

SERIOUS INCIDENT

Aircraft Type and Registration:	BAe Avro RJ85, EI-RJH
No & Type of Engines:	4 Lycoming LF507 1F turbofan engines
Year of Manufacture:	1999 (Serial no: E2345)
Date & Time (UTC):	12 November 2015 at 1525 hrs
Location:	Belfast International Airport
Type of Flight:	Commercial Air Transport (Passenger)
Persons on Board:	Crew - 4 Passengers - 80
Injuries:	Crew - None Passengers - None
Nature of Damage:	None
Commander's Licence:	Airline Transport Pilot's Licence
Commander's Age:	42 years
Commander's Flying Experience:	10,250 hours (of which 9,700 were on type) Last 90 days - 221 hours Last 28 days - 80 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot and incident paperwork submitted by the aircraft operator

Synopsis

The flight crew were unable to land at their destination, Dublin, due to high winds. They initiated a diversion to Belfast International, but their approach there was delayed due to an area of poor weather affecting the airport. Once this cleared, the aircraft was able to land at Belfast, although it did so with less than the required Final Reserve fuel remaining.

History of the flight

The incident occurred during a scheduled passenger flight from Paris Charles de Gaulle to Dublin. During pre-flight preparations, the flight crew noted that Dublin was forecast to be subject to strong south to south-westerly winds gusting to 45 kt at the expected time of arrival. Belfast International Airport was available as an alternate airport, although it was forecasting similar wind strengths to Dublin. The forecast for Manchester Airport gave winds gusting to 25 kt. Both Dublin and Belfast were forecast to be subject to temporary reductions in visibility to 5,000 m during rain showers. Manchester was expecting similar showery conditions, but only later in the day and after the planned flight. Shannon Airport, 96 nm west-south-west of Dublin was forecasting similar conditions to Dublin.

In view of the expected conditions, the aircraft commander ordered sufficient fuel loaded to allow for an approach at Dublin followed by diversion to Manchester, plus an additional 25 minutes flying time. This was in addition to the required 'Final Reserve' fuel which

equated to a further 30 minutes flying time. The aircraft departed stand at Charles de Gaulle at 1220 hrs and took off at 1246 hrs.

Actual airfield weather reports obtained en-route showed a surface wind at Dublin from 220° at 23 kt, gusting to 35 kt with Runway 16 in use. Reports from both Manchester and Belfast showed that either was suitable for a potential diversion if a landing at Dublin was not possible. As the aircraft neared Dublin, the flight crew were instructed to delay their approach as the wind was gusting to 47 kt, placing it beyond the maximum cross-wind limit on either Runway 16 or 28. While holding, the crew established that the wind at Belfast International was from 190° at 22 kt, with good visibility.

The wind strength eased at Dublin for a time and the aircraft commenced an approach. However, the approach had to be discontinued when the wind strengthened again and a number of aircraft ahead were unable to land. The flight crew initiated a diversion to Belfast, having checked that the weather there was acceptable and that the fuel on board exceeded that required for the diversion.

As the aircraft was being vectored for an ILS approach to Runway 25 at Belfast, the flight crew were informed that an area of poor weather was affecting the airport, with low visibility and wind gusts to 40 kt. The poor weather could be seen by the flight crew on their weather radar. Although it appeared to be moving rapidly, the crew were unable to commence an approach until it had cleared the airport, so made a 'PAN-PAN' call to alert ATC to their reducing fuel state. The crew were also expecting a 'low fuel' alert on the flight deck, so consulted the appropriate checklist in anticipation.

With ATC assistance to avoid the poor weather, the aircraft flew to the south-west of the airport. With the poor weather clearing the area and the wind abating, ATC offered Runway 17 for landing which the flight crew accepted, having earlier checked that the landing distance would be suitable. About this time it became apparent that the aircraft might land with less than the Final Reserve fuel of 849 kg, so the flight crew transmitted a 'MAYDAY' call. The aircraft subsequently flew a short-pattern radar circuit to an ILS on Runway 17, touching down at 1548 hrs with 650 kg of fuel remaining.

Contributory factors

The aircraft commander reported that several factors influenced the sequence of events. While more fuel could have been loaded in Paris, he gave consideration to the aircraft's weight for landing, particularly as windshear conditions were possible. The commander initiated the diversion with fuel for an extra 10 minutes flying time above the minimum required. Although an earlier decision to divert would have meant more fuel available in case of further delays, this had to be weighed against the likelihood of a safe landing at Dublin, which appeared possible for a time when the wind eased.

Manchester was available as a diversion, had better weather conditions and had been allowed for in the fuel uplift. However, Belfast appeared to offer a better alternative at the time, required less fuel, and had two runways available in case of significant wind shifts.

Comment

This incident is an example of the decisions flight crews may have to face in rapidly changing weather conditions. If conditions for landing are well below the requirements, the decision about whether and when to divert is straightforward. However, when conditions appear marginal for landing, the commander will naturally have to weigh the likelihood of making a safe approach and landing at the original destination (which will consume fuel that would otherwise be available for diversion, whether the aircraft is able to land or not) with the many variables involved in diverting at short notice to another airport that may be some distance away.