ACCIDENTS INVESTIGATION BRANCH
Department of Trade and Industry

# Jodel DR 1050 Ambassadeur G–AYEA

## Report on the accident in Bridgwater Bay, Somerset on 25 March 1972

LONDON: HER MAJESTY'S STATIONERY OFFICE
1973

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| *No.* | *Short title* | *Date of publication* |
|---|---|---|
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| 2/73 | Bolkow BO 208C Junior G–ATVB near Hambledon, Surrey, January 1972 | February 1973 |
| 3/73 | Beagle 206 Series 2 G–AVAL at Chouppes (Vienne) near Poitiers, France, March 1971 | May 1973 |
| 4/73 | Trident I G–ARPI near Staines, June 1972. Report of the Public Inquiry | May 1973 |
| 5/73 | Jodel DR 1050 Ambassadeur G–AYEA in Bridgwater Bay, Somerset, March 1972 | May 1973 |

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Department of Trade and Industry
Accidents Investigation Branch
Shell Mex House
Strand
London WC2R 0DP

4 April 1973

*The Rt Honourable Peter Walker MBE MP*
*Secretary of State for Trade and Industry*

Sir,

I have the honour to submit the report by Mr N S Head, an Inspector of Accidents, on the circumstances of the accident to Jodel DR 1050 Ambassadeur G-AYEA, which occurred in Bridgwater Bay, Somerset on 25 March 1972.

I have the honour to be
Sir
Your obedient Servant

V A M Hunt
*Chief Inspector of Accidents*

Accidents Investigation Branch
Civil Accident Report No EW/C 406

| | |
|---|---|
| *Aircraft:* | Jodel DR 1050 Ambassadeur G-AYEA |
| *Engine:* | Continental 0-200-A |
| *Registered Owner and Operator:* | Trustees of Zeta Group |
| *Pilot:* | Mr C H Roberts - Killed |
| *Passengers:* | Three - Killed |
| *Place of Accident:* | Bridgwater Bay, Somerset |
| *Date and Time:* | 25 March 1972 at approximately 1730 hrs |
| | All times in this report are GMT |

## Summary

The aircraft was on a private flight from Winkleigh, Devon to Elstree. About 10 minutes after departure it encountered low cloud and diverted to the north of its track. It was forced to climb into cloud to avoid hitting high ground on Exmoor and disappeared over Bridgwater Bay. Two days later wreckage from the aircraft was washed ashore on the Somerset coast. The report concludes that there was insufficient evidence to establish the reason why the aircraft struck the water but adverse weather conditions would have presented the pilot with difficulties which were probably the main causal factors in the accident.

# 1. Investigation

## 1.1 History of the flight

On 25 March 1972 the aircraft departed Elstree at 1019 hrs on a private flight to Perranporth, Cornwall with two adults and three small children on board. The route planned was to the South Coast, keeping to the west of the London Control Zone, along the coastline to Exeter and then direct to Perranporth. An unscheduled visit, lasting approximately 37 minutes, was made to Portsmouth Aerodrome because one of the young passengers had become airsick. On resumption, the flight encountered increasing cloud and haze and in the vicinity of Bridport climbed through the cloud to 4,500 feet. North of Exeter a gap in the clouds appeared through which the aircraft descended and when the disused airfield at Winkleigh, Devon came in sight it was decided to make a landing there and so keep a business appointment which had been tentatively arranged on the previous day. The aircraft landed at approximately 1325 hrs.

During the stopover at Winkleigh the aircraft was refuelled with five gallons of three star automobile petrol obtained from a local garage. The pilot indicated that he wished to return to Elstree before it got dark and it was decided that the adult passenger would remain at Winkleigh.

The aircraft took off from Winkleigh in a westerly direction from the grass alongside the runway at approximately 1655 hrs and, having made a 180° turn, flew east in the direction of Tiverton keeping just below the cloud base at about 700-1,000 feet above the ground. The weather at the time was overcast and it had just started to rain but there was very little wind.

At 1705 hrs the aircraft called the London Flight Information Region, reported that the cloud base was about 1,000 feet and requested en route weather information. The controller passed the Bournemouth weather for 1650 hrs and then suggested that, as he (the controller) was unable to contact Exeter, the pilot should try and contact them himself. The pilot acknowledged the Exeter frequency and no further radio communication was received from the aircraft.

At about this time the aircraft was seen flying northwards over Exmoor following the River Haddeo valley which is 2 miles east of Dulverton. The high ground was covered in cloud and the aircraft was flying low between the hills. It was not seen again but several people reported hearing the engine of a light aeroplane flying in or above the clouds over the coastal area north of Exmoor. One witness said that he twice heard the noise of what appeared to be an air-

craft diving in an area out to sea north of Watchet. The weather at the time was deteriorating with light drizzle becoming heavy rain. Nothing more was seen or heard of the aircraft. (Approximate route shown at the Appendix to the Report.)

On the following morning (26 March) an alert was put out and a ground and air search organised for the Exmoor and surrounding area. This search continued without success until late on the afternoon of 27 March when a small amount of wreckage from the aircraft was washed ashore on the beaches north of Burnham-on-Sea. On the same day the body of one of the young passengers, wearing a partially inflated lifejacket, was found in the water near Brean Down. Three days later the bodies of the pilot and one other passenger were found on the seashore in the Minehead and Lilstock areas. Neither was wearing a lifejacket. The body of the third passenger has not been found.

## 1.2 Injuries to persons

| *Injuries* | *Crew* | *Passengers* | *Others* |
|---|---|---|---|
| Fatal | 1 | 3 | – |
| Non-fatal | – | – | – |
| None | – | – | – |

## 1.3 Damage to aircraft

Destroyed.

## 1.4 Other damage

None.

## 1.5 Crew information

Mr Christopher Hirst Roberts, aged 32, held a valid Private Pilot's Licence (PPL) endorsed for aeroplanes in groups A and B but did not hold an Instrument Meteorological Conditions (IMC) rating nor a night rating. He was last medically examined in association with his licence on 16 October 1970.

Mr Roberts started flying at the end of 1970 and obtained a PPL on 23 April 1971. In December he received training in twin-engined aircraft and his licence was endorsed in that month for group B aircraft. In May 1971 he joined the Zeta Group which owned G–AYEA and had since flown about 72 hours in the aircraft. The pilot's log book was lost in the accident but it is estimated that he had accumulated about 140 hours flying experience. He had received some instruction in flying on instruments but had not completed a recognised instrument flying course. He had some experience in flying in cloud in G–AYEA which had only a limited blind flying panel.

## 1.6 Aircraft information

The aircraft was a four-seater, single-engined low-wing monoplane. It was manufactured in France in 1962 and placed on the British register in May 1970. In September 1970 it was acquired by the Zeta Group of which the pilot was a member and had been operated by them since that time. Immediately following its introduction to the British Register the aircraft was given an

extensive overhaul and issued with a three-year certificate of airworthiness in the private category valid until 4 June 1973. It had accumulated about 1,189 hours since new, 166 hours of which had been flown since the issue of the British Certificate of Airworthiness.

The instrument panel fitted in the aircraft contained an altimeter, airspeed indicator, magnetic compass, vertical speed indicator, and a turn and slip indicator. There was no artificial horizon or directional gyro. Two very high frequency (VHF) radio communications sets were carried but there was no radio direction finding equipment.

Two petrol tanks each with a capacity of 12 imperial gallons were fitted in the aircraft's fuselage and both were filled with 80 octane petrol prior to departure from Elstree. The aircraft was refuelled at Winkleigh with 5 gallons of three star automobile petrol, most of which was used to refill the front tank. It has been calculated that the aircraft had about 16 gallons of fuel on board when it took off from Winkleigh. Automobile petrol is made to a different specification from aviation petrol but the three star sample used in the aircraft differed very little in physical characteristics from the specifications for 80 octane aviation petrol except that it contained a lead content. The engine manufacturers have stated that the introduction of the automobile petrol would not have caused any mechanical damage to the engine but the fuel's higher volatility would have made the engine more susceptible to carburettor icing. A sample taken from the garage tank from which this petrol was supplied was analysed and proved to be free of impurities and contamination.

## 1.7 Meteorological information

A weather appreciation subsequently prepared by the Meteorological Office for South West England showed that the area was under the influence of a warm moist south-southwesterly airstream associated with a frontal trough that was moving eastwards. The cloud was layered with considerable low stratus, base between 400 and 800 feet. Visibility was generally 4-6 kilometres but much of the high ground was covered in cloud with a corresponding reduction in visibility. There was widespread rain or drizzle, moderate or heavy at times. The surface wind was between 10 and 15 knots rising to 20 knots over the high ground. The 1650 hrs weather for Bournemouth which was passed to the aircraft by the London FIR controller was:

| | |
|---|---|
| Wind | from 180° at 7 knots |
| Visibility | 5,000 metres |
| Cloud | 2 octas at 2,000 feet. |

Witnesses at Winkleigh reported that at the time the aircraft landed the weather was partly cloudy with sunny periods. During the afternoon the conditions deteriorated until at the aircraft's departure the sky was overcast with the cloud base at about 1,000 feet and it had started to rain although the wind was light. During the evening the weather deteriorated and there was heavy rain. The pilot of an aircraft which flew at flight level 55 from north to south across the eastern end of Exmoor just prior to the time of the accident reported later that there was continuous cloud at his flight level but there was no significant turbulence.

There is no meteorological office at Elstree but copies of a local area forecast and selected aerodrome forecasts are received by teleprinter in the control tower and are available for inspection by pilots. There were no weather facilities at Winkleigh.

### 1.8 Aids to navigation

The aircraft carried no radio navigational equipment and the flight was being conducted with visual reference to ground landmarks.

### 1.9 Communication

On the outbound flight from Elstree the aircraft maintained routine radio contact with the London Flight Information Region (FIR) (West) controller. These messages were of an advisory nature as the pilot had not filed a flight plan.

On the return flight the aircraft established communications with the London FIR controller about 10 minutes after departure from Winkleigh. After an exchange of messages concerning the en route weather, the controller suggested that Exeter Aerodrome should be called to obtain their weather conditions. The Exeter frequency was acknowledged by the aircraft and no further communication was received from it. It is not known whether the pilot called Exeter tower as the aerodrome and radio facility was closed at the time. Recordings of both the Glamorgan (Rhoose) and Bristol (Lulsgate) communications frequencies were examined but there was no evidence that the aircraft attempted to call them.

### 1.10 Aerodrome and ground facilities

Winkleigh Aerodrome is now disused and much of its surface has been taken over for other activities. The usable length of the east-west runway has been reduced to about 1,320 feet and its surface is overgrown with grass. There are no ground facilities on the site.

### 1.11 Flight recorders

Not required or fitted.

### 1.12 Wreckage

The location of the accident site could not be established and the main wreckage of the aircraft was not recovered. Consequently only those pieces which were washed ashore could be examined. These included the port main wing spar with the port wheel and most of the wing tip attached, the port main aileron and the port tailplane; small fragments of the starboard wing tip; about two-thirds of one of the wooden propeller blades and the rear seat cushions.

Damage to the propeller indicated that it was being driven at considerable speed when it struck the water. The damage relative to the port and starboard wings indicated that the aircraft had hit the sea with the right wing low and in a nose-down attitude.

## 1.13 Fire

There was no evidence of fire.

## 1.14 Survival aspects

### 1.14.1 *Survival*

The injuries sustained on impact by the three occupants whose bodies were recovered from the sea were almost wholly confined to the head and face. In only two instances were they sufficiently severe to render the recipients unconscious. The post mortem examination showed that all three persons survived the impact with the water and subsequently died of drowning and exposure. The first body recovered, that of a young boy with only minor head injuries, was wearing a lifejacket which was properly secured around the waist. The jacket consisted of two flotation chambers each with its own carbon dioxide bottle. The bottle in the front chamber had been discharged and the chamber was partially inflated when found. A second and similar lifejacket was found on the sea shore near Lilstock on 28 March. The webbing tapes used to secure this jacket had been secured on one side only and then in an incorrect manner. The carbon dioxide bottle in the front chamber had been discharged although the lifejacket was deflated when found. It is believed that there were only two lifejackets on the aircraft; neither of the two other bodies which were recovered were wearing lifesaving equipment. The accident is classified as survivable; however, the survivors could only have been saved by immediate rescue from the sea since a person immersed in water of a similar temperature is estimated to have a life expectancy of only approximately 30 minutes.

### 1.14.2 *The search aspects*

At about 1900 hrs on 25 March the controller at Elstree enquired from the London Air Traffic Control Centre at West Drayton (LATCC) whether they could confirm that G-AYEA would be returning to Elstree that evening. He was told that the Centre had had no contact with the aircraft since 1717 hrs when it was presumed to have changed to the Exeter frequency. Further information about the aircraft was sought by telephone from Perranporth and Exeter but there was no reply as both aerodromes were closed. Since no flight plan had been filed it was assumed that the aircraft diverted for an overnight stop, a practice which is not uncommon among private pilots.

The alert for the aircraft was not initiated until the following morning, 26 March. All likely airfields were checked but after all efforts had failed to locate it the procedure for missing aircraft was put into operation. The organisation of the search was co-ordinated between the Royal Air Force Rescue

Co-ordination Centre (RCC) at Plymouth, LATCC at West Drayton, and the Devon and Cornwall and the Somerset police, and a combined ground and aerial search was mounted in the Exmoor and surrounding areas. About 1600 hrs on 27 March pieces of wreckage were washed ashore on the beaches north of Burnham-on-Sea and the search was transferred to the area of Bridgwater Bay and its coastline. Shortly afterwards the body of a young boy was seen by a helicopter crew in the water near Brean Down. The aerial search was discontinued the following day but the police continued for some days to patrol the Somerset and North Devon coastline. On 30 March the body of the pilot was discovered on the sea shore near Minehead and that of another passenger was found near Lilstock.

# 2. Analysis and Conclusions

## 2.1 Analysis

### 2.1.1 *Discussion*

It has not been possible to establish the direct cause of this accident; there were no witnesses to it and insufficient wreckage of the aircraft has been recovered to enable an examination to establish whether or not there had been any pre-crash malfunction. However, the evidence that is available does permit some comment on the circumstances leading to it.

There is little doubt that an important causal factor was the deterioration in the weather which occurred whilst the aircraft was on the ground at Winkleigh. This was most marked over the Devon and Somerset hills which lay across the route to Elstree and the pilot's radio request for en route weather information indicates that he was unaware before he took off that this change had taken place. In response to his request the London FIR controller did what he could by passing the most appropriate weather information available to him which was the 1650 hrs actual for Bournemouth. If the pilot had telephoned and obtained a route forecast before leaving Winkleigh it would have given him a better overall picture of conditions throughout the route. It was unfortunate that the FIR controller was not aware that Exeter Aerodrome had closed down for the night but by that time the pilot was in the area of the bad weather and in a position to assess the conditions for himself. The fact that he had deviated considerably from his direct track indicates that he was trying to find a way round the worst of the weather, most probably in the knowledge that after negotiating that particular area he would enter the improved conditions indicated by the Bournemouth actual.

With hindsight it can be said that at this stage an early decision to return to Winkleigh would have been wise. In the event, by delaying this decision the pilot then found himself confined in a narrow valley without the opportunity to retrace his flight path and consequently was committed to climbing into cloud to avoid the high ground at the end of the valley. It is possible that having been forced to enter cloud he decided to climb through and continue 'on top' as he had done on his flight to Winkleigh. However, the cloud had thickened considerably since that time and it is unlikely that he was able to climb high enough to reach clear sky.

When considering more direct causal factors, the possibility that the aircraft had struck the sea following loss of control in cloud was investigated. Bearing in mind the pilot's experience and the aircraft's limited instrumentation, this is a possibility but the fact that the occupants suffered only comparatively minor injuries is not consistent with the sort of violent impact that could be

expected following a loss of control. There is evidence that the pilot was aware that he was flying over the sea as the body of one of the passengers was wearing a properly fastened lifejacket and it is unlikely that this was put on after striking the sea or whilst the aircraft was performing violent manoeuvres in flight.

On the remaining possibilities, ie a deliberate 'ditching' or an inadvertent contact with the water whilst flying low, no firm conclusion can be reached. The evidence that the propeller was under power at the time of the impact tends to indicate the latter, but it does not rule out the possibility of deliberate ditching following partial loss of power due, for example, to carburettor icing. This could have been induced by a prolonged descent at low power and it may be significant that the risk of this occurring had been increased by the use of three star automobile petrol, because of its higher volatility. In any event, whether the impact was inadvertent or the result of an attempted ditching, it is not surprising that it was severe enough to break the aircraft. It would have been very difficult to judge height above the surface and the aircraft's attitude in the prevailing conditions in which sea and sky would have merged to obscure the horizon.

2.1.2 *Survivability aspects*

The evidence of the pathologist is that the three occupants of the aircraft, whose bodies were recovered, had survived the impact with the water but had died from exposure. This raises the question whether they could have been saved if the search had started earlier. Although the pilot had 'booked out' from Elstree before his departure earlier in the day and had been in contact with London FIR whilst on the return flight, there was no reason why the authorities should have been alarmed since the pilot was under no obligation to keep them informed of his movements. The controller at Elstree assumed, quite reasonably, that the aircraft had diverted to another aerodrome and was stopping there overnight. If the pilot had telephoned a flight plan either to Exeter or London before he left Winkleigh the authorities would have been alerted as soon as radio contact had been lost. However, there is understandably some delay before an aerial or ground search can be mounted and medical opinion indicates that the life expectancy of a person exposed to water temperatures similar to those existing in the Bristol Channel at the time of the accident is probably less than 30 minutes. Therefore, unless equipment such as a dinghy and special clothing is carried, the only chance of survival in an accident of this sort is for the crash to be seen and rescue forces despatched to it immediately.

Whilst it is not suggested that the filing of flight plans should be mandatory for all flights, the advantages of doing this are obvious when the route planned is over water or sparsely populated or mountainous country. Attention of pilots has been drawn to this aspect from time to time by various *Aeronautical Information Circulars*, the latest is No 49/1972 issued by the Department of Trade and Industry on 27 March 1972.

## 2.2 Conclusions

(a) *Findings*

(i) The pilot was properly licensed but did not hold an Instrument Meteorological Conditions (IMC) rating.

(ii) The documentation of the aircraft was in order and the aircraft was properly loaded.

(iii) About 10 minutes after taking-off the pilot reported that he was encountering low cloud.

(iv) Because of bad weather the aircraft diverted to the north of its intended track and flew over an area of cloud-covered high ground.

(v) The pilot was forced to climb into cloud to avoid hitting high ground.

(vi) The weather 'actual' for Bournemouth received by the pilot indicated improved conditions to the east of Exmoor.

(vii) The precise location over the sea where the accident occurred could not be established.

(b) *Cause*

The precise reason why the aircraft struck the sea has not been established but adverse weather conditions would have presented the pilot with difficulties which were probably the main causal factors in the accident.

N S Head
*Inspector of Accidents*

Accidents Investigation Branch
Department of Trade and Industry
April 1973

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