



TRANSPORTATION SAFETY
BUREAU

FINAL REPORT
2012-324-4P
SERIOUS INCIDENT
LHCC
07/10/2012
AIRBUS A319
G-EZDU

The sole objective of the technical investigation is to reveal the causes and circumstances of aviation accidents or 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.

INTRODUCTION

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

- Regulation (EU) No 996/2010 of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation and repealing Directive 94/56/EC,
- 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 Kbvt.),
- 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 Kbvt., in accordance with Act CXL of 2004 on the general rules of administrative authority procedure and service.
- The Kbvt. and the MET Decree 123/2005 (XII. 29.) jointly serve compliance with 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 aviation accidents and 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 a transport accident or incident.
- In addition to the aforementioned laws, throughout the technical investigation ICAO Doc 9756 and Doc 6920 Manual of Aircraft Accident and Incident Investigation are applicable.
- This 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.

PRESENT FINAL REPORT

was based on the draft final report prepared by the IC for the purpose to form remarks by the involved parties as it is defined in the regulation

DEFINITIONS AND ABBREVIATIONS

| | |
|------------|--|
| AAIB | Air Accident Investigation Branch (investigating organization of the UK) |
| ACARS | Aircraft Communications Addressing and Reporting System |
| CPL/IR | Commercial Pilot Licence / Instrument Rating |
| EGGW/LTN | ICAO/IATA code of London Luton International Airport |
| EU OPS | Technical requirements and administrative procedures applicable to commercial transportation by aeroplane (965/2012 of 5 Oct 2012) |
| Extra fuel | Fuel that the commander may require in addition to that required (Taxi fuel + Trip fuel + Reserve fuel + Alternate fuel). EU OPS 1.255 |
| GKM | Ministry of Economy and Transport (Hungary) |
| FIR | Flight Information Region |
| HC Ltd. | HungaroControl Hungarian Air Navigation Services Pte. Ltd. Co. |
| ICAO | International Civil Aviation Organization |
| IFR | Instrument Flight Rules |
| TSB | Transportation Safety Bureau, Hungary |
| Kbvt. | Act CLXXXIV of 2005 on the technical investigation of aviation, railway and marine accidents and incidents |
| LHBP/BUD | ICAO/IATA code of Liszt Ferenc International Airport, Budapest |
| LHCC | Budapest FIR |
| LRTR/TSR | ICAO/IATA code of Traian Vuia International Airport, Timisoara, Romania |
| N/A | No data |
| NKH LH | Aviation Authority, National Transport Authority (Hungary) |
| SHRA | Shower Rain |
| TEMPO | Temporary Forecast of a weather phenomenon which may take place temporarily |
| TSRA | Thunderstorm rain |
| IC | Investigating Committee |

SUMMARY OF THE OCCURRENCE

| | | |
|----------------------------|---------------------------|---------------------------|
| Occurrence category | | serious aviation incident |
| Aircraft | Class | fixed wing aircraft |
| | Manufacturer | Airbus S.A.S. |
| | Type | A319-111 |
| | Registration | G-EZDU |
| | Operator | easyJet |
| Occurrence | Date and time (LT) | 07/10/2012, 16:56 |
| | Location | LHCC |

Reports and notifications

The occurrence was reported to the duty service of Transportation Safety Bureau of Hungary (hereinafter referred to as "TSB") by HungaroControl Pte. Ltd. Co. (Hereinafter referred to as HC Ltd.) on 07 October 2012, 17:06 hours (Universal Time Coordinated; hereinafter every reference to time in this report will be according to UTC).

The duty service of TSB

- notified the person on duty of NKH LH on 07 October 2012, 17:06 hours.
- notified in writing the accident investigating organization of the state of the operator (United Kingdom) on 08 October 2012, 12:12 hours.

Investigating Committee

On 7 October 2012, the Director-General of TSB assigned the following investigating committee (hereinafter referred to as IC) to the investigation of the case:

| | | |
|-------------------------|-----------------|---------------|
| Investigator-in-charge: | György HÁY | investigator |
| Member: | László PÁL | investigator |
| Member: | István HAJDUFI | investigator |
| Member: | Szilárd SÁRKÖZI | meteorologist |

István HAJDUFI, Investigator, left TSB Hungary during the investigation therefore Gergely MARÓTI, Investigator, was appointed as member of the IC on 09 11 2012.

Overview of the investigation process

On 07 10 2012, 17:06 hours, the duty service of TSB received a notification from HC Ltd. which contained that the London-Budapest flight call signal: (EZY75LT) of easyJet airline had diverted from its final approach path and reported Fuel Emergency due to thunderstorm rain. The aircraft turned towards Timisoara where it had normal landing at 17:20 hours. The emergency procedure was not withdrawn during the flight and thus, TSB investigates the occurrence as a serious incident.

On 13 11 2012, the IC contacted the Safety Director of HC Ltd., and requested him in writing to seize the radar images and voice records related to the affected flight and make them available for the IC for viewing and listening to.

The IC gathered information on the weather situation in the area of Budapest. Weather forecasts issued earlier were obtained, as well as those informative messages relevant to current weather which had been used by members of the crew in-flight.

On 08 10 2012, the Investigator-in-Charge of the IC contacted Air Accident Investigation Branch of the United Kingdom (hereinafter referred to as the "AAIB") through which he then requested the Flight Log, the documentation for preparation, and the load data sheet of the affected flight, the fuel calculation procedure of the company, and fuel bills.

After studying the documents received, that IC compiled a list of questions for the flight crew, to which the answers were received on 07 01 2013.

On 23 01 2013, the IC sent another letter to easyJet airline through AAIB in which the basic crew data (including the work and rest periods, etc.) and the approach procedure to Timisoara Airport chosen by the crew were requested for the purpose of use in the investigation record.

The last chapter of this final report, the Attachment section contains the comments received regarding to the draft final report.

A short summary of the occurrence

The scheduled flight of easyJet Airline from London to Budapest was on final approach after reaching the airspace of Budapest when the flight crew had to divert to an alternate aerodrome due to unfavourable weather conditions in the airspace and due to insufficient reserve fuel. After the diversion they communicated that they wished to fly to Tirana Airport, and then they reported "Fuel Emergency". Subsequently, they corrected the destination from Tirana to Timisoara, but they invariably demanded landing priority. The aircraft was refuelled in Timisoara after a successful landing, and flew to Budapest Airport uneventfully.

Based on the conclusions of the technical investigation, the IC suggested safety recommendation to be issued.

1. FACTUAL INFORMATION

1.1 History of the flight

On 07 10 2012, easyJet Airline was about to perform its scheduled flight No. EZY-2075 (call signal: EZY75LT) from London to Budapest with the appointed crew and 121 passengers on board.

In flight, the crew requested current meteorological data on two occasions.

While approaching Budapest Liszt Ferenc International Airport, the crew experienced strong thunderstorm rain due to which the airport could not receive arriving flights. Then the flight crew reviewed the available fuel quantity, assessed the positions of the alternate aerodromes relative to the storm zone and concluded that they had no chance to hold in the airspace of Budapest but needed to divert. The alternate aerodromes listed in the preparation documentation included only such aerodromes which would have been accessible only by flying through the storm zone or with substantial detour. Taking the available fuel quantity into consideration, the aerodromes indicated in positions two, three and four in the list could only have been reached by emergency procedure. As an effect of these circumstances, the flight crew had to evade the storm activity and select an aerodrome which was suitable for landing, ready to receive the aircraft, and accessible with the fuel in reserve on board. At 16:52 hours, they communicated that they intended to land at the airport of Tirana, which information was confirmed several times upon request from the air traffic controller. The flight crew of the aircraft reported "Fuel Mayday" which they confirmed by repeating it. In practice this meant that there was no sufficient fuel on board to land at the alternate aerodrome without using at least part of the Final Reserve Fuel (FINRES). Such reserve quantity allows 30 minutes of flying a holding pattern before landing in the vicinity of an alternate aerodrome if necessary due to the weather or traffic situation.

Next, the air traffic control communicated to the flight crew that climbing to flight level 120 was approved, and the shortest and most direct approach would be provided for the aircraft. One minute later, the flight crew modified their earlier report and declared Timisoara instead of Tirana as the alternate aerodrome. The ATC accepted it, and approved further climb. At 17:02 hours, the air traffic controller of the east sector of Budapest FIR asked the flight crew to confirm whether they maintained the emergency reported earlier, and whether they needed any other support. The flight crew confirmed that the Fuel Mayday situation still subsisted, but they needed no other assistance.

The aircraft continued its flight with the Mayday situation kept, and successfully landed at Timisoara Airport at 17:14 hours. The aircraft was refuelled, and flew to Budapest Airport, so the passengers arrived at the scheduled destination somewhat late, at 19:36 hours, local time.

1.2 Personal injuries

There were no personal injuries.

1.3 Damage to aircraft

There was no damage to the affected aircraft in connection with the occurrence.

1.4 Other damage

The IC received no information on other damage till the end of the technical investigation.

1.5 Information on the personnel

The airline provided the IC with the following data upon written request.

1.5.1 Data of the commander of the aircraft

| | | |
|--|---------------------------------|-----------------------------|
| Age, gender | | 53 years old, male |
| Licence data | Licence type | ATPL |
| | Professional valid until | N/A |
| | Medical valid until | N/A |
| | Certificates | IR |
| | Position | Pilot in Command |
| Flying hours/takeoffs | Total | Over 5,000 hours |
| | As pilot in command | 16 000 hours |
| | In the previous 90 days | 233 hours and 10 minutes |
| | In the previous 7 days | 19 hours and 35 minutes |
| | In the previous 24 hours | 7 hours and 17 minutes |
| | The affected type, total | 3,000 hours |
| Duty time in the previous 48 hours | | 17 hours and 42 minutes |
| Rest period in the previous 48 hours | | 15 hours and 15 minutes |
| Knowledge of the affected route, including airports, and related experience | | On 8 occasions in year 2012 |

1.5.2 Data of the co-pilot

| | | |
|--|---------------------------------|-------------------------------|
| Age, gender | | 35 years old, male |
| Licence data | Licence type | CPL |
| | Professional valid until | N/A |
| | Medical valid until | N/A |
| | Certificates | IR |
| Position | | Co-pilot |
| Flying hours/takeoffs | Total | Between 1,000 and 2,000 hours |
| | In the previous 90 days | 198 hours and 22 minutes |
| | In the previous 7 days | 19 hours and 53 minutes |
| | In the previous 24 hours | 7 hours and 17 minutes |
| | The affected type, total | 800 hours |
| Duty time in the previous 48 hours | | 17 hours and 42 minutes |
| Rest period in the previous 48 hours | | 15 hours and 15 minutes |
| Knowledge of the affected route, including airports, and related experience | | On 8 occasions in year 2012 |

1.5.3 Data of the air traffic controller

According to the IC's position, the activity of the affected staff of the air traffic management service was proficient and appropriate in the given situation, it did not contribute to the occurrence, and thus the technical investigation of the occurrence did not require detailed analysis of their data.

1.6 Aircraft data

1.6.1. General

| | |
|---|------------------------------|
| Class | fixed wing aircraft |
| Manufacturer | Airbus S.A.S. |
| Type/subtype (type number) | A319-111 |
| Date of manufacturing | 2008. |
| Serial number | 3735 |
| Registration | G-EZDU |
| State of registry | United Kingdom |
| Operator | easyJet Airline Company Ltd. |
| Call signal for the flight performed | EZY75LT |
| Number of the flight performed | EZY-2075 |



Figure 1: An earlier photograph of the aircraft

1.6.3. Aircraft engine data

The data of the aircraft engines had no effect on the course of events and thus requires no detailed analysis.

1.6.5 Loading data

The load data of the aircraft had no effect on the course of events and thus requires no detailed analysis.

1.6.7 Onboard warning systems

The IC found no comment in connection with the functioning of the onboard warning systems, and no such irregularity was reported to the IC.

1.7 Meteorological data

Weather events at the time of approaching Budapest:

When the aircraft approached the terminal control area of Budapest (**Figure 2**), and started to approach Runway 31R of Budapest Liszt Ferenc International Airport, it caught up with a cold-front based squall line which was also coming from NW and arching across the path of the aircraft (the speeds of squall lines are slow relative to those of aircraft), and it cut the terminal control area in two, as well as the standard approach procedure of the runway, and the airport fell on the other side (**Figure 3**).

The aircraft had the chance to go round the squall line only by drawing away by 20 nm from the approach procedure to SW direction, in a wider gap between two squall cells, which required crossing the southern boundary of the terminal control area (**Figure 4**). (Two flights arriving beforehand evaded the squall line exactly in the same way.) But then, when the aircraft returned to the final of Runway 31R, it faced one of the most active clusters of the squall line which was just over the airport, and thus the aircraft was again cut from the runway and thus from landing.

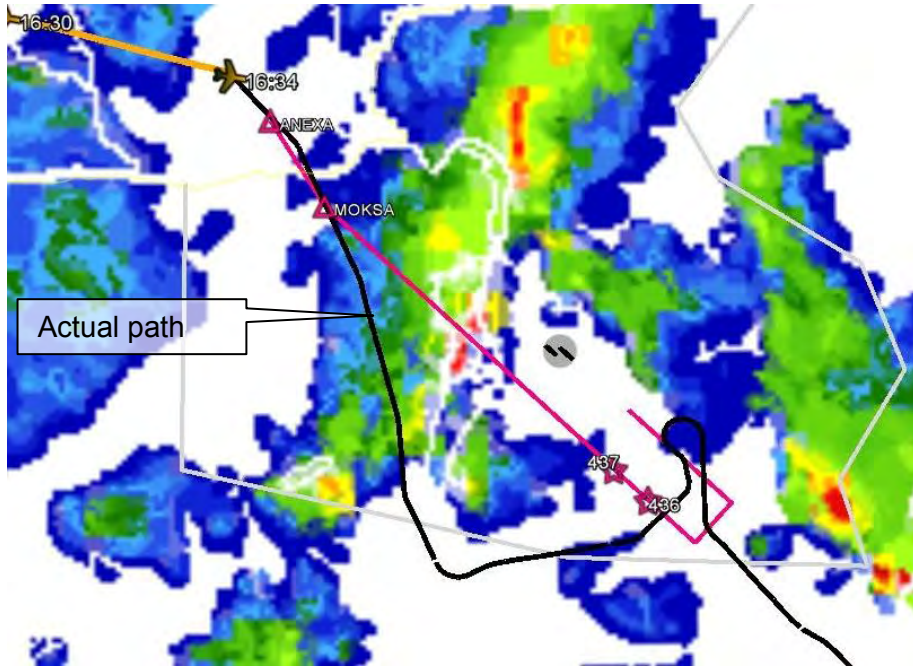


Figure 2

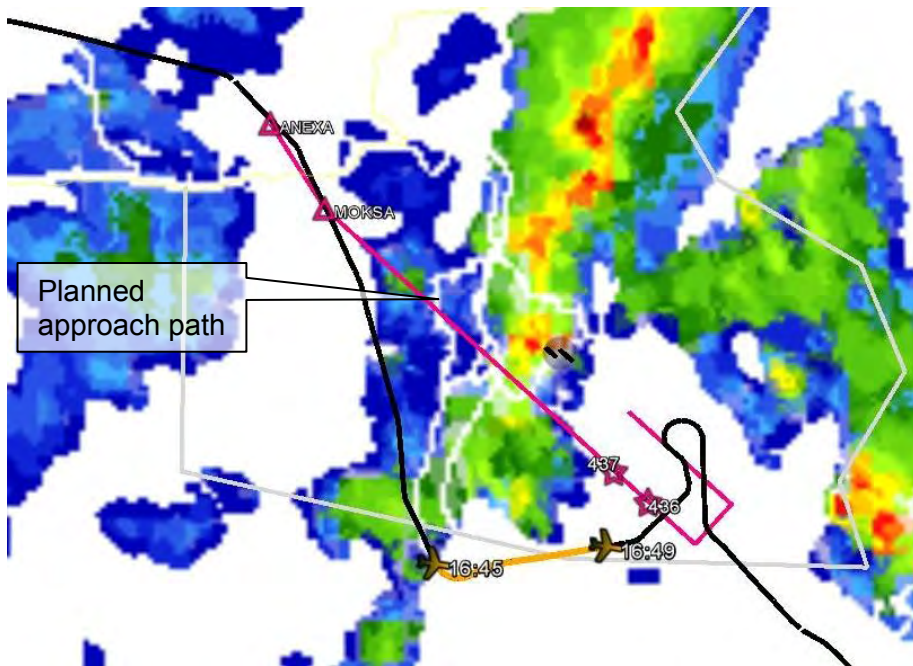


Figure 3

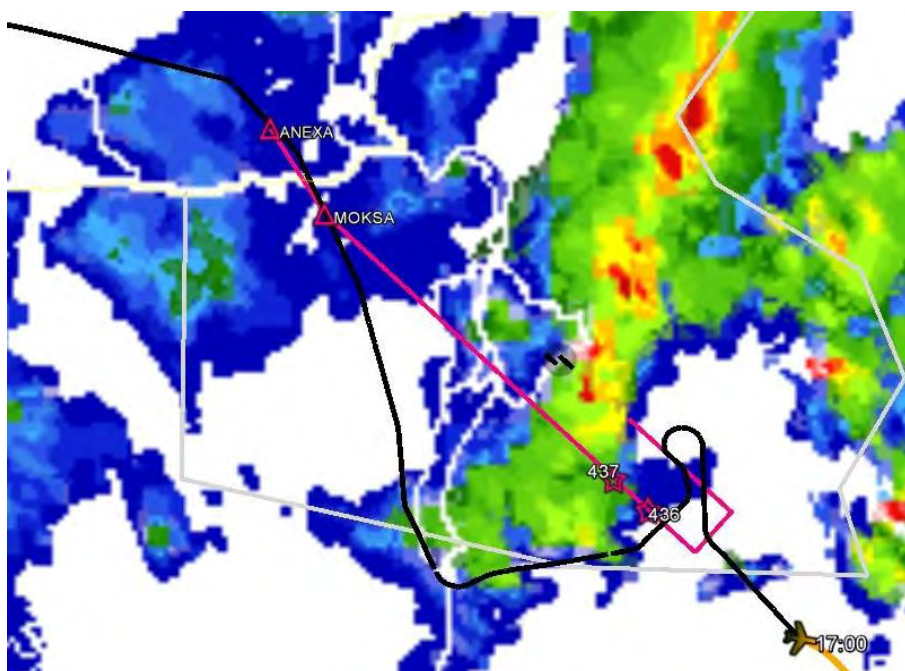


Figure 4

The flight path [*in black*] between the showers and thunderstorms [*yellow-red spots*], with highlighting those sections [*orange colour and time points*] which the aircraft flew when the background radar images were taken; and the standard arrival procedure [*purple*] and the boundary of the terminal control area [*in grey*]

Weather forecasts available to the flight crew:

The weather forecast included in the preparation documentation: issued on 07/10/2012, 05:00

```
TAF LHBP 070500Z 0706/0806 VRB03KT 8000 NSC
TEMPO 0706/0707 2000 BCFG BR
BECMG 0709/0712 -RA SCT040 BKN100
TEMPO 0712/0721 VRB18KT 6000 SHRA SCT015CB BKN020 OVC040
BECMG 0715/0718 30012KT
TEMPO 0718/0724 32018G28KT
BECMG 0721/0724 CAVOK
TEMPO 0803/0806 34008KT=
```

The weather forecast, issued prior to the departure of the flight, which **was not** obtained by the flight crew during the preparation of the flight: issued on 07/10/2012, 11:00

```
TAF LHBP 071100Z 0712/0812 16006KT CAVOK
BECMG 0712/0714 SCT040 BKN080
TEMPO 0714/0721 6000 SHRA SCT020 BKN030 OVC060
PROB30 TEMPO 0714/0719 VRB25G36KT 3000 +SHRA TSRA SCT015CB
BKN020
BECMG 0715/0718 32015KT
TEMPO 0717/0723 32025G40KT
BECMG 0721/0724 CAVOK
BECMG 0803/0806 34008KT
TEMPO 0807/0811 34012G22KT 9999 FEW030=
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1.8 Aids to navigation

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

1.9 Communication

The radio connection between the flight crew and the air traffic controllers proved to be undisturbed and continuous, however, the information communicated had to be repeated on a few occasions. The air traffic controller requested the flight crew to repeat the messages which referred to the selected alternate aerodrome (Tirana) and to the emergency (Fuel Mayday), with regard to the importance of such messages. When the flight crew realised that they had named an inappropriate alternate aerodrome via radio communication, they corrected it to Timisoara, and on this occasion, they also added the four letter (ICAO) code of the aerodrome, presumably in order to avoid possible further misunderstanding that might arise due to pronunciation.

1.10 Aerodrome information

The aircraft took off from London-Luton (EGGW/LTN) Airport on 7 October 2012, at 14:55 hours.

The planned destination aerodrome was Budapest (LHBP/BUD).

Due to adverse weather, the aircraft actually landed at Timisoara (LRTR/TSR) Airport on 7 October 2012, at 17:19 hours.

It was at 19:32 hours that the flight landed at Budapest Airport, the originally scheduled destination.

The parameters of the aerodromes had no effect on the occurrence, thus such information requires no detailed analysis.

1.11 Flight recorders

During the technical investigation of the occurrence, the IC found it unnecessary to evaluate the flight data records of the aircraft after replaying the radio communication and viewing the radar images recorded at the air traffic control centre.

1.12 Wreckage and impact information

The incident generated no wreckage.

1.13 Data of the medical investigations

No medical investigation was performed during the technical investigation of the occurrence.

1.14 Fire

There was no fire.

1.15 Chances of survival

There was no injury to persons.

1.16 Tests and research

Tests and researches were not performed or initiated by the IC.

1.17 Organisational and management information

The *Operations Manual (Part A)* describing the operation of the airline company includes detailed procedures of refueling. The crew is obliged to observe such guidelines when calculating the quantity of fuel required for performing the scheduled flight safely. A quantity of 'Extra Fuel' may also be boarded if the commander finds it necessary when preparing for the flight, e.g. if adverse weather conditions are expected along the route of the flight or around the destination aerodrome. However, extra fuel adds to the total weight of the aircraft, thus, however slightly, increasing the fuel consumption of the aircraft. The Operation Manual versions effective at the time of the occurrence and the making of this Final Report emphasise (Section 8.1.7.3.1) that the "*Flight crew will board **Extra Fuel** only if a **strong possibility** exists that it will be used.*" (Highlighting according to the original text.)

Upon question from the IC, the commander stated he had not took the opportunity to board extra fuel because the weather forecast in the preparation documentation indicated the term TEMPO associated to the shower, so he thought the shower would probably be temporary only.

During the pre-flight preparation, the flight crew relied on the information in the preparation documentation (weather forecast, list of alternate airports, etc.) they did not retrieve latest meteorological data that was already available. With the available information in mind, the flight crew fuelled the plane for the flight. With a total of 6920 kg fuel on board, the aircraft started to perform the flight at 14:46 hours, local time.

1.18 Additional information

From the aspect of drawing conclusions and issuing safety recommendations, the IC does not intend to dispose further information regarding the case other than the factual data outlined above.

1.19 Useful or effective investigation techniques

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

2. ANALYSIS

Obtaining information on weather during the preparation and performing of the flight

While performing the pre-flight tasks, the flight crew looked over the preparatory documentation which contained the weather conditions along the route, including expected changes as well. The preparatory documentation contained data from the weather forecast valid at the time of preparation thereof (i.e. issued at 5 a.m. and relevant to the next 24 hours). This type of forecast is issued with data updated every 6 hours, and thus, the version issued at 11 o'clock, i.e. before take-off, was already available for the crew on board the aircraft, and it contained a warning of the thunderstorm (TSRA) as well. The risk of the flight increased by the fact that the crew did not obtain this forecast during preparation for the flight.

In the 36th minute of the flight, the crew obtained current weather information (using the on-board ACARS system) of the destination and alternate aerodromes. Presumably it was at that time that they realised the strong thunderstorm activity in the Budapest area (with the code "TSRA" in the message). Probably due to the possibility of landing at an alternate aerodrome, the crew retrieved weather information again in Minute 79 of the flight, but on that occasion they received more favourable data (allowing landing) from the area of the destination aerodrome, so they continued their flight toward the destination aerodrome selected initially.

Decision about fueling (*)

After their failure to land in Budapest, the commander's decision options were seriously constrained by the scarcity of available fuel. In response to a question of the IC he stated he had determined the fuel quantity with regard to the TEMPO lines of the forecast data which included information on expected weather. Referring to the fuel policy in the operation manual of easyJet (Operations Manual - Fuel Policy) he said he had not found it justified to load Extra Fuel on the basis of the company policy. Finally, the flight took off with a small quantity of extra fuel probably due to inaccuracy of the manual fueling.

It should be noted here that, in the opinion of the IC, the wording in the Manual does not always encourage the crew to arrange for safe conditions of flight because the airline only supports the possibility of boarding extra fuel if it is **highly probable** that such extra fuel will actually be consumed. The reason is that unused extra fuel, although slightly, increases the total weight of the aircraft needlessly, which has adverse effect on fuel consumption, thus reducing the profit on the given flight.(**)

The commander did not find it justified to board extra fuel despite the fact that the 5 o'clock weather forecast, which he was aware of, also contained elements referring to unfavourable weather phenomena such as thunderstorm cloud (CB) and showers (SHRA).(***). Being aware of the wording in the manual cited above, the IC think it cannot be excluded that the crew of the aircraft would not have found it justified to board extra fuel on the basis of the information in the 11 o'clock weather forecast although it referred to expected intensive showers (+SHRA) and, with 30% probability, to thunderstorm cloud (CB), thunderstorm rain (TSRA), and strong wind gusts (36 knots).(****)

Performing the flight

When approaching Budapest, i.e. in the final section of the flight, the aircraft faced a strong squall line which made landing impossible. It was at that point that the commander decided to select an alternate aerodrome, but, in the case of the two priority possibilities (Bratislava and Vienna) it can be stated that, although the weather conditions were favourable for landing locally, the aircraft should have flown through an extensive squall line or take a lengthy detour to access such aerodromes. It was at this

point that the commander decided to land at an aerodrome which is nearby, has favourable weather conditions, and accessible by avoiding the squall line. When re-planning the route, the crew communicated to the air traffic control that they selected Tirana as alternate aerodrome (**Figure 5**), and in 4 minutes they reported Fuel Mayday to the air traffic controller.

A flight crew shall report such message if, after landing, the quantity of the fuel on board would presumably be less than the final reserve quantity. This quantity is indicated in the preparatory documentation, and in the actual case it was 979 kilograms. When checking the radio communication records, the IC found that the expressions “Tirana” and “Fuel Mayday” were confirmed by the crew several times despite their statement that they wished to land at Timisoara aerodrome all the time. According to their statement, they gave the code of Timisoara (LRTR) as destination aerodrome in the route calculation system all the time, and the system showed that the final reserve fuel quantity will be 900 kg after landing. They reported emergency situation in possession of this information.

The air traffic controller will arrange for the shortest possible flight path and landing priority at the destination aerodrome immediately for an aircraft that has reported mayday. Correction took place in the fifth minute after reporting Mayday, and the name of Timisoara was also mentioned correctly in the radio communication as destination for the first time. With the mayday status maintained, the rest of the flight as well as landing took place with no complication and, according to records made by the flight crew, the quantity of the fuel left after shutting of the engines off was **1280** kilograms. If the IC starts from the flight crew’s statement that the route calculation system calculated 900 kg of fuel remaining after landing in Timisoara then the difference of 380 kg between the actual and the calculated remaining fuel may primarily be explained by a substantial shortening of the actually flown approach procedure and the climb of flight level 180 compared to the planned procedure.

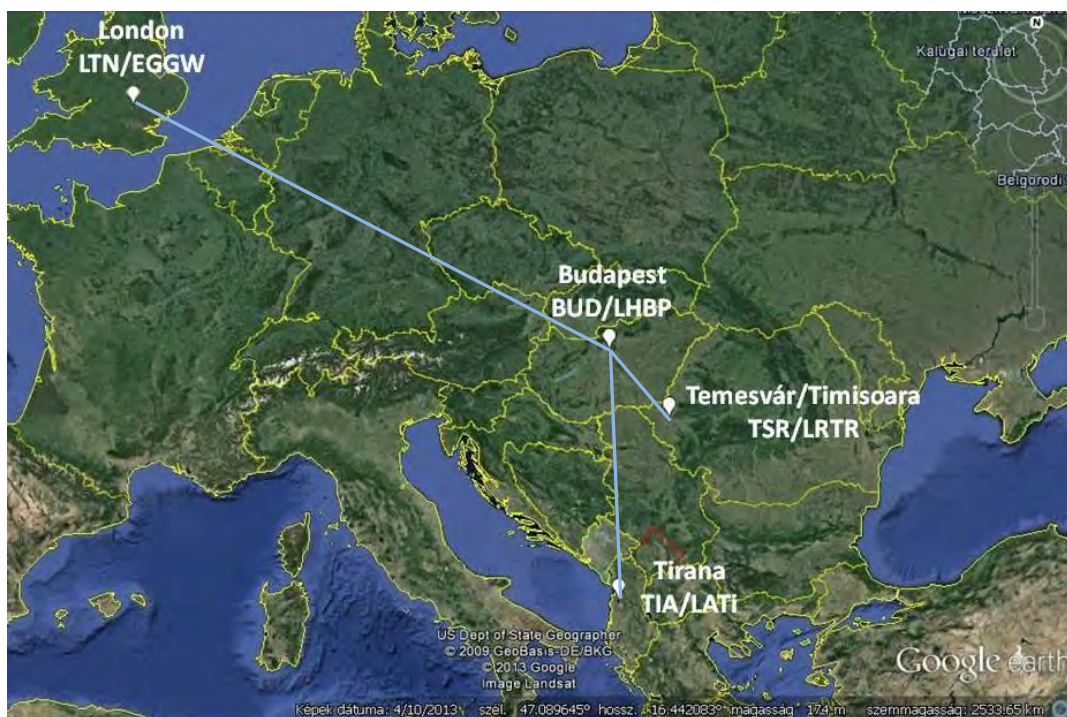


Figure 5

3. CONCLUSIONS

3.1 Factual findings

- The preparatory documentation made for the given route in advance did not specify a potential alternate aerodrome which would have been accessible without flying through the unfavourable weather zone, despite the fact that the same documentation indicated the expected evolution of the weather conditions. Further, the preparatory documentation also says that if the flight reaches close to the aerodrome and then the crew decides to land at an alternate aerodrome then they may only continue their flight without reporting mayday if they chose the first option. However, in the case of further alternate aerodromes indicated in the preparatory documentation, the flight crew are obligated to do so in each case.
- After pre-flight preparation and fueling, the flight took off at 14:46 hours on the basis of a documentation which indicated the weather forecast available at the time of making of such documentation. However, at 11:00 hours, between the completion of the preparatory documentation and the takeoff, a new forecast was issued which included relevant information on the strong thunderstorm activity in the vicinity of the destination aerodrome (see Section 1.6). However, the flight crew did not have this information.
- After the aircraft landed, there was 1280 kilograms of fuel on board, which is 301 kilograms above the limit which would have made the reporting of mayday justified. The emergency procedure may be withdrawn at any time, but the flight crew did not chose this opportunity during the flight.

3.2 Causes of the occurrence

During the technical investigation, the IC concluded that the occurrence of the incident was due to several concurrent causes.

- During their preparation for the flight, the flight crew did not obtain the updated weather forecast which was already available at that time and included relevant information on the possible thunderstorm activity.
- The wording of the fueling policy of the airline company does not support the commander sufficiently with using the opportunity of boarding Extra Fuel. (*)(**)
- None of the alternative aerodromes indicated in the preparatory documentation was accessible using the normal procedure due to the extension and location of the squall line.
- During the final approach of the flight to Budapest Airport, the weather conditions prevented landing.
- According to the flight crew's report, they had mistaken Timisoara for Tirana in voice communication only; after entering the ICAO code of the aerodrome of Timisoara (LRTR), the onboard computer indicated that less than 900 kg of fuel was expected to remain after landing. In such a case the crew are automatically obliged to report "Mayday, Mayday, Mayday, Fuel" and request the air traffic control service to provide priority for landing. The emergency procedure may be withdrawn at any time, but the flight crew did not chose this opportunity during the flight despite the fact that the quantity of fuel left was (1280 kg), i.e. well above the emergency level, which also must have been seen earlier.

4. SAFETY RECOMMENDATION

The IC does not find it justified to issue a safety recommendation relevant to the outdated weather information playing a role in the occurring of the incident, because the problem could have been avoided by following the relevant rules.

4.1 Safety recommendation issued in the course of the technical investigation

The IC did not find it necessary to issue an immediate safety recommendation during the technical investigation.

4.2 Safety recommendation issued at the closing of the technical investigation

The Investigating Committee of Transportation Safety Bureau of Hungary proposes that the following safety recommendation be issued as a conclusion of the technical investigation.


BA2012-324-4P-1. *The Investigating Committee found during the investigation that, through its wording, the document ruling the operation of the airline company may apply pressure on the commander of the aircraft who may only use the opportunity to board Extra Fuel if it is very likely that such Extra Fuel will be utilised.*


Transportation Safety Bureau of Hungary recommends the airline company to revise their fueling policy in order to encourage the aircraft commander relevant to the opportunity to board Extra Fuel, thus increasing flight safety.

The Investigating Committee considers that in the case of accepting and implementing the above recommendation, the number of those occurrences may be reduced which lead to fuel mayday situation during flights deviating from the normal procedural and having little reserve fuel.

Budapest, „ 09 „ February 2016


György HÁY
Investigator-in-Charge


László PÁL
Member of the IC


Gergely MARÓTI
Member of the IC


Szilárd SÁRKÓZI
Member of the IC

ATTACHMENT

List of the not accepted comments received in the draft final report:

| Chapter | Comment | Response |
|----------|---|---|
| 1.7 | The weather forecast for the planned alternate aerodrome was relevant to the investigation but was not included in the data or the analysis. | Not relevant from the aspect of the Final Report. |
| 2 (*) | The decision about fuelling text makes no reference to the forecast conditions at the alternate aerodrome, which is relevant to the commanders' decision making. | Not relevant from the aspect of the Final Report. |
| 2 (**) | The investigation only quotes the text referred to here and focusses on the words highly probable . The investigation does not include reference to other text which is relevant, such as that which recommends carriage of extra fuel when adverse conditions are forecast such as thunderstorms. Additionally, there are several other forms of guidance and training available to crew to ensure that commanders are aware of the need to carry extra fuel when relevant. | Not relevant from the aspect of the Final Report. |
| 2 (***) | This comment implies that carriage of extra fuel is required when conditions of CB and SHRA are forecast. This is not required by regulation and is subjective. A commander might reasonably choose not to load extra fuel for such forecast conditions. | Not relevant from the aspect of the Final Report. |
| 2 (****) | This is supposition. The commander was not asked whether he would have made a different fuel planning decision if he had been aware of the later forecast. | Not relevant from the aspect of the Final Report. |
| 3.2 (*) | The wording in the policy gives supportive guidelines to crew for cases where extra fuel should be carried. This includes expected thunderstorms. | Not relevant from the aspect of the Final Report. |
| 3.2 (**) | There is no evidence that the commander of the flight was influenced by such wording of the fuel policy resulting in insufficient extra fuel carriage. Neither is there any analysis of the effect of such wording on the company pilots as a whole. Available data shows that average extra fuel carriage is in the order of 400kg per flight. | Not relevant from the aspect of the Final Report. |