



MINISTRY OF TRANSPORT AND CIVIL AVIATION

# CIVIL AIRCRAFT ACCIDENT

Report of the Court Investigation on

the Accident to

York G-AHFA

on 2nd February, 1953

LONDON: HER MAJESTY'S STATIONERY OFFICE

1954

TWO SHILLINGS NET

7, King's Bench Walk,  
Temple, E.C.4.  
16th November, 1953.

*To the Right Honourable Alan T. Lennox-Boyd, M.P.,  
Minister of Transport and Civil Aviation.*

SIR,

I have the honour to send you herewith my Report in the matter of the disappearance of the York aircraft G-AHFA in the North Atlantic Ocean in February of this year.

It is an occasion of deep regret to me, and, I believe, to my Assessors as well, that the Report fails to supply the answers to many questions which must have been exercising the minds of those who lost relatives or friends in the disaster.

To them I can only say through you that the evidence called before us pointed to nothing which explained what happened, nor did the parties who appeared at the Inquiry invite us to any positive finding.

For my own part I was relieved to see that the "Questions" propounded by the Attorney-General did not include a question asking what was "the probable cause of the accident". Such a question can be most dangerous and in other contexts has been known to lead, even when most conscientiously answered, to expensive and heart-breaking litigation. You will see in paragraph 31 of the Report how we have viewed the assessment of probabilities.

This was a most harmonious Inquiry and I do not think that any of the parties who were represented at it will be other than glad to find that the Report attaches blame to no one.

It is customary for the writers of letters such as this to take the opportunity of mentioning to the Minister the Assessors who have supported the Court. I gladly follow that happy custom here and pay a sincere tribute to the kindness, ability and good sense of my two friends whose names appear with mine as signatories of this Report. We quickly became a team and our unanimity was never seriously in doubt.

Since this is the third Inquiry into an air accident which I have been privileged to conduct I feel entitled to make personal mention of another individual whose work has greatly assisted the Court on each occasion. I refer to Miss B. Sowden of your Ministry who has on each occasion been in charge of the documents and copies of documents for the use of the Court. I have never known her system slip up or any failure in it cause a moment's delay in the proceedings. I am sure she is ably and loyally supported by other ladies in the Accidents Investigation Branch but I do not know their names.

I have the honour to be,

Sir,

Your obedient Servant,

ROLAND ADAMS.

---

THE CIVIL AVIATION ACT, 1949  
THE CIVIL AVIATION (INVESTIGATION OF ACCIDENTS) REGULATIONS, 1951

---

Report of the Public Inquiry into the cause and circumstances of the accident which occurred on the 2nd February, 1953, to the York aircraft G-AHFA.

AIRCRAFT :

YORK  
Type 685 Series C.I.  
Aircraft Serial Number 1304.

ENGINES :

Four Rolls-Royce Merlin.

REGISTERED OWNERS : Lancashire Aircraft Corporation Ltd.

OPERATORS : Skyways Ltd.

CREW : Captain D. Nicholls, D.F.C.  
First Officer P. E. Walton.  
Navigating Officer A. E. Chopping.  
Radio Officer J. A. Davis.  
Engineer Officer R. G. Lawrence.  
Air Hostess P. M. Newton.

All missing presumed killed.

PASSENGERS : 33—All missing presumed killed.

PLACE OF ACCIDENT : North Atlantic Ocean in about Lat.  $46^{\circ} 15' N$ . Long.  $46^{\circ} 32' W$ .

DATE AND TIME : 2nd February, 1953, at about 0531 hours G.M.T.

---

Unless otherwise stated all times in this Report are G.M.T., all bearings, courses and wind directions are true and all heights are heights above mean sea level.

---

### INTRODUCTION

1. At 2325 hours on the 1st February, 1953, the "York" aircraft G-AHFA (hereinafter called "FA") belonging to Lancashire Aircraft Corporation Ltd. (hereinafter called "the Owners") and operated by their wholly-owned subsidiary Skyways Ltd. (hereinafter called "the Operators") while engaged on a trooping flight from Stansted, Essex to Jamaica under contract with the Air Ministry took off from Lagens Airfield in the Azores on a planned rhumb line track at 8,000 feet via Torbay (St. John's) to Gander, Newfoundland.

2. The aircraft was manned by a crew of six, i.e. a Captain, a 1st Officer, a Navigating Officer, a Radio Officer, an Engineer Officer and an Air Hostess, and carried 33 passengers whose names are shown upon the Passenger Manifest. There was no freight and the baggage carried was of no significance to this inquiry. The take off weight was 68,898 lbs. as against an authorised maximum take-off weight of 70,000 lbs.

3. The weather forecast for the route indicated favourable flying conditions and there is no reason to suppose that the weather actually experienced differed materially from that forecast.

4. A "Pomar" (Positional Operational Meteorological Aircraft Report) was transmitted at 0010 hours on the 2nd February and this was followed by four further "Pomars" at intervals of approximately one hour and it is reasonable to assume that no trouble was encountered up to the time of dispatch of the last "Pomar" (0425 hours) when the position of the aircraft at 0410 hours was given as Lat.  $44^{\circ} 32' N$ ., Long.  $41^{\circ} 38' W$ .

5. At 0531 hours the Radio Operator on duty at Gander received an Urgency Signal from FA giving the position at 0530 hours as Lat.  $46^{\circ} 15' N$ . Long.  $46^{\circ} 31' W$ . This was followed immediately by the Distress Signal "S.O.S., S.O.S., S.O.S. de G-A" abruptly terminated at that point giving the impression that the transmitting station had gone off the air.

6. No further communication of any kind was received from FA and extensive sea and air searches set in motion by the Canadian and U.S. authorities failed to discover any trace of the aircraft or its occupants. It must be accepted that all the passengers and crew lost their lives.

7. The main problem for the Court was to discover what sort of catastrophe overtook this aircraft which had covered more than half of its intended route without apparent incident or difficulty.

## PART I

### THE AIRCRAFT

8. FA was constructed in 1946 by A. V. Roe & Co. Ltd. and was first operated by British South American Airways Corporation. In 1949 the ownership was transferred to British Overseas Airways Corporation and in 1951 to the Owners. The aircraft was progressively overhauled by the Owners and the Certificate of Airworthiness renewed on the 30th January, 1953. Up to the time of the accident it had flown a total of 6,418 hours and there is no record of any previous accident in its history.

9. The engines fitted in the aircraft were four Rolls-Royce Merlin 502 liquid-cooled engines each with 12 cylinders in two banks of 6. These engines had an approved life of 1,000 hours between complete overhauls. At the time of the accident each engine had run approximately 225 hours since the last complete overhaul by the makers.

10. The propellers were Hamilton "Hydro-matic" type metal three bladed variable pitch airscrews manufactured by De Havilland (Airscrews) Ltd. These propellers had an approved life of 1,200 hours between overhauls and at the time of the accident they had run :—

Port outer	695 hours.
Port inner	1,137 "
Starboard inner	225 "
Starboard outer	143 "

11. A Certificate of Safety for the aircraft, the engines and engine installations and the radio station was issued by the duly licensed Engineers authorised in that behalf on the 31st January, 1953, and was valid for 80 hours or 14 days or until a serious defect should occur within those periods. There was in addition the usual Pre-Flight Check at Stansted on the 1st February, 1953.

12. It is not proposed here to set out details of so well known a type of aircraft except such as might be thought to have a bearing upon the accident under investigation. The following information will however serve as a foundation for some of the later observations in this Report:—

- (a) No anti-icing or de-icing system was fitted to the propellers.
- (b) The leading edges of the main planes were fitted with the TKS de-icing system and the empennage with the Dunlop de-icing system.
- (c) Carburettor anti-icing was secured by
  - (i) hot air from inside the engine cowling supplied by an alternative air-intake shutter.
  - (ii) circulation of engine lubricating oil through the carburettor butterfly valves.
- (d) The engines and the wing centre fuel tank were protected by individual methyl-bromide fire-extinguishing systems and hand fire extinguishers were placed at strategic points about the crew and passenger compartments and the galley.
- (e) The aircraft was equipped with 6 inflatable rubber dinghies and an adequate supply of lifebelts and pyrotechnic signals. There was one emergency radio transmitter for use from a dinghy. The Air Navigation (General) (Amendment) Regulations, 1950, call for 2 such transmitters to be carried on oceanic routes but the Court is of opinion that this technical insufficiency was of no significance in the circumstances of this case.

## PART II

### THE CREW

13. Captain Donald Nicholls, D.F.C., who was in command of FA was born on the 1st July, 1922. His total of flying-hours up to the 31st January, 1953, was 5,590 of which 550 hours were in command of York aircraft during the six months immediately prior to the accident. He held Air Line Transport Pilot's Licence No. 25277 with a York endorsement in Group 1, valid until the 8th June, 1953. He had carried out the prescribed Periodic Flight Check on the 26th November, 1952, the report on which was "Satisfactory". This officer had no previous experience of flying on the Atlantic routes.

14. First Officer Peter Edward Walton was born on the 17th February, 1923. His total of flying hours up to the 31st January, 1953, was 2,106 of which 455 hours had been completed as Co-Pilot on York aircraft during the six months immediately prior to the accident. He held Commercial Pilot's Licence No. 35798 with a York endorsement in Group 2 valid until the 1st May, 1953. This officer had completed the prescribed Periodic Flight Check on the 26th November, 1952, the report on which was "Satisfactory". He had no previous experience of flying on the Atlantic routes.

15. Navigating Officer Alex Edward Chopping was born on the 1st July, 1922. He held Flight Navigator's Licence No. 2045 valid until the 14th April, 1953. He had completed 4,770 hours as Navigator of which 423 hours were during the six months immediately prior to the accident, including 5 return flights across the North Atlantic one of which was via Lagens to Gander.

16. Radio Officer John Albert Davis was born on the 19th December, 1920. He held 1st Class Flight Radio Telegraphy Operator's Licence No. 2194 valid until the 8th July, 1953, and also a First Class P.M.G. (Marine) Licence No. 2302 and had completed 3,139 flying hours of which 501 hours were during the six months immediately prior to the accident including the same North Atlantic experience as the Navigating Officer.

17. Engineer Officer Raymond George Lawrence was born on the 19th May, 1913. He held Aircraft Maintenance Engineer's Licence No. 3083 in categories "A" and "C" endorsed for York aircraft and an "X" licence. These licences were valid until the 22nd April, 1953. He had completed 2,600 hours as Engineer Officer which included five return flights between the United Kingdom and Gander.

18. Air Hostess Pamela Margaret Newton was born on the 28th July, 1926. She had completed 3,475 hours as Air hostess and 36 hours as Pilot and had made two return flights across the North Atlantic.

### PART III

#### PRE-FLIGHT INCIDENTS

19. On the 31st January, 1953, FA was towed tail first by a tractor from the hangar at Stansted Airport towards a dispersal point for the purpose of calibrating the D/F loop. The wind at such

time was strong with gusts of greater force and as the aircraft was towed across the runway a powerful gust caught the elevators depressing them fully with such violence that the control column was forced out of the hands of the mechanic holding it, as a result of which both control columns struck the blind-flying panels breaking several instruments. It is to be observed that no external locks had been fitted to the elevators before the aircraft was taken out of the shelter of the hangar. Upon appreciating what had happened the mechanic fitted the aileron nuisance bar but the elevators not being locked were caught by another gust causing the aileron nuisance bar to snap in two. Not until then were the external control locks applied and the aircraft taken back to the hangar. As a result of this incident both blind-flying panels were removed, certain instruments changed, the remainder tested and the panels replaced. An unlicensed Airframe Inspector was then ordered to make and made a thorough visual check of the complete elevator control run and in due course made and signed an entry in the relevant Inspection Sheet to the effect that all controls had been checked and found serviceable. The Court has no reason to question the thoroughness with which this check was carried out and is unable to connect the mishap with the subsequent loss of the aircraft.

If the elevator controls had been damaged or weakened by shock it would have been likely that the consequences of such damage or weakening would have manifested themselves at take-off with a full load. FA successfully made two heavy take-offs and one landing on the 1st February, 1953.

20. The Technical Log was lost with the aircraft so that the only evidence available to the Court of anything that happened after the take-off from Stansted comes from members of the Airfield Staff at Lagens. FA was carrying an experienced Engineer Officer and there was ample evidence that he was attending closely to his duties during the servicing of the aircraft at Lagens. This servicing consisted first of all of re-fuelling the aircraft and replenishing its water tanks. During these operations Engineer Officer Lawrence was standing on top of the fuselage and himself removed the water tank caps which are situated several feet aft of the wing centre fuel tank and are clearly marked as well as being distinct from the fuel tank caps in size and general appearance. Some 50 to 60 litres of water were pumped in after which E/O Lawrence replaced and secured the tank caps. There was no evidence before the Court as to the circumstances in which the fuel was put in to the fuel tanks at Lagens but E/O Lawrence signed the receipt for 2,085 gallons

of aviation gasoline and it is reasonable to suppose that since he is known to have been on top of the fuselage when the water tanks were filled he also satisfied himself that the right quantity of fuel had been put into the fuel tanks. When it became known that the aircraft had been lost the "bowser" used in refuelling was checked for water or foreign matter and none was found.

The Court has no reason to suppose that any mistake was made during re-fuelling and re-watering at Lagens or that the presence of water in the fuel tanks need be considered as a likely cause of the accident.

21. There was evidence that on the pre-flight run-up of the engines at Lagens the starboard inner engine was vibrating and that in consequence of such vibration E/O Lawrence with the help of local mechanics changed six sparking plugs on that engine after which all engines were run up and pronounced serviceable by E/O Lawrence. There is no reason to suspect any unserviceability of the engines up to the time of departure from Lagens.

#### PART IV

#### THE WEATHER

22. FA's Weather Reports: From the evidence of the "Pomars" transmitted by FA which were compiled hourly the first being timed 0010 hours on the 2nd February up to 0410 hours the Weather Forecast for the flight can be seen to have been substantially correct. There were variable amounts of cloud stratiform in structure along the whole of the route the main tops being at between 7,000 feet and 8,000 feet. At 10,000 feet to which altitude FA received permission to ascend at 0020 hours from Air Traffic Control, Santa Maria, the aircraft was flying above cloud. From 0410 hours onwards no further weather information was transmitted by FA.

23. Reports from other aircraft: A notorial declaration made by Captain R. Hoffman, Commander of Trans-Ocean Airlines DC-4, aircraft N75416 which flew at 8,000 feet from Santa Maria, Azores to Gander about 3 hours later than FA confirms that the weather encountered en route was in the main such as would permit flying by Visual Flight Rules with occasional cumulus tops in which light rime icing was encountered. Throughout the whole flight no significant weather was encountered by this aircraft.

*indicated*  
24. The synoptic situation: A ridge of high pressure extended across the track of FA resulting in north westerly winds of a strength of 20 to 25 knots over the first half of the route decreasing in strength in the area of 42° N. and gradually backing in the area of 47° N. and increasing in strength. In such conditions it can reasonably be assumed that in the area in which and at the time at which the Distress Signal was sent there would be broken cloud with tops up to 8,000 feet. At 10,000 feet flying conditions should have been good without turbulence or risk of icing. The Court is satisfied that the cold front which was lying across Newfoundland and moving eastward during the early hours of the morning of the 2nd February could not have reached or affected the weather in the area in which the last message was sent out.

#### PART V

#### THE FLIGHT

25. It is not proposed in this Report to follow the course of the fatal flight of FA in detail. The Court had the benefit of a carefully prepared reconstruction of the flight in diagrammatic form which was put in evidence by Mr. H. Keeling an Operations Officer in the Directorate of Control and Navigation Services in the Ministry of Civil Aviation. The Court accepts the opinion of this experienced officer as to the most probable track of the aircraft from Lagens to the presumed place of the disaster and adopts his diagram as part of this Report to which it is annexed as Figure I. Basing itself upon this acceptance of Mr. Keeling's conclusions the Court cannot find any fault with the navigation of the aircraft.

26. There is no evidence of abnormality of any sort in what is known of the flight up to 0425 hours at which time the "Pomar" relating to 0410 hours was transmitted.

27. At 0531 hours O.A.C. Gander received a signal prefixed "X X X" from FA giving the position at 0530 hours as Lat. 46° 15' N. Long. 46° 32' W. This message was described by the receiving operator in these terms "readability fair but distinct, sending good and speed of operating steady, normal and good, there did not appear to be any hurry or increase in operating speed from the aircraft". This Urgency Signal which was incomplete in that it did not state the reason for sending it was followed after a scarcely perceptible break by the Distress Signal "S O S,

S.O.S., S.O.S., de G-A" after which the transmission broke off abruptly. There was a decided increase in speed of operating as compared with the previous messages.

28. The Court attaches no significance to the fact that the "Pomar" relating to the 0510 hours position was never transmitted. Transmissions of "Pomars" must in practice be subject to delay for various reasons and on the flights from Stansted to Lagens and from Lagens towards Gander "Pomars" were, in fact, sent out with a time lag of up to 25 minutes. Significance may, however, be attached to the fact that for the purpose of giving the 0530 hours position a recalculation must have been made which would not normally have been necessary. It is reasonable to assume, therefore, that trouble of some sort developed in the aircraft not less than two minutes before the transmission of the Urgency Signal. It seems unlikely that such trouble, whatever its nature may have been, was sufficient to produce a state of alarm among the crew of the aircraft until after the commencement of the transmission of the Urgency Signal. Such a signal is not one which indicates that immediate assistance is required. Had the crew been aware of a dangerous state of affairs it is reasonable to expect that the "distress" prefix would have been used at once or that an Urgency Signal giving the reason for sending it would have been sent out without waiting for the Navigating Officer to give the Radio Officer the re-calculated position. The fact that the Urgency Signal so far as it went was transmitted at normal speed and was followed immediately by the Distress Signal transmitted at a greatly increased speed and broken off abruptly before completion leads to the conclusion that trouble developed in a sudden and violent manner.

## PART VI

### THE RESCUE SERVICES

29. The Rescue Co-ordination Centre at Halifax N.S. received information of the distress at 0535 hours and at once alerted all the stations which could take useful action in the direction of search and rescue. A number of aircraft of the Royal Canadian Air Force was dispatched to search the area round the last reported position of FA and surface craft of the U.S. Coast Guard were also sent in to the area. By the time the searching aircraft were in the area the cold front had advanced and there were severe icing conditions with poor visibility. U.S. and Canadian aircraft were engaged upon searches on the 2nd,

3rd and 4th February and flew a total of 190 hours and covered 68,000 square miles. The area of search is shown in Figure 1.

30. The surface weather conditions were unfavourable as regards visibility, temperature and the state of the sea. The bad "ditching" characteristics of the York make it unlikely that any survivor could have got out of the aircraft when it reached the surface even after a controlled descent. The Court is therefore unable to conclude that the prompt and efficiently planned efforts of the searches to which it desires to pay tribute were ever likely to be rewarded with success.

## PART VII

### COMMENT AND DISCUSSION

31. The outstanding feature of this inquiry is the lack of evidence as to what caused the disaster. The number of possibilities is almost unlimited: among the possibilities none can be preferred as probabilities. The choice of the topics which are to be found discussed in the following paragraphs of this Report is not based upon any belief that in any one or combination of them the explanation of this disaster is to be found. The topics are discussed out of deference to the submissions of Counsel and to the witnesses whose evidence opened the matters before the Court.

32. The possibility of crew fatigue: The Operations Manual of the Owners issued for the guidance of the Operators and their crews devotes an important paragraph to the question of Crew Fatigue. It lays down that no Captain who is left to carry out his own time-table (as was Captain Nicholls in this case) should arrange a schedule which is liable to imperil the aircraft and its occupants through crew fatigue. The practice of the Operators is to allow an absolute minimum of 9 hours rest after 9 hours flying on normal schedule, that is to say when a flight does not entail more than 9 hours flying on one leg. On occasions when a flying time of 9 hours is required to be exceeded involving an elapsed time of more than 12 hours in any one day crew rest of not less than 12 hours is to be allowed.

EA took off from Stansted at 1106 hours on the 1st February and it can reasonably be assumed that the crew came on duty not later than 1000 hours and probably as early as 0900 hours. This means that by the time they reached Lagens at 1913 hours they had been on duty at least 9 hours and perhaps longer. The turn-round at Lagens

occupied 4 hours 12 minutes during which time it is unlikely that any member of the crew had any time for recuperative rest. This carries the total of hours on duty to over 13 hours at the time of take-off from Lagens and to over 19 hours at the time of the Distress Signal. The total of hours on duty by the time the aircraft should have reached Gander would have been nearly 23 hours, and there a landing in the dark under Instrument Flight Rules would have had to be undertaken.

It is for consideration whether operators of flights of this nature ought not to provide provisional schedules for the guidance of Captains allowing for adequate periods of rest the duration of which should be related to hours on duty and not to flying time.

33. <sup>on</sup> The possibility of icing; <sup>the aircraft</sup> It has already been indicated that the Court does not think that FA encountered icing. The Operations Manual of the Owners contains the following:—

#### “Flights in Icing Conditions.

Before commencing a flight, Captains must carefully check their route forecast and should icing conditions be apparent alternative aerodromes must be available outside the icing belt. Where the aircraft is fitted with leading edge and engine de-icing equipment the Captain must estimate the period of time where heavy icing conditions may exist; *this should not exceed thirty minutes.* If, after 30 minutes in heavy icing conditions, the Captain has been unable to climb out of it, or there is no sign of clearance, the Captain must turn back.” <sup>these special</sup>

The Operators also issued a supplementary instruction to cover Jamaica Trooping flights in which is to be found the clear order “Under no circumstances will any flight over any sector be commenced if any doubt exists as to its practicability”. These instructions can be regarded as reasonable and sufficient.

<sup>the aircraft</sup> 34. The Certificate of Airworthiness permitted FA to fly in any conditions of icing for indefinite periods. As far as the evidence goes no actual flight tests have ever been carried out to determine whether or not some limitation ought to be indicated in the Certificate so that Operators may know what is the degree of icing in which it is safe to operate such an aircraft for prolonged periods.

35. The possibility of an engine fire: Engine fires in Rolls-Royce Merlin 502 series engines have been known. A great deal of evidence was

<sup>the possibility of engine fire</sup> led before the Court upon this topic. The possibility of fire originating in the induction system cannot be disregarded but a development of such a nature should have been apparent to the Pilot immediately through the noise of the back-fire which would lead him to look at once at his engine instruments. It is difficult to imagine an induction fire leading to so sudden and catastrophic a change in the situation as is indicated by the breaking off of the Urgency Signal and the immediate sending of the Distress Signal.

36. In considering the possibility of engine fire it is to be remarked that a potential contributory cause of such fires is the loss of lubricating oil. If this loss is detected in time the appropriate steps can be taken to prevent it leading to serious trouble. It is, therefore, important that the Pilot should have every possible assistance in detecting any such loss. One valuable aid which under existing regulations is not mandatory is the oil contents gauge associated with some sort of warning device. Reliance on the oil pressure gauges can lead to a dangerous situation in a number of combinations of circumstances, e.g., a loss of oil through the feathering pipe-lines which may not be apparent from a reading of the pressure gauges until the point of starvation has been almost reached. The need for oil contents gauges is the greater where the positioning, presentation of and night-lighting for the engine oil pressure and temperature gauges do not make for ready observation of changes in indications as is the case on York aircraft.

<sup>the</sup> 37. The engine fire-extinguisher system on York aircraft appears on the evidence to be satisfactory in circumstances when the engine fire drill which is contained in the Operations Manual and displayed in the cockpit is followed promptly and correctly and when there are no further complications, e.g., the propeller failing to feather. The Court <sup>is</sup> of opinion that a careful study should be made of the possibilities of transferring the contents of the methyl-bromide bottles from one adjacent engine to another so duplicating the fire extinguisher supply to any one engine.

<sup>felt</sup> 38. The Court feels constrained to point out that the number of mechanical failures or combinations of such failures which could produce an engine fire is incalculable. So long as machines of such complexity exist those who entrust their lives to their performance cannot be guaranteed more than a reasonable standard of knowledge, skill and devotion to duty on the part of those who design, manufacture, test, operate, maintain or

fly them. The Court has been unable to detect any failure under these heads on the part of any of those responsible for FA in any of those capacities.

39. The "ditching" characteristics of the York: The York is a high-wing monoplane the whole of the fuselage of which is below the level of the main planes. It is unlikely that the aircraft could remain afloat for more than a few seconds after even a fully controlled descent on to smooth water. In a rough sea the aircraft would almost certainly break up almost immediately and it is extremely unlikely that any of the occupants who were alive when it touched the water would have any chance of using the escape hatches or of launching any of the six internally stowed dinghies provided for such emergencies.

## PART VIII

### RECOMMENDATIONS

40. Steps should be taken by all operators to review the maintenance discipline in and about hangars. Such a failure as the omission to ensure that controls are locked against the possibility of damage caused by gusts of wind or the slip streams of other aircraft indicates a slovenly attitude on the part of a ground staff which can be corrected only by a tightening of discipline.

41. Consideration should be given to the question whether it would be right to impose upon operators the duty of providing provisional schedules for the guidance of Captains allowing for adequate periods of genuinely recuperative rest the duration of which should be related to duty time and the circumstances of the flight, e.g., type of aircraft, crew complement, noise-level, climatic conditions, route characteristics, and not simply to flying time.

42. The whole subject of crew fatigue should receive study at an impressive level. This is not simply a question of establishing certain time standards based on medical opinion but involves an approach to the much more difficult problem of finding ways of preventing the subjective preferences of individuals from accepting undesirable risks and so imposing the acceptance of the same risks upon others. The topic lies within the sphere of labour-relations as well as forming part of the proper subject matter of psychological studies. It is for consideration whether a Departmental Committee should be set up to investigate this important subject.

43. Consideration should be given to the desirability of strengthening or reinforcing Clause 40 in the "Compulsory Conditions" of Certificates of Airworthiness by imposing some limitation upon the permitted operation of an aircraft in terms of the degree and duration of icing to be expected.

44. Oil-contents gauges or some other reliable means of detecting loss of oil should be made a mandatory requirement on all public transport aircraft.

45. Study should be directed to the possibilities of transferring the contents of the methyl-bromide bottles from one adjacent engine to another.

46. Consideration should be given to the problem of providing external stowage for a proportion of the dinghies carried together with an automatic or remotely-controlled means of inflation upon ditching, more especially on aircraft with poor ditching characteristics.

### QUESTIONS AND ANSWERS

The Court's answers to the questions submitted by the Attorney-General are as follows:—

1. Who was:—

- (a) the registered owner,
- (b) the operator,
- (c) the hirer,

of the aircraft on 1st February, 1953.

- (a) Lancashire Aircraft Corporation Ltd.
- (b) Skyways Ltd.
- (c) Air Ministry.

2. Did the aircraft have a valid certificate of airworthiness?

Yes.

3. Was there a valid C. of S. for the flight?

Yes.

4. Had the aircraft been maintained in accordance with the approved schedule?

Yes.

*Handwritten notes:*  
The registered owner of the aircraft was Skyways Ltd. in which the Air Ministry had a 50% share. The aircraft was operated by Lancashire Aircraft Corporation Ltd. on 1st February 1953. The aircraft was not maintained in accordance with the approved schedule.

5. Were the crew licensed for the proposed flight from Stansted to Jamaica?

*Yes.*

6. Were the crew adequately experienced for the flight from Stansted to Jamaica?

*Yes.*

7. Was the aircraft loaded and trimmed within the specified limits set out in the Certificate of Airworthiness when it left Lagens?

*Yes.*

8. Did the aircraft depart from Lagens with sufficient fuel and oil for the proposed flight?

*Yes.*

9. Were the forecast weather conditions supplied to the Captain at Lagens suitable for the flight from Lagens to Gander?

*Yes.*

10. Did the actual weather differ materially from that forecast?

*No.*

11. Was the navigation of the aircraft satisfactory after departure from England?

*Yes.*

12. Was adequate radio communication maintained between the aircraft and ground stations after departure from Lagens?

*Yes.*

13. Did the Search and Rescue services function satisfactorily?

*Yes.*

14. Was the flight from England to Gander via the Azores a suitable operation to be carried out by a York aircraft in the prevailing weather conditions?

*Yes.*

15. What was the cause of the accident?

*Unascertainable.*

16. Was the loss of the aircraft caused or contributed to by the wrongful act or default of any person or party?

*No.*

(Sgd.) ROLAND ADAMS  
FRANK W. WALTON  
VERNON JESSUP

16th November, 1953.

APPENDIX I

LIST OF WITNESSES

- DANIEL ASTLEY, Inspector of Accidents, Ministry of Civil Aviation.
- ERIC NEWTON, Chief Investigating Officer, Accidents Investigation Branch, Ministry of Civil Aviation.
- FREDERICK WILLIAM CLARK, Mechanic, Lancashire Aircraft Corporation.
- LEONARD THOMAS McGRATH, Inspector, Lancashire Aircraft Corporation.
- HERBERT WILLIAM GRAY, Radio Engineer, Lancashire Aircraft Corporation.
- HARRY NIXON, Deputy Chief Inspector, Skyways Ltd.
- ROBERT JAMES PENNEY, Inspector, Lancashire Aircraft Corporation.
- WALLACE IVOR LASHBROOK, Chief Pilot, Lancashire Aircraft Corporation.
- ALBERT JAMES JOHNSON, Traffic Superintendent, Skyways Ltd.
- HENRY PHILLIP SNELLING, Operations Manager, Skyways Ltd.
- JAMES COLLIE CUMMING, Principal Scientific Officer, Meteorological Branch, Air Ministry.
- HAROLD KEELING, Operations Officer, Directorate of Control and Navigational Services, Ministry of Civil Aviation.
- DONALD CAMPBELL CLARK, Operations Officer, Ministry of Civil Aviation.
- LESLIE DOUGLAS CHAPMAN, Base Engineer, Skyways Ltd.
- WALTER TYE, Chief Technical Officer, Air Registration Board.
- WILLIAM PERCIVAL CALVERT, Aero Service Manager, Rolls-Royce Ltd.
- The evidence of the following was given by affidavit:—
- ACACIO VIEIRA JANUARIO, Chief of the Control Office, Santa Maria, A.T.C. Centre.
- LUIS PERESTRELLO, Socony Vacuum Portuguesa.
- ANIBAL COELHO DE MELO, Meteorological Office, Lagens Airfield.
- JOSE ANTONIO MARTINS ROSA RODRIGUES, Chief Operations Officer, Lagens Airfield.
- JOAQUIN JOSE DIAS, Mechanic, Lagens Airfield.
- RAY Y. HOFFMAN, Captain of Transocean Airlines aircraft N75416, Commander U.S.C.G.
- WINSLOW H. BUXTON, Commanding Officer of U.S.C.G. Cutter "Yakutat".
- CHESLEY CHARLES FOWLER, Radio Officer, Canadian Department of Transport, Gander, N.P.

APPENDIX II

LIST OF REPRESENTATIONS

- THE SOLICITOR-GENERAL (SIR REGINALD MANNINGHAM-BULLER, Q.C., M.P.) and MR. P. J. STUART BEVAN (instructed by the Treasury Solicitor) appeared on behalf of the Attorney-General.
- MR. RODGER WINN and MR. C. H. DE WAAL (instructed by Messrs. McKenna & Co.) appeared on behalf of Skyways Ltd.
- MR. KENNETH JOHNSTON, Q.C., and MR. R. LOCKNER (instructed by Messrs. Claremont, Haynes & Co.) appeared on behalf of Messrs. Rolls Royce Ltd.
- MR. L. G. SCARMAN and MR. J. R. PHILLIPS (instructed by Messrs. Stanley & Co.) appeared on behalf of the Air Registration Board.
- MR. J. N. B. PENNY (instructed by the Treasury Solicitor) appeared on behalf of the Air Ministry and the Ministry of Civil Aviation.
- MR. MICHAEL EASTHAM and MR. MICHAEL HITCHCOCK (instructed by Messrs. Kingsley, Napley & Co.) appeared on behalf of the personal representatives of Mr. A. G. Chopping, Navigator, and (instructed by Messrs. Guillaume & Co.) appeared on behalf of the personal representatives of Miss P. M. Newton, Stewardess.
- MR. K. A. G. RAYBOULD (Solicitor, of Messrs. Preston, Lane-Claypon & O'Kelly) appeared on behalf of the personal representative of Captain D. Nicholls.
- MR. TUDHOPE appeared as an observer on behalf of the Canadian Government.
- MISS CLARK appeared as an observer on behalf of the United States Government.

APPENDIX III

The Court sat at Holborn Town Hall as follows:—

2nd July, 1953.

3rd July, 1953.

6th July, 1953.

7th July, 1953.

After the close of the Public Hearing the Court and Assessors met on eight separate occasions for the purpose of considering and writing the Report.

*Crown Copyright Reserved*

PUBLISHED BY HER MAJESTY'S STATIONERY OFFICE

To be purchased from

York House, Kingsway, LONDON, W.C.2    423 Oxford Street, LONDON, W.1

P.O. BOX 569, LONDON, S.E.1

13a Castle Street, EDINBURGH, 2    1 St. Andrew's Crescent, CARDIFF

39 King Street, MANCHESTER, 2    Tower Lane, BRISTOL, 1

2 Edmund Street, BIRMINGHAM, 3    80 Chichester Street, BELFAST

or from any Bookseller

1954

Price 2s. 0d. net

Printed in Great Britain under the authority of Her Majesty's Stationery Office  
by Fosh & Cross Ltd., London