No. 6

British European Airways Corp., Viking Aircraft G-AHPN, struck runway at London Airport during Fog on 31 October 1950.
MCA Civil Aircraft Accident Report, MCAP 95

Circumstances

The aircraft en route from Le Bourget, Paris, to Northolt, London, carrying 26 passengers and a crew of 4, encountered adverse weather conditions and diverted to London Airport, where an approach-to-land was made under GCA. Shortly after completing the GCA approach to break-off point, the pilot announced that he intended to overshoot. Five seconds later the aircraft struck the runway and crashed, resulting in the destruction of the aircraft and the death of 28 occupants.

Investigation and Evidence

Before departure from Le Bourget, the Captain was informed of the weather conditions prevailing in the London Area, and was given the following landing forecasts which had been broadcast at 1721 and 1718 hours respectively:

Northolt (1800 - 2400 hrs.) Visibility 1,100 yds.; smoke haze cloud 8/8ths at 600 ft.; risk at 2000 hrs. of 440 yds. visibility in fog with sky invisible and cloud 8/8th at 400 ft.

London Airport (1800 - 2400 hrs.) As for Northolt except that the item in regard to cloud was "no cloud".

The aircraft departed from Le Bourget at 1839 hours with endurance of 4-3/4 hours for an estimated flight of 1 hour 24 minutes. On the flight plan London Airport, Blackbushe, Cormeilles and Orly, were designated as the alternates to Northolt Airport.

At 1925 hours, the aircraft reported to Air Traffic Control Centre, Uxbridge, as flying at 4,500 feet with E.T.A. Gravesend beacon 1938 hours.

Immediately afterwards the Uxbridge Controller instructed the aircraft to maintain altitude at 4,500 feet and stated that the meteorological observations for Northold at 1914 hours were: visibility 50 yds., surface wind - calm, sky obscured - fog. In acknowledging this, the Captain said that he would proceed to London Airport or Blackbushe and requested clearance to London Airport via Gravesend, which was granted.

At 1928 hours Uxbridge informed the aircraft that visibility at London Airport at 1920 hours was 40 yds. and at Blackbushe at 1925 hours, 1,000 yds. The Captain acknowledged this message and said he would continue to London Airport and if it was not possible to land he would advise diversion to Blackbushe and if that was not possible, to Hurn. At 1930 he was given the visibility at 1925 hours at Hurn as 1,000 yds.

At 1932, ATC Uxbridge gave the aircraft permission to enter the London Control Zone at Gravesend Beacon at 4,000 feet altitude. At 1936 Uxbridge reported visibility to the aircraft as follows: Blackbushe at 1934 - 1,000 yds.; London Airport at 1935 - 40 yds.; Hurn at 1932 - 500 yds. The Captain replied asking for the latest available meteorological observation at Manston. At 1939 he was informed that visibility at Manston at 1930 hours was 1,500 yds., to which he replied that if it was not possible to land at Blackbushe or London he would divert to Manston. This was acknowledged and he was instructed to establish communication with London Approach Control.

It is to be observed that at this stage the aircraft was quite close both to Blackbushe and Manston, and that the reported visibility at both was ample for safety, whereas the Captain had twice been told in the last 11 minutes that at London Airport visibility was down to 40 yds., which (as will clearly appear later) was much below any minima in which it was permissible for him to land. At 1940 the pilot told London Approach Control that he was approaching Gravesend at 4,000 feet and was diverting to London Airport. He was given London's weather in these terms "The surface wind is calm, the visibility is 40 yards, the runway visibility is 50 yards, thick fog, sky obscured, the runway in use is 28". The Captain at 1941 reported over Gravesend at 4,000 feet and London Approach Control said that they understood the pilot would have a look at London and then Blackbushe and Manston. At 1942 London Approach Control told the pilot he was cleared for the field, to maintain 4,000 feet and stand by for the London Director (Director of the GCA System, London Airport).

The London Director asked whether the pilot wished to carry out a ground controlled approach. He replied that he did. The aircraft was accordingly

identified and told that it was clear to descend to 1,500 feet and that this would be a straight-in approach for a landing on runway 28.[1] The approach continued in a normal way. The pilot was reminded that the break-off height for runway 28, was 140 feet.[2] He asked whether the Calvert lighting (system of lights along approach path) was switched on and was informed that all the lighting was on 100 per cent. At 1949 the aircraft was transferred to the talk-down controller. At 1951 with 6 miles to go, the pilot was told he was on the glide path, that his heading was good, that the visibility was now 30 yards with no lights (runway lights) visible. At 1953 with 1-1/2 mile to go, he was again reminded "visual check" (by which he would have understood "break-off point") was at 140 feet. Later he was told that he was 400 yards from the end of the runway.

At London Airport break-off point, 140 feet, and 400 yards from the runway for all practical purposes coincide, thus when the Captain was told he was 400 yards from the end of the runway, he was then at break-off point. After reaching break-off point the aircraft was observed in the radar scopes to start to rise above the glide path which was taken to indicate that the pilot intended to overshoot and was beginning to do so. Accordingly the controller did not give the usual final instructions "look ahead for landing". It cannot be said that this omission contributed to the accident, but it would have been better to have given it.[3]

At 1954 hours the pilot said that he was overshooting. Up to that moment the talk-down controller had been speaking, giving the usual guidance afforded to pilots carrying out overshoot procedure, but it is impossible to say with certainty when overshoot action actually began. A few seconds later with undercarriage retracted, the aircraft struck the runway, skidded 140 feet damaging its propellers, became airborne again and came down about 3,000 feet further on. The aircraft's starboard wing was torn off as the aircraft skidded across the runway and across a disused runway, coming to rest alongside a pile of drain-pipes where it burst into flames. The fog at the moment of the accident was so dense that the crash was heard but not seen and the fire engines, though ready, took five to ten minutes to find and reach the scene.

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1) The aircraft is brought down in a descent, in this case, at an angle of 3 degrees, to a point 400 yards from the threshold of the runway known as the break-off point.

2) Break-off point represents a height predetermined for the particular airport, here 140 feet, beyond which the aircraft ought not to approach unless the pilot can complete the approach and landing by visual means.

3) Arrangements brought into force since the inquiry ensure that the pilot will in future be left in no doubt that the talk-down has finished.

It is considered that this accident would have been avoided if the pilot had not brought his aircraft down as low as he did in spite of the information several times supplied to him that the meteorological visibility, as measured on the ground was as low as 40 or 50 yards. It is further considered that such an accident is unlikely to occur again if it is made an offence for a pilot to come down so low when visibility reported from the ground is considerably lower than the prescribed minimum.

Nevertheless to conclude that the accident would not have happened if the pilot had not come down so low in such conditions, is a very different thing from deciding that the pilot was in breach of regulations or instructions in taking the course he did; nor does it necessarily follow that he was imprudent in so doing.

The only relevant statutory requirements[1] in force in October 1950, state that:

> "The aircraft shall not, unless compelled by accident or other unavoidable cause, continue its approach to landing at any aerodrome beyond a point at which the limits of the aerodrome meteorological minima for landing at that aerodrome as specified in the said manual[2] ..... would be infringed." ("Aerodrome meteorological minima" means minimum heights of cloud and minimum values of visibility defined for the purposes of determining the usability of an aerodrome either for take-off or landing).

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1) The Court of Inquiry recommended that the statutory requirements be amended so as to prohibit an aircraft from continuing its approach to land at an aerodrome in circumstances in which the weather reported from the ground is below the operator's minima by a certain percentage (this does not rule out fixing a minimum height and minimum runway visibility, or runway visual range without reference to percentages if that is more convenient). It was suggested that something of the order of 70 per cent would be reasonable and effective.

2) The manual referred to is the Operator's Manual provided by the operator, in this case BEA, for the use and guidance of the members of the operating crew.

In the BEA Manual [1], the minimum height of cloud base specified for London Airport was 200 feet and the minimum visibility 600 yards. The effect, therefore of the statutory requirements was that the aircraft should not continue its approach to land at London Airport beyond a point at which these limits for landing at that aerodrome would be infringed.

Several questions were debated at the inquiry on the construction of the statutory requirements. It was urged on the one hand that an approach to land does not begin until break-off height is reached, and on the other hand that an approach to land begins at least as soon as the aircraft begins its last straight down approach, some 8 - 11 miles away from the point of touch down. It was agreed that the latter is the true view.

Next it was contended that there could be no infringement of the minima unless there was an actual landing and that the pilot was in any case entitled under the regulation to come down to break-off height. In respect of this it was decided that if the pilot went down below 200 feet without breaking cloud, he would be infringing the cloud base minimum. Equally if he went on flying at any point below 200 feet with a visibility of less than 600 yards he would be infringing the visibility minimum.

An additional question was debated, namely, whether the aerodrome meteorological minima in relation to values of visibility, meant visibility measured on the ground by the Meteorological Officers there, or the visibility of the pilot from his cockpit sometimes referred to in the inquiry as "slant visibility". It was agreed that the minima referred to in the regulation are minima as measured from the cockpit and not on the ground.

A further complication stemmed from the fact that the BEA Operator's Manual did not impose the specified minima as absolute or unqualified minima. The instructions in the manual contained a provision which permitted interpretation or "interpolation". Weather minima for airports, it was said, had been laid down as a combination of cloud height and visibility which, when considered together, form the limiting weather conditions. It was accordingly provided that the Captain should assess the existing conditions as given by the combination of the two factors and decide whether the differences produced better or worse conditions. He was in effect entitled to treat a case

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1) The Court of Inquiry recommended that clarity and simplicity should be introduced into those paragraphs of the Operator's Manual which specify the minima.

in which one factor was below the minimum but the other above as a case in which the combined conditions might not be regarded as worse than the limit laid down.[1]

Yet another factor must be taken into account before deciding whether the pilot was in breach of the regulation. There was undoubtedly radiation fog on the ground at the time of the accident, extending up to 40 or 100 feet and may have reached up to 200 feet though this is doubtful. It is considered that fog cannot be equated with cloud for the purpose of ascertaining the cloud base minimum. It may well have been therefore, that when the pilot had come down to 200 feet he was clear of cloud and remained clear down to 140 feet when he reached break-off height, though there was fog below him. Accordingly though the descent from 200 to 140 feet may have involved a breach of the regulation, such a breach, if established, could hardly involve a reflection on the Captain since in coming down to break-off height he was not infringing the instructions of BEA as both he and they understood them. On the basis of the preceding paragraphs it cannot be said that the Captain was in breach of the relevant regulations, although it is considered that his coming down was pointless, imprudent and hazardous.

Probable Cause

Although it cannot be established with certainty, the probable explanation of the known facts may be that the Captain deliberately came down below break-off point and then, at 100 feet or less, came into fog which abruptly reduced the visibility of the runway lights and that then and not till then he started overshoot procedure with fatal results.

1) This provision has since been cancelled by BEA.