



KÖZLEKEDÉSBIZTONSÁGI
SZERVEZET

TRANSPORTATION SAFETY
BUREAU

FINAL REPORT

**2008-219-4
SERIOUS INCIDENT**

**Ferihegy
27th July 2008**

**Airbus A-320 / Saab-2000
D-AIQB / YR-SBL**

The sole objective of the technical investigation is to reveal the causes and circumstances of aviation accidents, incidents or irregularities and to initiate the necessary technical measures and make recommendations in order to prevent similar cases in the future. It is not the purpose of this activity to investigate or apportion blame or liability.

The present investigation was carried out by the Transportation Safety Bureau of Hungary on the basis of

- Act XCVII of 1995 on aviation,
- Annex 13 identified in the Appendix of Act XLVI. of 2007 on the declaration of the annexes of the Convention on International Civil Aviation signed in Chicago on 7th December 1944,
- Act CLXXXIV of 2005 on the technical investigation of aviation, railway and marine accidents and incidents (hereinafter referred to as Kbv.),
- MET Decree 123/2005 (XII. 29.) on the regulations of the technical investigation of aviation accidents, incidents and irregularities;
- In absence of other related regulation of the Kbv., in accordance with Act CXL of 2004 on the general rules of administrative authority procedure and service

The Kbv. and the MET Decree 123/2005 (XII. 29.) jointly serve the compliance with the following EU acts:

- a) Council Directive 94/56/EC of 21 November 1994 establishing the fundamental principles governing the investigation of civil aviation accidents and incidents,
- b) Directive 2003/42/EC of the European Parliament and of the Council of 13 June 2003 on occurrence reporting in civil aviation.

The competence of the Transportation Safety Bureau of Hungary is based on Government Decree 278/2006 (XII. 23.).

Under the aforementioned regulations

- The Transportation Safety Bureau of Hungary shall investigate the aviation accidents and the serious aviation incidents.
- The Transportation Safety Bureau of Hungary may investigate aviation incidents and irregularities which - in its judgement - would have resulted in accidents under other circumstances.
- The technical investigation is independent of any administrative, infringement or criminal procedures initiated in connection with the transport accident or incident
- In addition to the aforementioned laws, throughout the technical investigation ICAO DOC 6920 Manual of Aircraft Accident Investigation are applicable.
- The present final report shall not be binding, nor shall an appeal be lodged against it.

No conflict of interest has arisen in connection with any member of the investigating committee. Persons participating in the technical investigation shall not act as experts in other procedures concerning the same case.

The IC shall safe keep the data having come to their knowledge in the course of the technical investigation. Furthermore the IC shall not be obliged to make the data – regarding which its owner could have refused the disclosure of the data pursuant to the relevant act – available to other authorities.

DEFINITIONS AND ABBREVIATIONS

ADC	Aerodrome Controller
AIP	Aeronautical Information Publication
APP	Approach Controller
ATC	Air Traffic Control
CTR	Control Zone
DME	Distance Measuring Equipment
FIR	Flight Information Region
IC	Investigating Committee
ICAO	International Civil Aviation Organization
ILS	Instrument Landing System
Kbvt.	Act CLXXXIV of 2005 on the technical investigation of aviation, railway and marine accidents and incidents
LAN radar	Local Area Network Radar
MET	Ministry of Economy and Transport (Gazdasági és Közlekedési Minisztérium, GKM)
NM	Nautical Mile
NTA AD	National Transport Authority, Aviation Directorate
SID	Standard Instrument Departure
TMA	Terminal Control Area
TPS	Tápiósáp
TSB	Transportation Safety Bureau
TWR	Aerodrome Control Tower / Aerodrome Control Unit
UTC	Universal Time Coordinated
VOR	Very High Frequency Omnidirectional Radio Range

BRIEF DESCRIPTION OF THE OCCURENCE

Occurrence category		Serious incident	
Aircraft	Manufacturer	Airbus Industries	Saab
	Type	A-320	Saab-2000
	Registration	D-AIQB	YR-SBL
	Serial number	200	2000-013
	Operator	Deutsche Lufthansa	Carpatair S.A.
Occurrence	Date and time	27 th Jul. 2008, 16:35 UTC	
	Location	Ferihegy airport	
Number of	Fatalities	0	
	Seriously injured persons	0	
Aircraft damage		Not damaged	
State of registry		Germany	Romania
Authority supervising manufacturing		-	
Competent investigating organization		TSB	

Reports and notifications

The occurrence was reported to the dispatcher of the TSB at 18:38, 27th July 2008 by the personnel on duty at the air traffic service of Ferihegy airport.

THE DISPATCHER OF THE TSB

- reported to the TSB's head of department on duty at 18:42, 27th July 2008, and
- notified the duty personnel of NTA AD on 28th July 2008.

Investigating committee

On 28st July 2008, the Director-General of the TSB assigned the following Investigating Committee (hereinafter referred to as IC) to the investigation of the serious aviation incident:

Investigator-in-Charge	Zoltán NÉMETH	investigator
Member	László PÁL	investigator

Overview of the investigation procedure

During the investigation of the incident TSB

- asked the air traffic service provider to submit the relevant data recorded in connection with the incident, the radio communication, the radar shots, the meteorological data and the summary report prepared by the air traffic service provider and analysed these documents;
- requested further information from the competent investigative bodies on the main technical and professional data of the aircraft and crew concerned; and on the captain's report;
- asked the operators of the aircrafts to submit information on the company procedures regarding the operation of the aircrafts;
- studied the flight procedures applicable at Ferihegy airport.

A short summary of the occurrence

Having reported the case, HungaroControl Hungarian Air Navigation Services Plc. was asked by TSB on 28th July 2008 to submit further data necessary for the investigation of the case. HungaroControl Plc. sent the relevant data to TSB.

The Flight Safety Department of HungaroControl Plc. forwarded its incident report to TSB.

The IC contacted the airlines operating flights DLH6X and MAH516. The personnel of flight DLH6X forwarded its report to TSB, and the airline provided information about the procedures and equipment utilized by them.

The IC compiled the present final report as based on the radar and voice data recorded by HungaroControl Plc., on the report about the incident, on the report submitted by the personnel of the aircraft and by studying the flight procedures and the procedures applied by air traffic control.

1. FACTUAL INFORMATION

1.1 History of the flight

The Airbus A320 type passenger aircraft with the call sign DLH6HX took off at 14:30 UTC, on the 27th July 2008 from airport Frankfurt-Main (EDDS) planning to land at Budapest-Ferihegy international airport (LHBP). The crew of the aircraft contacted Ferihegy ADC on 118.1 MHz at 15:59:48 UTC, and informed him about carrying out an ILS approach to runway 31R. At 15:59:51 UTC ADC gave the aircraft clearance to land on runway 31R.

The Saab-2000 type passenger aircraft with call sign MAH516, with destination Stuttgart was cleared by Ferihegy Tower to take off from runway 31L which is parallel with runway 31R.

Claiming unstabilized approach, 2 NM from the threshold of runway 31R, DLH6X interrupted its approach at 16:00:35 UTC and started the missed approach procedure. The aircraft was handed over by ADC to the frequency 129.7 MHz of APP.

During the execution of the missed approach procedure, DLH6X got into conflict with flight MAH516 taking off from runway 31L, which contacted APP at 16:02:09. APP instructed the aircrafts to follow diverging directions.

During the incident the 3 NM separation minimum applicable in Budapest TMA airspace was reduced to 1.4 NM at the same altitude. The further flight of the aircrafts ensued without any incident, they landed safely at their destination airports.

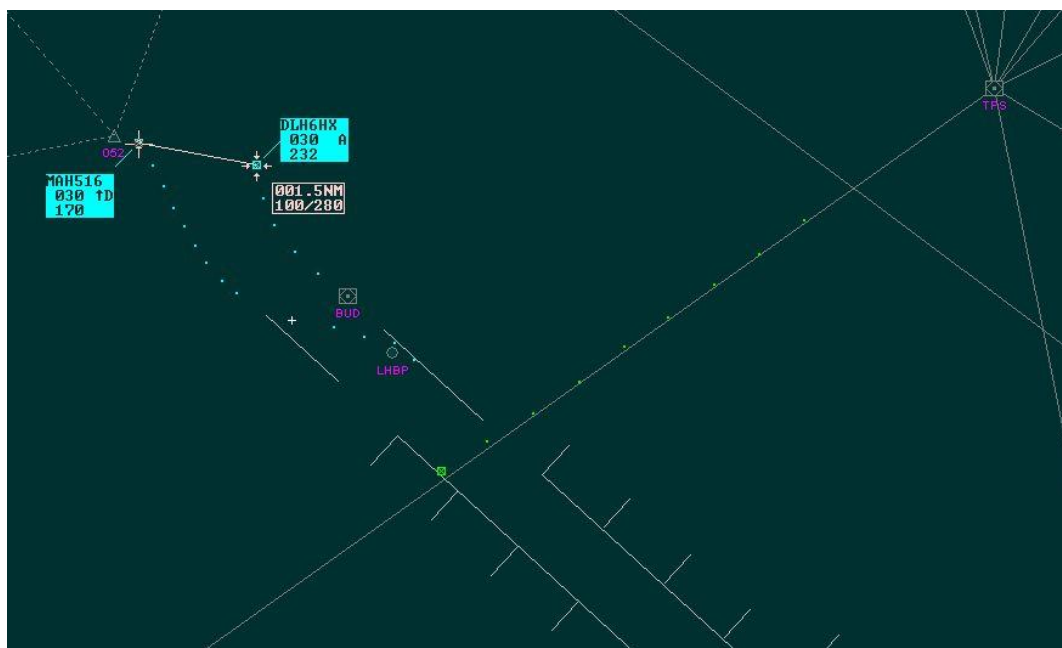


Figure 1. The LAN radar shot shows flights DLH6X and MAH516 on the same altitude, 1.5 NM from each other.

1.2 Personal injuries (DLH6X / MAH516)

Injuries	Crew		Passenger	Other
	Cockpit	Cabin		
Fatal	0	0	0	0

Serious	0	0	0	0
Minor	0	0	0	0
None	2/2	3/1	100/26	–

1.3 Damage to aircraft

The incident did not cause financially relevant damage in the given aircraft.

1.4 Other damage

The IC did not receive any information on further damage by the completion of the investigation.

1.5 Information on the personnel

1.5.1 The captain of the aircraft

The IC does not dispose of data regarding the captain of the aircraft.

1.5.2 The first officer

The IC does not dispose of data regarding the first officer of the aircraft.

1.6 Aircraft data

The aircraft data had no effect on the course of events, therefore their analysis was not required.

1.7 Meteorological data

The weather conditions recorded at Ferihegy at 16:00 UTC were the following:

- Wind direction (at ground level): 050°, wind speed: 8 knots, visibility: above 10 km, temperature: 28°C, dew point: 16°C.

The occurrence happened in daylight, the aircraft operated under visual meteorological conditions (VMC). There was no precipitation or a significant quantity of clouds.

1.8 Aids to navigation

The navigational instruments had no effect on the course of events therefore their analysis was not required.

1.9 Communications

The instruments used for communication had no effect on the course of events therefore their analysis was not required.

1.10 Aerodrome information

The parameters of the aerodrome had no effect on the course of events therefore their analysis was not required.

1.11 Flight recorders

The required data recorders regarding the ATC equipment and the aircrafts were operative and the data recorded by them were usable.

The data from the data recorders indicated in the type certificate of the aircrafts were not downloaded.

1.12 Wreckage and impact information

The incident did not result in a wreckage.

1.13 Data of the medical investigations

There are no data available about the psychophysical state of the crew before and during the flight.

Medical forensics examination

There was no medical forensics examination.

1.14 Fire

There was no fire.

1.15 Chances of survival

There were no personal injuries.

1.16 Tests and research

Tests and researches were not initiated by the IC.

1.17 Organisational and management information

The characteristics of the relevant organizations had no effect on the incident thus their analysis was not required.

1.18 Additional information

The IC was not informed about any relevant additional information.

1.19 Useful or effective investigation techniques

The investigation did not require techniques differing from the traditional approach.

2. ANALYSIS

During the occurrence, the arriving aircraft, DLH6X, was directed by radar vectoring. On the downwind leg the crew announced seeing the runway, thus the direction enabling a shorter final approach was accepted.

As based on the contents of the report received from the aircraft's crew, they experienced a tailwind. Consequently, the final approach proved to be too short to reduce the speed of the aircraft to a value appropriate for safe landing. The speed of the aircraft was 25-30 knots higher. According to the procedures of the airline, the approach has to be interrupted in such a case, thus the crew of the aircraft started a missed approach procedure. The fact was also reported to ADC at 16:00:35 UTC.

The "LIDO Chart" utilized by the crew of DLH6X determines the missed approach procedure the following way:

"310° – at 1000 RT, direct TPS – climb 3000, cross TPS VOR at 3000"

i.e. flying at 310°, right turn at 1000 feet, climbing to 3000 feet in the direction of TPS, crossing TPS VOR at 3000 feet (Fig. 2).

In the opinion of the IC, the map and the verbal description of the procedure do not match entirely. DLH6X did not follow the missed approach procedure described by the test, i.e. it did not turn right at 1000 feet, but climbed to 3000 feet maintaining the direction of the runway, and kept its direction until passing BUD VOR. Only after passing BUD VOR did it turn to the direction of TPS in the manner it is shown by the map.

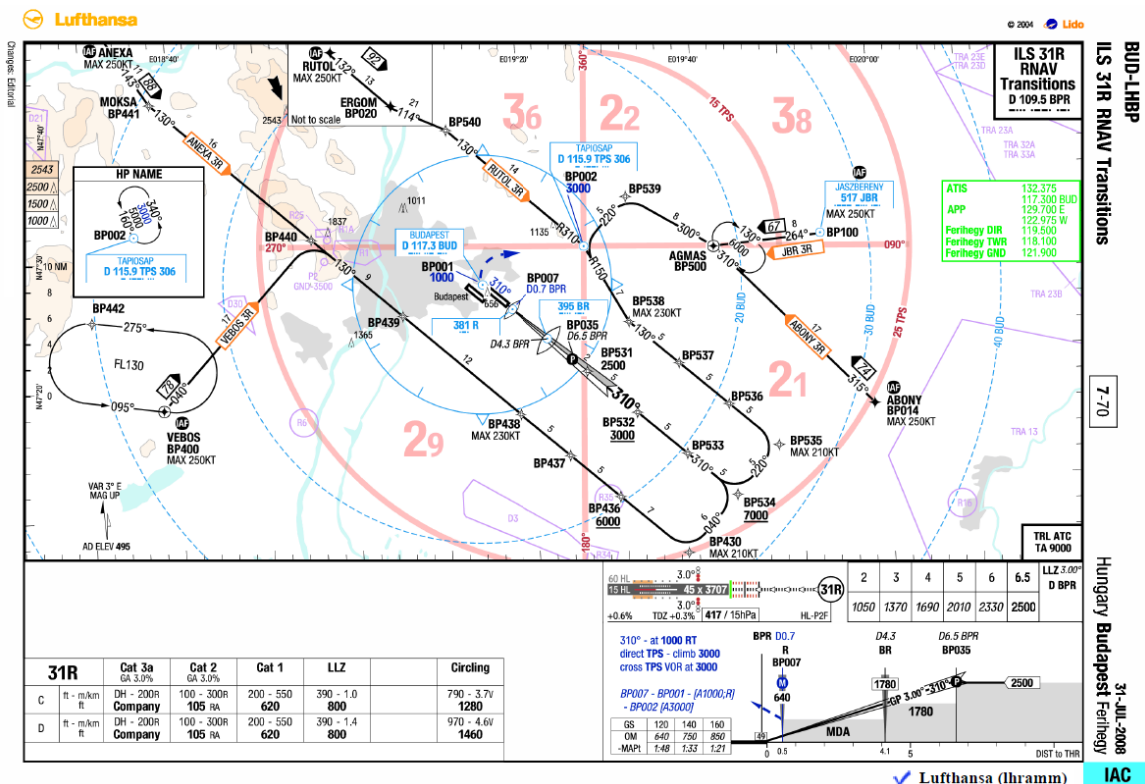


Fig.2. LIDO Chart for the ILS approach of 31R

The map used by the crew was identical to the current AIP map at the time of the occurrence. HungaroControl issued a decision on 27th August 2008 to correct the misunderstandable figure, the corrective measures were taken. Thus, the AIP

modification published after the incident, valid from 12th March 2009 includes a new map and a modified description on how to carry out the missed approach procedures (see the Appendix).

As based on the information received from the crew, during initial climb their attention was divided by concentrating on not to surpass 3000 feet altitude due to their high climbing speed, and also by replying to the question of ADC, asking the reason for going around, to which the crew replied “not established.” At 16:01:31 UTC ADC asked the aircraft to contact APP at the frequency of 129.7 MHz, where APP instructed the aircraft at 16:01:56 UTC to turn right onto the direction of 040°. Following this, at 16:02:09 UTC, 1 minute 44 seconds after having received clearance to take off from ADC, MAH516 also contacted APP.

During this 1 minute and 44 seconds, MAH516 basically “vanished” from the sight of air traffic control, the previously granted clearances were not modified, and there was uncertainty as to which air traffic service unit is in contact with the aircraft. This is also confirmed by the fact that at 16:02:32 UTC ADC tried still to correspond with MAH516 by radio, while the crew had already contacted APP. The reason behind this uncertainty might have been that, according to the procedure applied at Ferihegy, after take-off, reaching 1500 feet, the departing aircraft contact APP autonomously and not as a response to the commands of ADC, if TWR does not give instructions to the contrary (see: AIP HUNGARY AD2-LHBP – SID 31). As it is often seen, adhering to this requirement poses problems frequently, because radio communication is established between APP and the aircraft well after passing 1500 ft. This confuses air traffic control, as ADC does not know exactly when the aircraft will change to the frequency of APP. He/she does not know whether the aircraft is still at his/her frequency, or is already communicating at the frequency of APP.

According to the published departure procedure in force at the present time, in order to reduce the noise burden on the neighbouring settlements, the aircraft taking off from runway 31L, after reaching the direction beacon LI/A, are to turn right following the direction of 325° until crossing BUD DME after 3.5 NM. MAH516 followed the published noise mitigation procedure and flew over LI/A, then turned right, and was flying in the direction of 325°. Thus the paths of the two aircraft were converging.

On contacting APP, MAH516 was immediately asked by APP to abandon the departure procedure (APP instructed the aircraft to head left, in the direction of 270°), which was carried out by the aircraft. As the aircraft continued their flights in diverging directions, the conflict was solved. Then, they continued their flight and landed safely at their destination airports.

3. CONCLUSIONS

3.1 Factual findings that can be linked directly to the occurrence

- The speed of DLH6X was higher than the speed necessary for carrying out the landing safely, thus the aircraft executed a missed approach procedure.
- DLH6X did not follow closely the published missed approach procedure.
- MAH516 contacted APP 1 minute and 44 seconds after having received clearance to take off from ADC.
- MAH516 adhered adequately to the noise abatement departure procedure to be followed after take-off.
- The path of the departure procedure followed by MAH516 and the path of the missed approach procedure carried out by DLH6X did not ensure the applicable minimum separation for Budapest TMA airspace. The required minimum horizontal separation of 3 NM was reduced to 1.4 NM between the aircraft on the same altitude.
- When APP was contacted, he instructed the aircraft to change directions immediately. The conflict was thus solved, the aircraft continued their flights in diverging directions, and landed safely at their destination airports.

4. SAFETY RECOMMENDATIONS

BA2008-219-4_1: The IC recommends HungaroControl Plc. to reconsider the procedures of frequency change in order to ensure that the departing traffic will not vanish from radio communication for longer periods.

BA2008-219-4_2: In order to avoid similar occurrences in the future, IC recommends HungaroControl Plc. to review the airspace structure regarding the connection between TMA and CTR.

5. APPENDICES

1.
 - a) The map valid at the time of the incident, and
 - b) the modified mappublished in the AIP (AIP HUNGARY AD2-LHBP-ILS 31R-1).
2. The missed approach procedure to be used during the ILS approach of 31R, published in the AIP (AIP HUNGARY AD2-LHBP-ILS 31R-2)
 - a) The description of the procedure valid at the time of the incident, and
 - b) the modified description.
3. The AIP procedure regarding the frequency change of departing aircraft (AIP HUNGARY AD2-LHBP – SID 31)
4. Copy of the text of the communication between the air traffic services and the aircrafts, submitted by HungaroControl Plc.

Budapest, 08. June 2010

Zoltán NÉMETH
Investigator-in-Charge

László PÁL
IC Member

Appendix 1/a. Map of the procedure in AIP at the time of the occurrence
Appendix 1/b. Map of the procedure in AIP modified after the incident
Appendix 2/a. The missed approach procedure in the AIP at the time of the occurrence
Appendix 2/b. The modified missed approach procedure in the more recent AIP publication
Appendix 3. The procedure for the frequency change of departing aircraft.

All time data given in UTC.
Appendix 4.

NOTE:

*The present document is the translation of the Hungarian version of the final report.
Although efforts have been made to translate it as accurately as possible, discrepancies
may occur.
In this case, the Hungarian is the authentic, official version.*