

# The Dutch Safety Board

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**Occurrence #:** 2004116      **Classification:** Serious incident

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## FACTUAL INFORMATION

Date of the occurrence:	17-07-2004	Cockpit crew:	2
Place of the occurrence:	Bremen (EDDW)	Cabin crew:	Unknown
Aircraft registration:	PH-KZI	Passengers:	Unknown
Airline company:	KLM Cityhopper (KLC)		
Aircraft model:	Fokker F.28 Mk. 0070	Injuries:	None
Aircraft model:	Passenger aircraft		
Type of flight:	Scheduled flight		
Phase of operation:	Approach	Lighting conditions:	Daylight
Damage:	Nil		

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## The flight and the occurrence

The flight was a scheduled flight from Zurich (LSZH) to Amsterdam Airport Schiphol (EHAM). According to the captain the aircraft encountered severe windshear (wind gusts up to 50 knots were noticed) during the approach to runway 27 at EHAM (at approximately 1,500 ft). The approach was cancelled and a turn to the north was initiated to avoid the area of windshear. Initially the aircraft reacted violently to the windshear during which the maximum landing gear extension speed was exceeded by approximately 20 knots. After a few seconds the aircraft stabilized and during the ensuing go around the landing gear and the flaps were retracted.

In view of the prevailing weather conditions at EHAM, Rotterdam (EHRD) as well as Groningen (EHGG) it was decided to divert to Bremen (EDDW). During the flight to EDDW the crew declared a "low fuel emergency" to air traffic control (ATC). The landing at EDDW was uneventful. After landing the remaining fuel was 750 kg.

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## Investigation & Analysis

On request of the Bundesstelle für Flugunfalluntersuchung (BFU) in Germany the investigation was done by the Dutch Transport Safety Board, the predecessor of the Dutch Safety Board.

During preparation of an air transport flight the total fuel to be taken on board is planned carefully. Sufficient fuel has to be taken to taxi (taxi fuel) and fly from the place of departure to the destination (trip fuel) plus an additional amount of fuel to cover small deviations from the planned flight conditions (contingency fuel). Then fuel is taken to be able to divert from the destination airport to an alternate airport (alternate fuel) plus sufficient fuel to fly for 30 minutes (final reserve fuel). The captain may take extra fuel if he finds it necessary. During flight the captain is legally required to plan a landing with at least 30 minutes of final reserve fuel remaining on board. According to the KLM/KLC Basic Operations Manual (BOM) the captain shall immediately declare an emergency if he expects to land with less than 30 minutes of fuel remaining.

The selection of alternate(s) –determining the alternate fuel to be taken - is based on the weather forecasts for destination and selected alternate(s). The weather forecasts for destination EHAM as well as the planned alternate EHRD indicated weather conditions above applicable minimums for the planned

flight insofar that wind gusts do not have to be taken into account during the flight planning. It may be noticed that planning a nearby alternate is cost saving because less fuel has to be carried.

However there were some aspects in the weather forecasts that might need further consideration. A variable wind with a speed of 17 knots and wind gusts up to 36 knots indicates heavy thunderstorm activity. This type of weather was forecasted for both EHAM as well as EHRD. Under these conditions single runway operation could be in effect at Amsterdam, causing arrival delays. Planning a nearby alternate (EHRD) is not advisable because of the risk of encountering the same weather that may exclude a landing. Taking extra fuel or selecting a more distant alternate (like EDDW) is preferable.

During flight three fuel phases can be distinguished:

1. The "normal" phase, during which the aircraft is expected to land with more than the amount of alternate fuel plus final reserve fuel;
2. The "abnormal" phase, during which the aircraft is expected to land with less than the amount of alternate fuel plus final reserve fuel, but more than final reserve fuel;
3. The "emergency" phase in which it is expected to land with less than final reserve fuel.

According the KLM/KLC Basic Operations Manual the captain should consider advising ATC of the situation in case the aircraft enters the abnormal phase. However no priorities can be derived from such an advisory, it is an "early" warning to ATC that emergency assistance may be required. If the captain expects to land with less than final reserve fuel, he must immediately declare an emergency. Once an emergency call is issued the flight is entitled to get priority. It is emphasized that the issuance of a fuel emergency is based on an expectation.

For safety reasons the captain has the authority to divert to any airport. The actual alternate airport does not necessarily have to be the planned alternate. As long as the required fuel is on board, any suitable airport can be used as diversion airport. In view of the weather conditions probably no other option remained than to divert to EDDW. Consequently a "low fuel emergency" was declared at the moment the captain expected to land with less than 30 minutes of fuel remaining. An emergency is declared by issuing a "MAYDAY-call"<sup>1</sup>.

Note: An interesting publication was found at the Aviation Safety Reporting System (ASRS) Directline website. It is written by Jeanne McElhatton and is called Great Expectations, Minimum Fuel Situations. It can be found at: [http://asrs.arc.nasa.gov/directline\\_issues/dl3\\_great.htm](http://asrs.arc.nasa.gov/directline_issues/dl3_great.htm).

Note: This report has been published in English and Dutch language. If there are differences in interpretation the Dutch text prevails.

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<sup>1</sup> ICAO Annex 2 – Appendix 1 - 1.1 Distress signals:

The following signals, used either together or separately, mean that grave and imminent danger threatens, and Immediate assistance is requested: (...)

b) a radiotelephony distress signal consisting of the spoken word MAYDAY.