

CIVIL AVIATION (INVESTIGATION OF ACCIDENTS) REGULATIONS 1969

**Review of the Report on the accident to
Handley Page Dart Herald 203 G-BBXJ
which occurred at Jersey Airport, Jersey,
Channel Islands on 24 December 1974**

Report

before

Gerald A Draycott,

Captain J H Montgomery *Pilot Assessor*

and

Mr R F Franklin *Engineer Assessor*

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11 January 1977

*The Rt Hon Edmund Dell MP
Secretary of State for Trade*

Sir

I have the honour to submit my report upon the review of the report by Mr G C Wilkinson, an Inspector of Accidents, on the circumstances of the accident to Handley Page Dart Herald 203-G-BBJX, which occurred at Jersey Airport, Jersey, Channel Islands on 24 December 1974.

In so doing I wish to place on record the invaluable assistance I received from the assessors, Captain J H Montgomery and Mr R F Franklin.

I have the honour to be
Sir
Your obedient Servant

Gerald A Draycott

Appearances

Mr Michael Howard

(Instructed by the Treasury Solicitor) appeared as Counsel on behalf of the Review Board

Captain C W Henshall

appeared in person on his own behalf

Mr M A Butler

of Stewart A West & Co, solicitors, appeared on behalf of British Island Airways Limited

List of documents *(not published)*

Accident Report
Commander's statement
Commander's report to Company
Commander's reply to Company questionnaire
Co-pilot's statement
Co-pilot's reply to Company questionnaire
Statement by A C Ball (Tower Controller)
Supplementary statement by A C Ball
Statement by B A Johnson (ATC)
Supplementary statement by B A Johnson
Statement by B de la Haye (BIA Engineer)
Supplementary statement by B de la Haye
Statement by J P Griffin (Chief Fire Officer)
Supplementary statement by J P Griffin
Statement by F Geall (Electrician – Jersey Airport)
Supplementary statement by F A Geall
Transcript – Guernsey Approach 128.65 MHz
Transcript – Jersey Approach 120.3 MHz
Transcript – Jersey Tower 119.45 MHz
Airfield information
ILS let down chart
Airfield status report
Navigation log
Take-off data sheet
Load sheet
General declaration
Certificate of registration
Certificate of airworthiness
Anemogram
Approach wind conditions
Photographs + legend
Airfield plate
Airfield weather observations
Extracts from Company Operations Manual

Extracts from Flight Manual
Pilot's training records
Extracts from Company Training Manual
Statement by P R Coombs (AIB)
Flight deck instrumentation diagrams
List of questions
Airfield chart giving positions of eye witnesses
Legend of impact marks for survey plan
Statement by P R Coombs in answer to Captain Henshall's questions
Statement by J Illingworth in answer to Captain Henshall's questions
Statement by S G Corps in answer to Captain Henshall's questions
Copies of letters from Captain Henshall
Captain Henshall's amended report
Captain Henshall's questions
Mr Illingworth's report
Mr D Davies' report (CAA)
Extracts from G-BBXJ technical log
Extracts from G-BBXI technical log
Statement by R Davis (AIB)
AIB report indicating sections amended by Captain Henshall
Captain Henshall's amended version of AIB report -- report No. 2
Captain Henshall's list of amended questions to the Review Board
Asymmetric flying on G-BBXJ
Final entries in G-BBXJ technical log
Additional statement by Mr Illingworth
Additional statement by Mr Corps (CAA)
Statement by Mr R Barnesfield

Preliminary

Accident

- 1 During a scheduled flight from Southampton to Guernsey on 24 December 1974 the starboard engine of a Handley Page Dart Herald 203 -- G-BBXJ was shut down as a precautionary measure and the aircraft was diverted to Jersey Airport. At 1918 hrs following a single engine approach to the runway at Jersey the starboard wing tip of the aircraft struck the ground alongside the runway and the aircraft crashed off the runway.

Investigation

- 2 The Chief Inspector of Accidents instructed Mr G C Wilkinson, an Inspector of Accidents, to carry out an investigation of this accident, which he did, and a copy of his proposed report thereon was, pursuant to Regulation 11 of the Civil Aviation (Investigation of Accidents) Regulations 1969 No. 833, served amongst others, on Captain Colin Deane Henshall, the Commander of the aircraft at the material time.
- 3 Captain Colin Deane Henshall gave notice on 1 March 1976 that he wished the findings and conclusions in the proposed report to be reviewed by a Review Board under Regulations 12 and 13.
- 4 British Island Airways Limited, the operators of the aircraft at the material time sought and were granted leave to appear at the Review under Regulation 13 (7).

Proceedings of review board

- 5 On 25 August 1976 a Preliminary Meeting was held and attended by all interested parties or their representatives, at which directions were given for the preparation and conduct of the Review.
- 6 The Review Board sat in public at Convocation Hall, Church House, Great Smith Street, London SW1 on 19 and 20 October 1976, to hear evidence and argument.

Oral evidence was given by:

Mr P R Coombs	Inspector of Accidents
Mr R A Davis	Inspector of Accidents
Mr J K B Illingworth	Principal Scientific Officer in the Air Division of the Department of Industry
Mr S G Corps	Deputy Chief Test Pilot, Civil Aviation Authority
Mr R H Barnesfield	Investigation Engineer, Dowty Rotal Limited
Mr A C Ball	Watch Supervisor -- Jersey Airport
Mr B A Johnson	Air Traffic Controller -- Jersey Airport
Captain Colin Deane Henshall	Commander of G-BBXJ at the time of the accident

7 The written statements and documents which had been before Mr Wilkinson when compiling his report were read or were available to all interested parties, including a written statement made by the co-pilot Ronald William Lowe, who had indicated his intention not to attend the hearing, owing to his being overseas.

8 Additional written evidence was read of the following witnesses:

Mr B de la Haye	Engineer – British Island Airways
Mr J P Griffin	Chief Fire Officer – Jersey Airport
Mr F A Geall	Electrician – Jersey Airport

Issues

- 9 As a result of the Preliminary Meeting and the directions given thereat it was possible to narrow and define the aspects of the proposed report upon which Captain Henshall joined issue. They were these:

The proposed report found as facts, *inter alia*

- (a) The track of the aircraft in relation to the runway centre line and the indicated airspeed at the relevant time in seconds were as shown in Appendix 3 of the report.
- (b) The aircraft was displaced slightly to the right of the runway as it approached the threshold.
- (c) The airspeed fell below the target threshold speed of $89\frac{1}{2}$ knots 15 seconds before the accident, and by the time of the impact the airspeed had reduced to 78 knots.
- (d) A left turn was initiated 19 seconds before impact but the turn was not sustained for sufficient time to allow the aircraft to re-align with the runway extended line.
- (e) Full power was applied to the port engine 3 seconds before impact and the aircraft then yawed to the right and the starboard wing tip hit the ground and the aircraft crashed.

- 10 The proposed report reached the following conclusions, *inter alia*, on the above facts:

- (a) The airspeed decayed to below the recommended speeds during the final stages of the approach and the aircraft at the same time drifted to the right of the extended runway centre line.
- (b) The Commander called for full power on the port engine at the time when the speed was insufficient to maintain directional control.
- (c) The aircraft went into an uncontrollable roll at a low height resulting in the starboard wing contacting the ground.
- (d) The accident was caused by the application of asymmetric full power when there was insufficient airspeed to maintain directional control and when the aircraft was too close to the ground to allow recovery from the yaw and roll which developed and the failure to keep the aircraft correctly aligned with the runway centre line, and the failure to maintain adequate airspeed during the final stages of the approach.

- 11 For his part Captain Henshall maintained that:

- (a) the track of the aircraft and airspeeds shown in Appendix 3 were not accurate.
- (b) Shortly after selection of full flap the aircraft became slightly displaced to the right, but the centre line was regained without difficulty.
- (c) The airspeed did not decay at the rate and to the level stated in the report or, if it did, he was unaware of it.

- (d) In the final stages of the approach he retarded the port throttle and the aircraft turned to the right and despite the application of full opposite rudder and the rest of the aileron it was not possible to regain control, and as it was then, in what he felt was an irretrievable situation, he ordered full power.

12 Captain Henshall put forward the following possible reasons for the aircraft's going out of control:

- (a) a malfunction in the guard circuit which caused the starboard propeller to unfeather and so to increase drag.
- (b) The controls of the aircraft were incorrectly rigged.
- (c) There was distortion in the rigging of the mainplanes and/or damage to the leading edge of the starboard wing of the aircraft which caused the wing partially to stall.
- (d) That side-slipping action or a fault in the pitot-static system caused the airspeed indicators to over read.

13 He further maintained that if the accident could not be attributed to any of these reasons then the proper conclusions should be that the accident was caused by a loss of control in the final stages of the approach, the reasons for which remain undetermined.

Evidence and findings

- 14 As his report indicates the Inspector relied upon the analysis of the flight recorder for the data set out in Appendices 1, 2 and 3 to his report. Mr Illingworth, who had not provided the analysis used by the Inspector, made his own independent checks and analysis of the flight recorders, and gave evidence to the effect that the data set out in the Appendices differed in no material respect from the data he himself obtained, although there were some small but immaterial discrepancies, and he accordingly agreed with the Inspector's report. It was indicated that the track shown in Appendix 3 was the track followed by the starboard wing tip and not the track which would have been produced by the centre line of the aircraft.
- 15 Mr Corps considered all the documentation in the case, including the points raised by Captain Henshall, and expressed the following opinions:
- (a) He did not believe the aircraft was out of control before full power was applied to the port engine shortly before impact, and that there was some measure of control some five seconds before impact.
 - (b) That the application of full power did not help matters, but was a very understandable reaction.
 - (c) That he could not accept as a possible cause of the accident that the controls of the aircraft were incorrectly rigged, since the aircraft had made several flights during the day prior to the accident without revealing any problems in this respect.
 - (d) That he could not accept as a possible cause of the accident distortion in the rigging of the mainplanes and/or damage to the leading edge of the starboard wing, which could have caused that wing partially to stall, since damage to have such results would have to be so substantial as to have been quite obvious prior to the accident.
 - (e) That any side-slip there may have been would not have had any significant effect on the situation.
- 16 Mr R H Barnesfield gave evidence to the effect that it would be a mechanical impossibility for a malfunction to occur in the guard-circuit which caused the starboard propeller to unfeather, and the only manner in which unfeathering could occur would have been by a deliberate movement of the appropriate lever. There was no evidence that there had been any such deliberate movement.
- 17 Captain Henshall gave evidence substantially to the effect that:
- (a) Having heard the evidence of Mr Corps and Mr Barnesfield, apart from the possibility that the aircraft was incorrectly rigged, he could no longer maintain that any of the four possible reasons he had put forward under paragraph 12, could have been contributive factors to the accident. He agreed that no difficulty had been experienced on other flights that day that could be attributed to the aircraft being incorrectly rigged, but suggested such defects might not have been apparent if it had manifested itself only at a very low speed when the aircraft was only a foot off the ground.

- (b) That up to the 81 knot point shown in Appendix 3 the aircraft was on the centre line, except for a minor diversion to the right which was corrected, and the centre line regained at the ten second point, and that he remained on the centre line for a few seconds before control was lost.
- (c) He was never aware that the airspeed was lower than it should have been until after he was in difficulties, and that his co-pilot never gave him any indication that it was. Captain Henshall said that he was watching his airspeed indicator at all material times, but that he could not after the accident recall any specific airspeeds. He accepted that no fault was found in the pitot-static system, and that the speed shown on the A S I must have been accurate within the normal tolerances.
- (d) In the final stages of the approach at the minus 10 second stage the aircraft went to the right, and he applied 'full rudder and a lot of aileron' but 'the aircraft was getting away from him and going to the right'. It was not totally out of control, but was not responding in a normal manner, and that although Appendix 2 shows on the heading trace a turn to the right at about minus five seconds he was not aware of the aircraft coming back to the centre line, and about four seconds after he had applied full rudder and aileron he called for full power on the port engine.

18 The Board took into account the written and oral statements made by the witnesses who actually saw the aircraft coming in to land at the relevant time which was to the effect that so far as they could see the approach, until shortly before touch-down, appeared to be normal, but having regard to the fact that this was a night landing and the positions in which the witnesses were standing in relation to the aircraft, the Board are of the opinion that their evidence is not sufficient to displace the data arrived at from the analysis of the flight recorder.

19 Moreover, the written statement of the co-pilot, which it appears was made by him before any analysis had been made of the flight recorder, was to the effect that as the aircraft approached the threshold it was displaced to the right of the runway centre line, and that had the approach continued parallel with the runway and the aircraft touched down, the port wheels would have been about in line with the lights on the starboard edge of the runway. This evidence, in view of the Board, is more consistent with the data obtained from the flight recorder, than with the recollection of Captain Henshall.

20 The Board accepted as substantially accurate the evidence and opinions expressed by the expert witnesses called before them by Counsel for the Board, and the written statements of the witnesses placed before them.

The Board was unable to accept any of the suggested possible reasons for the accident put forward by Captain Henshall, in that there was no evidence to support any of them, and such evidence as there was tended to negative them.

21 The Board were driven to the conclusion that the only reasonable inferences to be drawn from the evidence were:

- (1) The aircraft was at all material times somewhat displaced to the right of the centre line of the runway.
- (2) The airspeeds decayed in accordance with the speeds as tabulated in Appendix 3 which were below the recommended speeds during the final stages of the approach.
- (3) That Captain Henshall did not appreciate that the airspeed was decaying at the rate or extent it was, and that his co-pilot did not draw his attention to the airspeed at any material time.

- (4) That due to the low level of the airspeed at about minus five seconds before impact Captain Henshall lost, or thought he had lost, effective control of the aircraft and this caused him to call for full power on the port engine and the result of the application of such asymmetric power was to cause a yaw and roll which could not be controlled because of the lack of sufficient airspeed and the close proximity of the aircraft to the ground.

22 In the result the Board confirms the findings and conclusions of the Inspector, Mr G C Wilkinson.

Gerald Draycott

Captain J H Montgomery (*Pilot Assessor*)

R F Franklin (*Engineer Assessor*)