

No. 27

British United Air Ferries, Ltd., Carvair, G-ARSF accident at Zestienhoven Airport, Rotterdam, The Netherlands on 28 December 1962. Report of the Netherlands Air Accident Board, released as C. A. P. 201 by the Ministry of Aviation (U. K.)

1. Historical1.1 Circumstances

Carvair, G-ARSF was on a scheduled international flight. It took off from Southend Aerodrome, England, for Rotterdam, The Netherlands, with 4 crew and 14 passengers aboard, at 1002 hours GMT. During the flight the cabin heating was switched off due to a defect in the heating system but apart from this the flight was uneventful. At 1044 hours the aircraft was in radio communication with Rotterdam control tower and at 1045 hours G-ARSF was given the following weather report: wind 200°/5 kt, QNH (altimeter setting) 1015.5 mb, visibility 1 500 m in snow, 2/8 at 180 m, 5/8 at 300 m. After entering the Rotterdam control area the aircraft was cleared to the RR beacon and to descend to 1 500 ft, and on approach to the airport it was further cleared to descend to 1 000 ft. At 1055 hours the aircraft was over the airport, which could be seen by the crew, and received the message that the runway and taxiways were covered with 2 cm of firm snow, that sand had been strewn and braking action was moderate. The aircraft crossed the beacon at 1 000 ft on the outbound heading and a procedure turn was made at 130 mph with an engine speed at 2 550 rpm. The flaps were lowered to 30°, both altimeters were set on QNH 1015.5 mb, and the check list was completed. Clearance to land was received and the descent commenced. The aircraft intercepted the ILS glide path and during the approach to the airport, after passing the outer marker beacon, the crew had the runway lights in sight, and the approach was continued visually. At an altitude between 600 - 700 ft the aircraft was above the ILS glide path with the needle of the instrument showing a maximum deflection. At this time the power setting was 2 550 rpm and 27 inches intake pressure which was then steadily reduced to 2 550 rpm and 18 inches intake pressure. At a distance of half-a-mile from the airport, full flap was applied. The aircraft then lost height rapidly and the main wheels hit a dike, which forms the boundary of the airport. The aircraft bounced and continued to be airborne. The right wing then dropped and struck the ground and then failed. The aircraft cartwheeled and came to rest in an inverted position with the nose of the aircraft facing the direction of approach on the right hand edge of the runway.

1.2 Damage to the aircraft

The aircraft was extensively damaged.

1.3 Injuries to persons

The captain of the aircraft was killed, the co-pilot seriously injured and the two other crew members were slightly injured. There were no injuries among the passengers.

2. Facts ascertained by the Inquiry

2.1 Aircraft information

The Certificate of Airworthiness was valid until 5 July 1963. The last periodic inspection was completed on 21 December 1962. From data available, there had been no incidents or recurring defects. The landing weight and centre of gravity location were within the prescribed limits.

2.2 Crew information

The pilot-in-command, age 37 years, held a valid airline transport pilot's licence properly rated for the flight. He had a total flying experience of approximately 6 534 hours of which 450 hours were in Carvair aircraft. He had made 176 landings at Rotterdam Airport.

The co-pilot, age 36 years, held a valid commercial pilot's licence properly rated for the flight. He had a total flying experience of 6 014 hours of which 201 hours were in Carvair type aircraft. He was familiar with the Rotterdam Airport.

2.3 Weather information

Visibility varied from 3 000 m to 1 000 m in snow. Occasional snowfall and broken stratus cloud occurred. No previous aircraft landings had been made on that day and, consequently, no visibility reports from air to ground were available.

2.4 Navigational aids

The ILS was intercepted after a descent using the RR beacon.

2.5 Communications

Communications were normal until the time of the accident.

2.6 Aerodrome installations

The Instrument Landing System (ILS) was in operation. Runway and approach lighting were at 100% intensity. The runway and threshold lights had been cleared of snow. Obstruction lighting in the approach sector including the red lights marking the dike were "on". The red and white obstruction markers on the dike had not been cleared of snow.

2.7 Fire

Fire did not occur.

2.8 Wreckage

N/A

3. Comments, findings and recommendations

3.1 Discussion of the evidence and conclusions

During the investigation into the daylight visibility of obstruction markings on the dike end of the runway and approach lighting under similar weather conditions the following observations were recorded:

- a) The dike lies 1.40 m below the obstruction free zone required by ICAO;
- b) The dike did not stand out against the surrounding terrain;
- c) The obstruction lighting and markers on the dike were not effective;
- d) The approach lighting between the dike and the runway could not be distinguished clearly during an approach, particularly during a low approach;
- e) The threshold lights were not clearly visible and provided the pilot with no point of reference for the runway threshold;
- f) The crossbar of the approach lighting was clearly visible the whole time;
- g) It is very improbable that the crossbar can be confused with the threshold lighting;
- h) It is possible that the similarity between the upper surface of the runway proper and that of the extension of runway 06 (the underrun of runway 24 which was the active runway) as well as the position of the snow which had been cleared from the runway, gave the impression that the runway began at a distance of 120 m instead of 240 m from the dike.

In observing the crew was competent to fly the aircraft and familiar with the airport, it was noted that the captain had carried out the approach procedure in the proper manner, but during the final stage of the approach, the aircraft, owing to insufficient power, rapidly lost height, thus descending below the ILS glide path and as a result the approach lights between the dike and the runway were not visible making it difficult for the captain to estimate height and distance.

3.2 Probable causes

It was concluded by the Board that the accident was due to the fact that the captain carried out the final stage of the approach below the normal glide path with insufficient engine power, as a result of which the speed of descent was too high in relation to the horizontal distance still to be covered to the beginning of the runway. Consequently, the aircraft, at a high vertical speed hit a dike, after which the right wing broke off and the aircraft came to rest on its back, with its nose facing the direction of approach.

The Board was of the opinion that even if there had been no dike, and it was not an obstruction of any significant height, the aircraft would still have hit the ground a considerable distance short of the runway threshold, although possibly with less fatal consequences than in the present instance.

3.3 Recommendations

None appear in the report.
