace of the Barcelona CTR (control zone) as both aircraft were transitioning to final approach for the Barcelona Airport.

The aircraft operated by Vueling Airlines had been cleared to proceed to waypoint BL542, at an altitude of 4000 ft by the sector LEBLT3E controller. Then, this controller had transferred it to the FIN (final) sector controller. So, the aircraft was in radio/radar contact with the FIN sector controller.

In the meantime, the aircraft operated by Royal Air Maroc had been cleared to proceed to waypoint BL546 at an altitude of 5000 ft by the sector LEBLT3E controller. The executive controller in sector LEBLT3E was relieved and the new controller cleared it to descend to 4000 ft. This other aircraft was still in radio/radar contact with the sector LEBLT3E controller.

At 12:29, there was a loss of separation between the two aircraft. The VAC (conflict violation alert) on the STCA system was activated on the sector LEBLT3E controller's display, but at no time was the controller aware of this loss of separation.

At 12:30, the crew of the aircraft operated by Royal Air Maroc reported that the other aircraft was within 2 NM, ahead and at the same altitude, and he requested abandoning the approach to the left.

Over the course of the incident, the aircraft came within 1.1 nautical miles horizontally and 200 ft vertically.

None of the crew or passengers on either aircraft were injured.

The aircraft did not sustain any kind of damage.

The investigation has determined that this incident was caused because the controller was not aware of all the traffic that were in his area of responsibility (that is, sector LEBLT3E) and that were of concern even if they were no longer on his frequency.

1. FACTUAL INFORMATION

1.1. History of the flight

On Friday, 6 July 2018, an Airbus A-320-214 aircraft operated by Vueling Airlines was flying to the Barcelona-El Prat Airport. The sector LEBLT3E controller had cleared it to proceed to waypoint BL542 to transition to the final approach to the Barcelona Airport at an altitude of 4000 ft, and had transferred it to the FIN (final) sector controller.

A Boeing 737-800 aircraft operated by Royal Air Maroc was also flying to the Barcelona-El Prat Airport and was transitioning to final approach. The sector LEBLT3E controller had cleared it to proceed to waypoint BL546 at an altitude of 5000 ft.

A short time later the executive controller in sector LEBLT3E was relieved.

The new controller contacted the Boeing 737-800 operated by Royal Air Maroc to clear it to descend to 4000 ft.

Later, at 12:29, there was a loss of separation between the two aircraft. The VAC (conflict violation alert) on the STCA system was activated on the sector LEBLT3E controller's display, but at no time was the controller aware of this loss of separation.

The crew of the Royal Air Maroc aircraft did notice this loss of separation and informed the sector LEBLT3E controller that it had another aircraft within 2 NM, in front and at the same altitude, and requested abandoning the approach to the left.

Over the course of the incident, the aircraft came within 1.1 nautical miles horizontally and 200 ft vertically.

None of the crew or passengers on either aircraft were injured.

The aircraft did not sustain any kind of damage.

1.2. Injuries to persons

Injuries to persons on board the Airbus A-320-214

Injuries	Crew	Passengers	Total in the aircraft	Other
Fatal				
Serious				
Minor				N/A
None	6²	178	184	N/A
TOTAL	6	178	184	

Injuries to persons on board the Boeing 737-800

Injuries	Crew	Passengers	Total in the aircraft	Other
Fatal				
Serious				
Minor				N/A
None	6 ³	118	124	N/A
TOTAL	6	118	124	

1.3. Damage to aircraft

The aircraft were not damaged.

1.4. Other damage

There was no damage of any kind.

1.5. Personnel information

Information on the crew of the Airbus A-320-214

The captain, a 37-year-old Spanish national, had an airline transport pilot license for airplanes (ATPL(A)) issued on 22 January 2016 by AESA and A320 and IR(A) ratings, which were valid until 30 October 2018.

². 2 flight crew and 4 cabin crew.

³. 2 flight crew and 4 cabin crew.

The captain had a class-1 medical certificate that was valid until 12 November 2018.

The first officer, a 30-year-old Spanish national, had a commercial pilot license for airplanes (CPL(A)) issued on 3 September 2009 by AESA and A320 and IR(A) ratings, which were valid until 31 May 2019.

The first officer had a class-1 medical certificate that was valid until 25 February 2019.

Information on the crew of the Boeing 737-800

The captain, a 51-year-old Moroccan national, had an airline transport pilot license for airplanes (ATPL(A)) issued on 10 March 2006 by the Moroccan Civil Aviation Directorate and a B737 300-900 rating that was valid until 28 February 2019.

The captain had a class-1 medical certificate that was valid until 30 September 2018.

The first officer, a 32-year-old Moroccan national, had a commercial pilot license for airplanes (CPL(A)) issued on 1 April 2011 by the Moroccan Civil Aviation Directorate and a B737 300-900 rating that was valid until 31 October 2018.

The first officer had a class-1 medical certificate that was valid until 30 April 2019.

Information on the executive controller in Barcelona sector LEBLT3E

The Barcelona Approach controller, a 44-year-old Spanish national, had a license with an initial issue date of 30 May 2005, with the following ratings: ADV, ADI (with AIR, GMC, TWR, GMS and RAD endorsements), APP, APS (with PAR, SRA and TCL endorsements), ACP (with OCN endorsement) and ACS (with TCL and OCN endorsements). For the LECB unit, he had the APS/TCL rating, which expired on 24 April 2019.

He had a class-3 medical certificate that expired on 7 September 2018.

He had been trained on both the new Barcelona TMA, where RNAV flight paths were recently implemented to replace the conventional flight paths, and on potential incidents at the TMA as a result of the introduction of these new flight paths.

Information on the planning controller in Barcelona sector LEBLT3E

The Barcelona Approach controller, a 51-year-old Spanish national, had a license with an initial issue date of 26 September 1999, with the following ratings: ADV, ADI (with AIR, GMC, TWR, GMS and RAD endorsements), APP, APS (with PAR, SRA and TCL endorsements), ACP (with OCN endorsement) and ACS (with TCL and OCN endorsements). For the LECB unit, he had the APS/TCL rating, which expired on 21 November 2018.

He had a class-3 medical certificate that expired on 3 August 2019.

He had been trained on both the new Barcelona TMA, where RNAV flight paths were recently implemented to replace the conventional flight paths, and on potential incidents at the TMA as a result of the introduction of these new flight paths.

1.6. Aircraft information

Information on the Airbus A-320-214

The A320-214 aircraft, with registration EC-HQL and serial number 1461, was manufactured in 2001 and entered in AESA's registry on 21 June of that same year. It has two CFM-56-5B4/P engines.

It has a certificate of airworthiness issued by AESA, and an airworthiness review certificate that is valid until 26 April 2019.

Information on the Boeing 737-800

The Boeing 737-800, with registration CN-RNU and serial number 28987, was entered in the registry of the Moroccan Civil Aviation Directorate on 26 October 2015.

It has an airworthiness review certificate that is valid until 15 October 2018.

1.7. Meteorological information

The incident took place at 10:29 UTC. The 10:00 and 10:30 UTC METARs for the Barcelona-El Prat Airport (LEBL) were as follows:

METAR LEBL 061000Z 13010KT 100V160 9999 FEW025 SCT050 26/20 Q1020 NOSIG=

METAR LEBL 061030Z 13010KT 100V160 9999 FEW050 26/20 Q1020 NOSIG=

These reports indicate that the winds were from a variable direction with a southeasterly component at 10 knots, with visibility in excess of 10 km, few clouds, a temperature of 26° C, dew point of 20° C, and a pressure (QNH) of 1,020 hPa, with no significant changes expected.

1.8. Aids to navigation

The most significant moments in the radar tracks for the aircraft involved in the incident are provided below.

The following image shows the positions of the Airbus A-320-214, with callsign VLG61WG, and the Boeing 737-800, with callsign RAM964Y, at 12:26:00. VLG61WG is flying direct to waypoint BL542, descending through 7300 ft for 4000 ft. RAM964Y is flying direct to waypoint BL546, descending through 9000 ft to 5000 ft. The groundspeed of VLG61WG is 220 kt, and the groundspeed of RAM964Y is 250 kt.



Illustration 1. Positions of VLG61WG and RAM964Y at 12:26:00

The following image shows the positions of the Airbus A-320-214, with callsign VLG61WG, and the Boeing 737-800, with callsign RAM964Y, at 12:27:28. VLG61WG is flying direct to waypoint BL542, descending through 6100 ft for 4000 ft. RAM964Y is flying direct to waypoint BL546, descending through 6900 ft and

cleared to descend to 4000 ft. The groundspeed of VLG61WG is 220 kt, and the groundspeed of RAM964Y is 270 kt.



Illustration 2. Positions of VLG61WG and RAM964Y at 12:27:28

The following image shows the positions of the Airbus A-320-214, with callsign VLG61WG, and the Boeing 737-800, with callsign RAM964Y, at 12:28:27. VLG61WG is flying direct to waypoint BL542, descending through 5400 ft for 4000 ft. RAM964Y is flying direct to waypoint BL546, descending through 5600 ft and cleared to descend to 4000 ft. The groundspeed of VLG61WG is 220 kt, and the groundspeed of RAM964Y is 280 kt.



Illustration 3. Positions of VLG61WG and RAM964Y at 12:28:27

The following image shows the positions of the Airbus A-320-214, with callsign VLG61WG, and the Boeing 737-800, with callsign RAM964Y, at 12:29:06.

VLG61WG is flying direct to waypoint BL542, descending through 5000 ft for 3000 ft. RAM964Y is also flying direct to waypoint BL542, descending through 5000 ft to 4000 ft. The LAD (azimuth distance line) indicates that they were 3.4 NM apart at the same altitude. The groundspeed of VLG61WG is 220 kt, and the groundspeed of RAM964Y is 260 kt.



Illustration 4. Positions of VLG61WG and RAM964Y at 12:29:06

The following image shows the positions of the Airbus A-320-214, with callsign VLG61WG, and the Boeing 737-800, with callsign RAM964Y, at 12:30:22. The aircraft were on the south outbound leg, VLG61WG descending through 4300 ft for 3000 ft, and RAM964Y at 4000 ft. The LAD (azimuth distance line) indicates that they were 1.2 NM apart. The groundspeed of both aircraft is 220 kt.

At that point, the conflict violation alert (VAC) on the STCA activates on the displays of the air traffic controllers, as shown in the reproduction.



Illustration 5. Positions of VLG61WG and RAM964Y at 12:30:22

The following image shows the positions of the Airbus A-320-214, with callsign VLG61WG, and the Boeing 737-800, with callsign RAM964Y, at 12:30:47. The aircraft were on the south outbound leg, VLG61WG descending through 4100 ft

for 3000 ft, and RAM964Y at 4000 ft. The LAD (azimuth distance line) indicates that they were 1.2 NM apart. The groundspeed of both aircraft is 220 kt.

RAM964Y initiated the separation maneuver after reporting it to the air traffic controller.



Illustration 6. Positions of VLG61WG and RAM964Y at 12:30:47 h

1.9. Communications

The most significant communications between the pilots and the controllers are included for the subsequent analysis of the incident.

At 12:25:53, the sector LEBLT3E controller instructs the Boeing 737-800 with callsign RAM964Y to descend to 5000 ft. He had previously cleared it to proceed to waypoint BL546 to join the transition to final approach.

At 12:26:17, the sector LEBLT3E controller instructs the Airbus A-320-214 with callsign VLG61WG to contact the controller on final. He had previously cleared it to proceed to waypoint BL542 and descend to 4000 ft.

After this, the executive controller in the control position for sector LEBLT3E was relieved.

At 12:26:36, the Airbus A-320-214 with callsign VLG61WG contacts the sector F07 (FINAL07) controller, who instructs it to descend to 3000 ft. This instruction is acknowledged by the crew. Later, at 12:28:50, he reminds them they have to descend to 3000 ft. This instruction is once more acknowledged by the crew.

At 12:27:23, the sector LEBLT3E controller instructs the Boeing 737-800 with callsign RAM964Y to descend to 4,000 ft.

At 12:30:22, the sector F07 (FINAL07) controller instructs aircraft Airbus A-320-214 with callsign VLG61WG to fly the ILS Z approach maneuver to runway 07L.

At 12:30:49, the Boeing 737-800 with callsign RAM964Y contacts the sector LEBLT3E controller to report traffic ahead within 2 NM at the same altitude. They request abandoning the approach to the left. The controller apologizes.

1.10. Aerodrome information

The Barcelona-El Prat Airport (ICAO code LEBL) is 10 km southwest of the city of Barcelona. It is at an elevation of 4 m and it has three runways: 02/20, 07L/25R and 07R/25L.

At the time of the incident, the airport was operating with parallel runways, East configuration, meaning airplanes were landing on runway 07L and taking off from runway 07R.

Runway 07L is 3,352 m long and 60 m wide.



The map of the Barcelona-El Prat Airport is provided below.

Illustration 7. Map of the airport

1.11. Flight recorders

The aircraft involved in this incident were equipped with flight recorders, but their analysis was not deemed to be of interest to the study of this incident.

1.12. Wreckage and impact information

The aircraft involved in the incident were not damaged.

1.13. Medical and pathological information

There is no indication that physiological factors or incapacitations affected the actions of the flight crew members or the flight controllers.

1.14. Fire

There was no fire in the aircraft or in the surroundings.

1.15. Survival aspects

Not applicable.

1.16. Tests and research

Statement from the crew of the A320-214

The crew stated that they did not recall anything related to this incident, as they were unaware of the loss of separation.

Statement from the crew of the 737-800

The incident occurred after leaving the RUBOT holding pattern, at 4000 ft, as they were flying toward waypoint BL546, as per ATC's instructions. They saw a Vueling A320 ahead of them descending from 5000 ft and flying within 1.5 NM in the same direction. When the vertical separation had closed to approximately 500 ft, they decided to turn left to avoid potential wake turbulence and immediately informed ATC, which apologized several times.

The approach was completed normally with radar vectors.

Statement from the executive controller in Barcelona sector LEBLT3E

He thought that the relief of the executive controller position was appropriate given the operational situation, which he described as simple. He stated that the offgoing controller told him about the airplanes that were on the frequency.

After the turnover, he descended the aircraft with callsign RAM964Y to 4000 ft. The aircraft proceeded as per the RUBOT1E transition and, as it was on the outbound leg, it reported a diversion due to the wake turbulence of another traffic which was 1.2 NM in front and descending through 4000 ft.

He was unaware of this other traffic until the time of the incident. Although the traffic was in his sector, it had been transferred to the FIN controller before the turnover. He also did not realize that the VAC alert had been activated.

Statement from the planning controller in Barcelona sector LEBLT3E

Just as the sector assistant was being relieved, the oncoming executive controller had a loss of separation between two aircraft at the south transition for runway 07L.

He thought it could have been due to a possible distraction during the turnover with the aircraft on different frequencies.

1.17. Organizational and management information

Information on the operator of the Airbus A320-214

The Airbus A-320-214 is operated by Vueling Airlines, which has an Air Operator Certificate issued by AESA to engage in the commercial air transport of passengers and cargo.

Information on the operator of the Boeing 737-800

The Boeing 737-800 is operated by Royal Air Maroc.

1.18. Additional information

Airspace where the aircraft were operating at the time of the incident.

At the time of the incident, the airport was operating with parallel runways, East

configuration, with landings on runway 07L and takeoffs from runway 07R.

The aircraft involved in the incident were transitioning to the final approach to land on runway 07L. As the chart shows, there are two holding patterns: RUBOT and VIBIM. The Airbus A-320-214 with callsign VLG61VG was coming from the VIBIM holding pattern, while the Boeing 737-800 with callsign RAM964Y was coming from to the RUBOT pattern. Aircraft in these two holding patterns proceed to waypoint BL546.

At RNAV RUBOT1E leg of the transition to final approach, the maximum airspeed (IAS) is limited to 220 knots.



At the time of the incident, both were in the vicinity of waypoint BL542, inside Barcelona CTR airspace.

The RNAV routes were introduced on 26 April 2018 for runway 07 and on 24 May 2018 for runway 25.

Internal investigation report from ENAIRE

ENAIRE conducted an internal investigation into the event, after which it implemented a series of measures to improve safety. One of them entailed a counseling session for the executive controller involved in this incident, and covered blind spot mitigation techniques, visual scanning routines in radar environments (in particular hot spots for new RNAV1 approach paths to LEBL) and lessons learned involving information relayed during turnovers.

1.19. Useful or effective investigation techniques

No special investigation techniques were used.

2. ANALYSIS

The Airbus A-320-214 operated by Vueling Airlines had been cleared by the sector LEBLT3E controller to proceed to waypoint BL542 in order to transition, at an altitude of 4000 ft, to the final approach for the Barcelona Airport.

At 12:26:17, as the aircraft was proceeding to waypoint BL542 from holding pattern VIBIM, the controller instructed its crew to contact the Final controller. The aircraft was still in his sector (LEBLT3E).

The aircraft's ground speed was 220 kt according to the radar track. The chart for transitioning to the final approach specifies a maximum speed (IAS) of 220 kt at RNAV RUBOT1E leg. The wind speed at that altitude is not known, so the compliance with said speed restriction cannot be evaluated; however, the aircraft's ground speed during the incident remained constant.

At the same time, the Boeing 737-800 operated by Royal Air Maroc had been cleared by the sector LEBLT3E controller to proceed to waypoint BL546 to transition to the final approach for the Barcelona Airport at an altitude of 5000 ft. However, this aircraft did remain in contact with the sector LEBLT3E controller as the executive controller in sector LEBLT3E was being relieved.

ENAIRE, in its Operations Manual for the station, provides a protocol or checklist so that when controllers are relieved, the oncoming controller receives all of the necessary information. The controllers involved in this incident received training in this regard and are aware of this protocol. Both stated that the turnover was, in their opinion, conducted correctly and that all of the necessary information was relayed to the oncoming controller.

During turnovers, the oncoming controller should be made aware of the general situation in the sector, which particular emphasis on those aircraft that are or could cause conflicts, whether or not they are on the frequency. In an approach sequence or pre-sequence (as in this incident), the first traffic in the sequence is transferred to the next sector when it is "clear of conflicts"; that is, when the traffic has no other aircraft ahead of it and will not pose a conflict to the other traffic remaining in the sector and on the frequency. However, this action does not necessarily entail that the next traffic in the sequence (#2) is "clear of conflicts", since the position of the #1 traffic could affect it. Therefore, the #1 traffic, even if on another frequency, could be essential traffic for the #2 traffic, and therefore priority information to relay during a turnover.

The workload during the turnover between the controllers was not high; in fact, the oncoming executive controller defined the situation as simple.

Therefore, neither the operational situation at the time of the turnover, nor the fact

that no mention was made during said turnover of the presence of a traffic that was still in the sector but that was no longer on the frequency, justifies the oncoming controller's failure to notice that the traffic could be of concern.

After the turnover, the sector LEBLT3E controller contacted the Boeing 737-800 to clear it to descend to 4000 ft.

During the incident, the aircraft's ground speed exceeded 220 kt according to the radar track. The wind speed at that altitude is not known, so the compliance with the speed restriction specified in the chart to transition to final approach cannot be evaluated; however, at no point did the sector LEBLT3E controller instruct the aircraft to reduce its speed.

Subsequently, at 12:29, separation between the two aircraft was lost. Seconds earlier, the Royal Air Maroc aircraft was flying in a volume where the PAC (conflict caution alert) and VAC (conflict violation alert) of the SCTA system are inhibited to avoid numerous nuisance alerts, which is why the PAC alert was not received at any point. However, the VAC alert was activated on the display of the sector LEBLT3E controller, since the incident occurred just beyond the alert inhibition volume. According to his statement, at no time was the controller cognizant of this alert or of the loss of separation.

The crew of the Royal Air Maroc aircraft did notice this loss of separation, as they were in visual contact, and they informed the sector LEBLT3E controller that they had another aircraft ahead of them within 2 NM and at the same altitude, and they requested leaving the approach to the left.

The executive controller was not aware of the presence of traffic in his sector that could affect the others. Two reasons might explain this:

• First, the outgoing executive controller had already transferred that traffic to another frequency. When a traffic is transferred to another sector, it changes color on the display of the sector's air controller, and is shown in blue (this color denotes traffic of interest, such as the Vueling Airlines aircraft) instead of dark green (this color shows accepted traffic, that is, those whose communications have been accepted, as in the case of the Royal Air Maroc aircraft). This distinction could have caused cognitive attention bias in the controller, meaning he gave preference to information that affected him directly (namely, the traffic in his frequency) while ignoring collateral information (that is, the traffic in his sector that had been transferred to another).

• Another possible reason for this inattention by the air traffic controller is that his focus was away from the area where the loss of separation took place, since at that very moment he was communicating with two other aircraft that were in the VIBIM holding pattern.

3. CONCLUSIONS

3.1. Findings

- The crews of both aircraft had valid licenses and medical certificates.
- The controllers at the units involved in the incident had valid licenses, unit endorsements and medical certificates.
- The documentation for both aircraft was in order and they were airworthy.
- The offgoing executive controller transferred communications with the Airbus A320-214 to the FIN controller.
- The crew of the Boeing 737-800 were not informed of the presence of the other aircraft. The controller did not provide anti-collision guidance.
- The controller was unaware of the loss of separation and of the VAC (conflict violation alert).
- At 12:29, the flight paths of the aircraft resulted in their closing within 1.1 NM horizontally and 200 ft vertically of each other.

3.2. Causes/Contributing factors

The investigation has determined that this incident was caused because the controller was not aware of all the traffic in his area of responsibility (that is, sector LEBLT3E) and that were of concern, even if they were no longer on his frequency.

4. SAFETY RECOMMENDATIONS

No safety recommendations are issued since the measures taken by ENAIRE are deemed to be suitable. Specifically, having a counseling session with the executive controller of sector LEBLT3E involved in this incident to improve his awareness of all the traffic in his sector is deemed appropriate.