ACCIDENT INVESTIGATION BRANCH
Department of Trade and Industry

Fournier RF 4D G–AXJS

Report on the accident in the sea about ¼ mile northeast of Skateraw, Kincardine on 14 October 1972

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No.	*Short title*	*Date of publication*
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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
6/73	Fournier RF 4D G–AXJS in the sea about ¼ mile northeast of Skateraw, Kincardine, October 1972	June 1973

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Department of Trade and Industry
Accidents Investigation Branch
Shell Mex House
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17 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 G M Kelly, an Inspector of Accidents, on the circumstances of the accident to Fournier RF 4D G–AXJS which occurred in the sea about ¼ mile northeast of Skateraw, Kincardine on 14 October 1972.

I have the honour to be
Sir
Your obedient Servant

V A M Hunt
Chief Inspector of Accidents

Accidents Investigation Branch
Civil Aircraft Accident Report 6/73
(EW/C425)

Aircraft:	Fournier RF 4D G–AXJS
Engine:	One Rectimo Type 4 AR 1200
Registered Owner and Operator:	Mr W A Burns, Balmedie, Aberdeen, Scotland
Pilot:	Mr W A Burns – Killed
Passengers:	None
Place of Accident:	In the sea about ¼ mile northeast of Skateraw, Kincardine
Date and Time:	14 October 1972 at about 1650 hrs
	All times in this report are GMT

Summary

The aircraft was on a flight from Dundee Airfield to Aberdeen (Dyce) Airport using the coastal route when weather conditions deteriorated. Whilst flying at about 200 feet above the sea it entered a bank of sea fog and crashed about 20 seconds later. The report concludes that the accident was probably the result of the pilot losing height whilst flying on instruments in fog. The aircraft was not equipped with an artificial horizon.

1. Investigation

1.1 History of the flight

On the afternoon of 14 October Mr Burns flew G–AXJS from Aberdeen (Dyce) Airport to Dundee (Riverside Park) Airfield in company with another light aircraft, landing at Dundee at about 1450 hrs. The weather was fine, the flight was uneventful, and no refuelling or other work was done on G–AXJS at Dundee. The two aircraft took off from Dundee at about 1615 hrs to return to Aberdeen in company. On reaching Montrose both aircraft were together at 2,500 feet and the weather was still good. The pilots then agreed to part company and each changed to 120.9 MHz, the Aberdeen approach frequency.

At 1641 hrs G–AXJS called Aberdeen and reported that he was bound from Dundee, was then abeam Stonehaven and that he expected to be at Aberdeen in approximately 15 minutes. Aberdeen air traffic control (ATC) then passed the pilot the information that Runway 17 was in use, and the latest Aberdeen weather. This was a special weather report, issued at 1632 hrs. It gave the visibility as 1,200 metres, and cloud of 2 oktas at 100 feet, 5 oktas at 200 feet, and 7 oktas at 1,200 feet. The pilot replied that he was descending, and that he would fly along the coastline to the mouth of the river Don and then follow the river to the airfield. This was a 'bad weather' procedure used by pilots based at Aberdeen when approaching the airfield from the south in visual contact with the surface. Mr Burns had successfully used this procedure on previous occasions.

At 1647.30 hrs ATC requested G–AXJS to report approaching the mouth of the Don. The pilot replied that he would do so 'if I get there', and reported that at that moment he was passing abeam of Portlethen (about 5 miles south of Aberdeen harbour), flying along the coast at 400 feet.

At about this time two witnesses at Skateraw (about 2 miles south of Portlethen) saw the aircraft just off the coast flying north about 200 feet above the sea. It was in level flight with the engine running normally and making no unusual noise. The aircraft then entered a bank of sea fog that was moving towards the coast from the northeast. The witnesses continued to hear the engine running normally until, about 20 seconds after the aircraft had disappeared into the fog, there was noise like a sudden increase in engine speed followed immediately by a dull thud.

Floating wreckage was later picked up. Mr Burns' body was not recovered until 22 November 1972.

1.2 Injuries to persons

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

1.3 Damage to aircraft

The aircraft was destroyed.

1.4 Other damage

There was no other damage.

1.5 Crew information

Mr William Alexander Burns, aged 51, was trained as a pilot in the Royal Air Force in 1940. After being seriously injured that year he did not fly again until 1962 when he was granted a Private Pilot's Licence. The evidence is that he was a careful and conscientious pilot. At the time of the accident he had flown 678 hours of which 220 had been on the Fournier RF 4D. His last flying prior to the day of the accident had been on 8 September. An analysis of his experience is as follows:

	Total hours	*Instrument flying*	
		Dual	*Pilot*
RAF Service 1940	157	16:25	6:35
1940-1962	–	–	–
1962-1970	224	–	–
1971 and 1972	297	–	9:10 (simulated, with a safety pilot)

In June 1972 Mr Burns applied to the Civil Aviation Authority for an IMC rating to be added to his Private Pilot's Licence. This he was granted without having to take a flight test under a rule that exempts a pilot who has 'at least 500 hours as pilot of aeroplanes, including at least 10 hours dual instrument flying instruction under a qualified flying instructor, and who is in current flying practice'. In requesting exemption from the flight test Mr Burns correctly claimed 16 hours experience as pilot undergoing instrument flying training. However the application form does not ask when the training was carried out and as log books are not examined when such applications are dealt with it would not have been apparent to the Civil Aviation Authority (CAA) staff that the experience claimed had been gained in 1940.

Mr Burns had flown 9 hours instrument practice between January 1971 and May 1972 in a Cessna 150 with another pilot as safety pilot, and of this total about 1 hour 15 minutes had been devoted to limited panel flying. The last such flight had taken place in June 1971.

1.6 Aircraft information

Fournier RF 4D G–AXJS (constructor's serial no 4148) was manufactured by Sportavia-Putzer GmbH and Company in the Federal German Republic in 1969 and was registered in the name of Mr W A Burns in September 1969.

The aircraft was equipped with one Bendix TR 22-1AE-14 VHF communications set but had no radio navigation equipment. The flight instruments consisted of an altimeter, a vertical speed indicator, an air speed indicator, an electric turn and slip indicator of needle and ball presentation, and a magnetic compass. No life raft or life jacket was carried.

The aircraft had a Certificate of Airworthiness in the special category; last renewed on 29 September 1972 and valid at the time of the accident. Investigation indicated that G–AXJS had flown a total of 232 hours, had been satisfactorily maintained throughout its life, and that its history had been trouble free.

The pilot of the aircraft that had flown in company with G–AXJS stated that he had noted that the latter's fuel tank had been full at the start of the flight from Aberdeen Airport and that Mr Burns had mentioned no unserviceability either before take-off from Aberdeen or when on the ground at Dundee.

1.7 Meteorological information

On 14 October there was high pressure over Scotland. Relevant extracts from the Aberdeen Airport local area forecast for the period 0600 hrs to 1500 hrs (which Mr Burns saw before leaving Aberdeen) are as follows:

Winds and Temperature

Surface	: Calm or variable 5 knots (temperature not stated)
2,000 feet	: Variable 5 knots + 9°C
5,000 feet	: Variable 5 knots + 4°C
Cloud	: 7 oktas strato-cumulus 4,500 feet, tops 7,500 feet
Surface visibility	: 4-8 kilometres locally, 500 metres at first
Weather	: Haze. Fog patches in the valleys at first soon dispersing
Further outlook	: To 1400-2100 hrs - little change

Relevant extracts from the Aberdeen Airport local forecast issued at 1400 hrs for the period 1500-2100 hrs are as follows:

Winds and Temperature

Surface	: Variable 3 knots (temperature not stated)
2,000 feet	: Variable 5 knots + 8°C
5,000 feet	: Variable 10 knots + 4°C

Cloud	: 2 oktas stratus 1,500 feet, tops 2,000 feet 3 oktas strato-cumulus 2,500 feet, tops 4,000 feet 5 oktas strato-cumulus 6,000 feet, tops 7,500 feet
Surface visibility	: 4-8 kilometres
Weather	: Haze
Further outlook	: Not mentioned

At about 1600 hrs sea fog began to approach the coast of Aberdeen and at 1632 hrs Aberdeen Airport meteorological office issued a special weather report giving visibility at 1,200 metres and cloud as 2 oktas at 100 feet, 5 oktas at 200 feet and 7 oktas at 1,200 feet. This report was passed to G–AXJS at 1641 hrs by air traffic control.

There was no weather information available at Dundee Airfield during the time the two aircraft were there. Mr Burns discussed the situation with the pilot of the accompanying aircraft and they decided to return early because they considered that at that time of year under the prevailing conditions there was a risk of sea fog developing. The other pilot telephoned his wife, who was also a pilot, at his home, which was on the approach to Runway 35 at Dyce, and she told him that the weather was hazy but that she could see a point 4 miles away to the south. The two pilots therefore considered the weather to be satisfactory and decided that the return flight could be made without difficulty.

The eyewitnesses at Skateraw reported that at the time of the accident the wind and sea were calm, there was no cloud over the land area around Skateraw nor any sea fog to the south, but that a bank of sea fog moving in from the northeast was laying just off the coast from Skateraw northwards.

1.8 Aids to navigation

Not relevant.

1.9 Communications

G–AXJS carried a single VHF communications equipment and was in contact with Aberdeen ATC from 1641 hrs until 1648 hrs. A transcript of these radio communications is at Appendix 1.

1.10 Aerodrome and ground facilities

Not relevant.

1.11 Flight recorder

Not required and not fitted.

1.12 Examination of the wreckage

Most of the wreckage, with the exception of the engine, the cockpit, the centre section, and the inboard area of the starboard wing was recovered.

Analysis of the damage indicated that the aircraft struck the sea with its port wing and that this caused a failure of the main spar in the region of the third wing rib out from the root. The aircraft then cart-wheeled and the starboard wing broke off downwards and backwards in relation to the fuselage. Finally the fuselage and tail assembly struck the water inverted.

No evidence came to light of any defect or damage that was not attributable to impact with the sea.

The damaged fuel tank (capacity 8.36 imp/gals) was found to contain 2¾ gallons of fuel and 1¾ gallons of sea water. The filler cap was secure, the float-type contents indicator was satisfactory, except that the indicator wire was bent; and the breather hole in the guidance tube was clear and was correctly positioned in the forward facing direction.

In sum, examination of the wreckage recovered revealed no indications of pre-impact failure or malfunction of any kind.

1.13 Fire

There was no evidence of fire either in the wreckage or in the observations of the eyewitnesses.

1.14 Survival aspects

The accident is not considered to have been survivable.

About the time that radio contact with the aircraft was lost, an eyewitness reported a crash to HM Coastguard.

Search and rescue action involving a ship of the Royal Navy, a lifeboat of the Royal National Lifeboat Institution and a Sikorsky S-61 helicopter of British European Airways Helicopter Ltd, was initiated forthwith. Sea fog and bad visibility obliged the helicopter to return but the Navy picked up floating wreckage about ½ mile north of Skateraw and some ¾ mile off shore at 2015 hrs. The pilot was not found during this search.

1.15 Tests and research

None necessary.

1.16 Medical aspects

After his pilot's medical examination in February 1970 Mr Burns had been under medical treatment for Meniere's disease for six months until February 1971. When he underwent a medical examination for a pilot's licence in February 1971 by a delegated authorised medical examiner (who was not his own general practitioner) he gave a negative answer on the appropriate form*

* Department of Trade and Industry, Civil Aviation Department MED Form 6.

to the question 'Have you had any illness or injury since the last medical examination?'. At his examination for renewal of his licence in April 1972, he again answered the question 'Give brief details of any medical treatment during the last two years',* in the negative. Meniere's disease is a disease of the inner ear that causes attacks of disorientation and sickness. It is a condition in which a patient may well experience long periods of remission, but attacks could then occur as a result of stress, shock, or minor infection. It is not, therefore, outside the bounds of possibility that Mr Burns could have suffered an attack in the air. Such an attack would not have to be a serious one to reduce significantly his chances of flying the aircraft safely in instrument flying conditions especially as it was not equipped with an artificial horizon.

Mr Burns' body was recovered from the sea on 22 November 1972. A post mortem examination showed death to have been caused by multiple injuries. No other factor which might have had a bearing on the accident was discovered.

* Civil Aviation Authority MED Form 46.

2. Analysis and Conclusions

2.1 Analysis

The weather forecast known to Mr Burns was the Aberdeen Airport local area forecast for the period 0600 to 1500 hrs. This forecast indicated good weather and although it did not extend to cover the period of the return flight the 'further outlook' section stated that there would be little change in the period up to 2100 hrs. Neither this forecast, nor the weather on the actual flight to Dundee, nor the information obtained by telephone about the visibility near Aberdeen Airport at 1610 hrs indicated a deterioration in the weather. The Aberdeen Airport meteorological office forecast issued at 1400 hrs for the period 1500 to 2100 hrs continued to forecast good weather. There was nothing, therefore, in the meteorological information available to the pilots to suggest that the return flight should not be undertaken.

The first radio communication between G–AXJS and Aberdeen approach control indicated that at 1641 hrs G–AXJS was abeam Stonehaven. The special weather report passed to Mr Burns at this time was not encouraging but he elected to continue with the intention of following the coast and the river Don below the main cloud base. The second and last, communication between G–AXJS and Aberdeen Airport indicated that the aircraft was abeam Portlethen at 1648 hrs. Mr Burns had lived at Portlethen for a number of years and was unlikely to have been mistaken about this position report. However, the aircraft crashed into the sea off Skateraw, 2 miles south of Portlethen, sometime within the next four minutes. It seems likely, therefore, that Mr Burns returned to the south for a short distance soon after reaching Portlethen, possibly with the intention of descending to see if he could continue the flight at a lower height. His comment on the radio 'If I get there' suggests that he already had in mind that the flight to Aberdeen might have to be abandoned.

Eyewitnesses in the area saw the aircraft flying over the sea at a height of about 200 feet until it disappeared in the sea fog. Thereafter the engine note continued normally for about 20 seconds when it suddenly increased and then stopped simultaneously with the noise of an impact. This evidence taken together with the aircraft's good technical history, the absence of any distress message, and the absence of any evidence of pre-crash failure or malfunction in the wreckage recovered, leads to the conclusion that the accident was unlikely to have been caused by a technical failure or malfunction.

Flight over the sea at 200 feet in visual flight conditions is neither difficult nor of itself unsafe, although there is no safety margin for engine failure. To be caught at that height in fog is, however, a very different matter.

To fly in cloud or fog on instruments – especially without an artifical horizon – within a limit of 200 feet is not easy. The difficulty was compunded in this case by the need to manoeuvre in some way to get out of the fog.

It is therefore probable that the pilot became disorientated and the aircraft lost height until it struck the water.

Although he was apparently in good health the possibility cannot be overlooked that an attack of disorientation or vertigo connected with Meniere's disease for which he had been treated in 1970 and 1971, might have recurred. If it did, even in a mild form, it would have adversely affected the pilot's ability to fly on instruments.

2.2 Conclusions

(a) *Findings*

(i) The aircraft's documents were in order and it had been maintained in accordance with an approved maintenance schedule.

(ii) The weight and centre of gravity were within the laid down limits, and there was ample fuel for the flight.

(iii) There was no evidence to indicate pre-crash failure or malfunction.

(iv) The pilot was properly licensed.

(v) There was no indication in the weather information available to the pilot before take-off of a deterioration that could affect the flight.

(vi) The aircraft flew into a bank of fog while the pilot was trying to continue the flight at low level over the sea by visual reference.

(vii) The aircraft was not fitted with an artificial horizon.

(viii) The aircraft lost height while the pilot was attempting to fly at low level, in fog, on instruments.

(b) *Cause*

The probable cause of the accident was that the pilot lost height while trying to fly on instruments in sea fog at low level, and the aircraft struck the sea.

3. Recommendations

3.1 That consideration be given to devising a means of checking a candidate's recent medical history for treatment of diseases that might affect the validity of his medical examination for a pilot's licence.

3.2 That the case for granting exemptions from the IMC rating flying test to pilots who have not held a full civil or military instrument rating be reviewed.

G M Kelly
Inspector of Accidents

Accidents Investigation Branch
Department of Trade and Industry
April 1973