Background Information into

Report of Non-Statutory Inquiry into

Accident involving Aer Lingus DC3 EI-ACF, the St. Kieran,

near Birmingham on 1 January 1953

conducted by Mr. Patrick Keane, S.C. in March 2002

The late Capt. T.J. Hanley, was the Captain of an Aer Lingus Dakota DC3, the St. Kieran, registration EI-ACF, on a scheduled flight from Dublin to Birmingham, on 1 January 1953.

Both engines cut out while the aircraft was descending for approach at Birmingham and Captain Hanley carried out a forced landing in a farm at Spernall. The Co-Pilot was the only casualty, sustaining head and back injuries; the hostess and the 22 passengers were unhurt.

An Investigation, carried out by the U.K. Ministry of Civil Aviation, concluded that the aircraft's engines had cut out because both engines were being fed by fuel from the same tank which had run dry.

Captain Hanley refused to accept this conclusion at the consultation phase of the investigation process and he requested the U.K. to hold a Public Inquiry. The U.K. Minister refused this request.

Captain Hanley requested the Irish Minister for Industry and Commerce to hold a Public Inquiry and this was arranged. Mr. Thomas Teevan, S.C., was invited to hold this Inquiry assisted by three Assessors:

Comdt. James Teague, Air Corps,
Comdt. Patrick Swan, Air Corps
Captain Ritsaert van den Hornet, of K.L.M. Royal Dutch Airlines.

The Inquiry lasted several days in June 1953 and was widely reported in the national newspapers.

The Court was convened under The Air Navigation (Investigation of Accidents) Regulations, 1928.

Mr. Teevan made his report to the Minister under Regulation 10(8) of the above which states:

"The Court shall make a report to the Minister stating its findings as to the cause of the accident and the circumstances thereof, and adding any observation and recommendations which the Court thinks fit to make with a view to the preservation of life and the avoidance of similar accidents in the future, including a recommendation for the cancellation, suspension or endorsement of any licence or certificate".

The Court found:

"The primary cause of the accident was the loss of engine power due to fuel starvation. The Court finds that this was caused by selecting the port engine to the Right Main tank to which the starboard engine was also selected.

The loss of engine power alone was not the sole cause of the accident, which could have been avoided had the crew diagnosed the cause of the trouble and changed the fuel feed to another tank.

The failure to diagnose fuel starvation was probably due to two circumstances: i.e. first the lack of co-ordinated effort by the Pilot and First Officer after the engines cut; secondly the knowledge of the crew that ample fuel for the flight was on board and their belief that the engines were drawing from their respective main tanks.

The actual force landing of the aircraft in conditions of low cloud, poor forward visibility and unfavourable terrain was skilfully executed and resulted in the passengers escaping unharmed".

Despite its power to do so under Regulation 10(8) quoted above, the Court made no recommendation as to any endorsement or revocation or cancellation of the Pilots' Licences.

The then Minister for Industry and Commerce, on the sole recommendation of the Secretary and against the views of the Chief Aeronautical Officer, decided that Captain Hanley should never again fly passenger aircraft and this effectively ended Captain Hanley's flying career which had been both long and distinguished. Being 47 years old, he had flown in the Air Corps up to 1945 and although he joined Aer Lingus in 1939, he did not fly with them until after the Emergency.

The Co-Pilot had his licence endorsed for 1 year and never sought a renewal. The injuries he received may have precluded the granting of a licence. He joined this Department as an Aeronautical Officer -Operations and retired in or about 1985, and is still alive.

Captain Hanley worked as a Flight Dispatcher in Shannon and later emigrated to the U.S.A.

There was no system of appeal to the Court of Inquiry.

In 1974, on his return to Ireland in retirement, Captain Hanley through the Irish Airline Pilots' Association, petitioned the Minister to examine the case.

Without prejudice, the Minister in 1977 re-awarded Captain Hanley his Pilot's Licence, though he was obviously too old to exercise it's privileges.

The Minister gave an undertaking to establish an appeals mechanism after the holding of Investigations. This was given effect in the legislation passed in 1997 (S.I. No. 205 of 1997 Air Navigation (Notification and Investigation of Accidents and Incidents) Regulations, 1997).

Over the past number of years the Hanley family have sought the quashing of the original verdict. This could not be agreed to; however, it was mooted that Minister O'Rourke could see the possibility of an apology for the harshness of the endorsement of Captain Hanley's licence. The Hanley family were thankful for this offer but rejected it saying it was long overdue but they wanted the 1953 verdict quashed.

In recent years there were numerous correspondence, meetings and consultations between the family of the late Capt Hanley, solicitors acting on their behalf - Hanahoe & Co., the Office of the Attorney General, and the Minister for Public Enterprise, Mrs. Mary O'Rourke, T.D. In 2002, with the agreement of the Hanley family and their legal representatives, the Minister decided to appoint a Senior Counsel (S.C.) to carry out a review of the 1953 Public Inquiry. Following discussions between the Attorney General's office and the Hanley's legal representatives, it was agreed that Mr. Patrick Keane S.C. be selected to carry out the review and he was duly appointed by the Minister. He was assisted by two assessors, Mr. Kevin Darcy, Investigator, and Capt. Stubben, Technical Expert.

The agreed terms of reference for Mr. Keane's review were as follows:

(a) *"Is there any evidence now available that was not available to the Court of Inquiry which by itself or together with the evidence that was available to the Inquiry might have led it to reach a different conclusion"*

(b) *"Was it reasonable for the original Court of Inquiry in 1953 on the evidence before it to conclude as a matter of probability that fuel mismanagement had been the cause of the crash"*.

The second inquiry into this non-fatal accident was held in the then Department of Public Enterprise, 44 Kildare Street, on 25, 26, and 27 March 2002.

The role of the Department of Public Enterprise in this review was to facilitate the process by providing a venue and support facilities for the inquiry. It also made available all Departmental records relating to the accident, the original UK investigation and the Teevan Inquiry. The Department did not seek to influence the outcome by supporting or opposing any of the parties to the inquiry.

The report of the second inquiry was received by the then Minister in June 2002, and was copied to the Hanley's Solicitor.

Mr Keane's Inquiry dealt with question (b) first.

Question B: *"Was it reasonable for the original Court of Inquiry in 1953 on the evidence before it to conclude as a matter of probability that fuel mismanagement had been the cause of the crash"*

Answer : *"It was reasonable for the Court of Inquiry in 1953 based on the evidence to conclude as a matter of probability that fuel mismanagement had been the cause of the crash on 1 January 1953"*

He then dealt with question (a) as follows:

Question A: *"Is there any evidence now available that was not available to the Court of Inquiry which by itself or together with the evidence that was available to the Inquiry might have led it to reach a different conclusion".*

Answer : *The answer is in the negative.*

The attached document is the full report of Mr. Keane's Inquiry.

By way of explanation, Mr Keane's Inquiry was convened by the then Minister of Public Enterprise. In June 2002 this Department was renamed the Department of Transport.

Kevin Humphreys
Chief Inspector of Accidents

DEPARTMENT OF PUBLIC ENTERPRISE

REPORT OF NON-STATUTORY INQUIRY

INTO NON-FATAL AIR CRASH AT BIRMINGHAM

ON JANUARY 1st, 1953

1. Report:

1.1 This report has been prepared pursuant to an Inquiry requested by the Minister of Public Enterprise, into a non-fatal aircrash at Birmingham on 1.1.1953. The said Inquiry was held on 19th, 20th, 21st, 22nd, 23rd, 26th, 27th, 28th, 29th, and 30th May, 1953 and 1st June, 1953, and was conducted by Thomas Teevan SC (as he then was) pursuant to the Air Navigation (Investigation of Accidents) Regulations, 1928 – 1943.

2. Facts

2.1 At 9.36 a.m. on 1.1.53, a DC-3 Aircraft EI-ACF, belonging to and operated by Aer Lingus Teoranta (hereinafter called "Aer Lingus") piloted by Captain Thomas J. Hanley and First Officer Patrick J. Whyte, took off from Dublin Airport for Birmingham. The air hostess was Philomena McCluskey and there were 22 passengers on board.

2.2 The route followed was by way of Point Lynas, Wallasey, Whitegate and Lichfield to Birmingham. The two-engined plane reached Lichfield at 10.56 a.m., and within a few minutes thereafter, lost power from both engines when flying at a height of about 5,000 ft. and the aircraft made a forced landing in a field at Spernall, Warwickshire, 14 ½ miles south, south west of Elmdon Airport. The aircraft was extensively damaged, but all passengers and crew, with the exception of the First Officer, escaped without serious injury.

2.3 The Teevan Inquiry was required to ascertain, as its main remit, the cause of the engine failure, and whether the resulting accident could have been avoided.

3. The Aircraft

3.1 The aircraft, a Douglas DC-3 built by the Douglas Aircraft Corporation, Inc., of Santa Monica, California, USA, under the serial number 42957, was delivered to Air Lingus on 24.2.46 and was duly registered under the nationality and registration mark EI-ACF, the Certificate of Registration No. 66 being issued on 1.3.46.

3.2 Up to 1.1.53, the aircraft had completed a total flying time of 10968 hours 35 minutes. Since the last checks 7 and 8 – completed on 16.12.52 – it had flown 85 hours 55 minutes. The Certificate of Airworthiness No. 18 was last renewed on 20.2.52 and was valid until 19.2.53.

3.3. The port engine no. 356655 had completed 85 hours 55 minutes since its last overhaul up to 1.1.53. The starboard engine, no. 361759, had completed 462 hours 20 minutes since its last overhaul up to 1.1.53, both well within the limits laid down, the approved time to overhaul being 900 hours.

3.4 The propellers and other component parts and instruments were also well within the limits of their respective approved times to overhaul.

3.5 The Certificate of Safety was issued at 6.00 a.m. on 1.1.53 on completion of a check 2 (100 hrs. inspection) and was valid until 6.00 a.m. on 5.1.53.

3.6 On the flight to Birmingham on 1.1.53, the aircraft carried, apart from its normal equipment and fuel, a crew of two pilots and a hostess, 22 passengers, 308 kgs. of baggage and 87 kgs. of cargo, the total weight being 11433 kgs., well under maximum permissible take-off weight allowed by the Certificate of Airworthiness which stated a maximum of 26900 lbs.

3.7 The trim was within the limits laid down in Certificate of Airworthiness.

3.8 As originally built, the aircraft carried four fuel tanks: two forward (main) and two aft. (auxiliary). One main and one auxiliary tank was in each wing. The capacity of each main tank was 168 imperial gallons (all references hereafter to gallons is to imperial gallons). The capacity of each auxiliary tank was 167 gallons. The port auxiliary tank had been removed as part of the fleet standardization programme prior to 1.1.1953. The total fuel capacity between the three remaining tanks was thus 503 gallons.

3.9 The fuel system was arranged so that fuel could be supplied to either or both engines from any of the wing tanks. The fuel tank selectors were located in the standard position on the left and right of the engine control pedestal. There was no provision for fuel transfer between tanks.

3.10 In addition to the two engine driven fuel pumps, there were two electrically driven booster pumps. The booster pumps were designed to maintain sufficient pressure for operation of the aircraft in case either engine driven pump failed.

4. The Crew

4.1 Captain Thomas James Hanley, born on 11.04.1906, was in possession of an Airline Transport Pilot's Licence No. 32, endorsed for Douglas DC-3 aircraft, issued on 8.11.51, and valid until 5.5.53. His instrument rating was valid until 3.3.53. He was also the holder of a Flight Radio Operator's Licence Radiotelephony (General) No. 88, issued on 3.3.1952 and valid until 5.11.1953. He had last had a line check on 12.3.1952. He had been promoted to Captain on 1.5.1945, and to Senior Captain, Class II on 1.12.1946. On 1.4.1950 he was promoted to Senior Captain, Class I.

4.2 Captain Hanley had completed up to 1.1.53 a total number of flying hours of 7303 hours 05 minutes of which 3369 hours, 50 minutes, had been as first pilot on DC-3 aircraft. He was very familiar with the Dublin-Birmingham route and with Elmdon Airport.

4.3 First Officer Patrick Joseph Whyte, stated to be then about 30 yrs. of age, was the holder of an Airline Transport Pilot's Licence no. 66 endorsed for Douglas DC-3 aircraft, issued on 29.12.1952 and valid until 15.4.1953. His instrument rating was valid until 21.10.1953. He was also in possession of a Flight Radio Operator's licence Radiotelephony (General) no. 42, issued on 4.7.1951 and valid until 23.4.1953. He had had a line check on 16.11.1951.

4.4 First Officer Whyte had flown a total of 3599 hours, 25 minutes up to 1.1.1953, of which 2668 hours, 20 minutes were as co-pilot on Douglas DC-3 aircraft. He too was very familiar with the Dublin-Birmingham route and Elmdon Airport.

4.5 Captain Hanley and First Officer Whyte had flown together on eight previous occasions during 1952, five of which were during the month of December.

5. The Flight

5.1 The aircraft had been refuelled between 5.45 a.m. and 6.00 a.m. on 1.1.53 to the normal fuel load of 300 gallons for the Dublin to Birmingham flight, distributed as to 120 gallons in the left main tank, 115 gallons in the right main tank and 65 gallons in the right auxiliary tank. After refuelling the tanks had been dipped and the quantity and distribution entered in the fuel and oil record. In addition 16 gallons of oil were carried in each of the two oil tanks, 8 gallons of de-icer alcohol in the windshield and carburettor de-icer tank and 3 ½ gallons of de-icer alcohol in the propeller de-icer tank. These quantities were also entered in the fuel and oil record which was attached to the technical log issued to the pilots. The accuracy of the fuel dip at Dublin Airport is stated to be plus or minus 2 gallons according to the Aer Lingus Aircraft Operating Instructions.

6. Preparation for the Flight

6.1 Captain Hanley arrived at the airport at 8.40 a.m. and found that First Officer Whyte had already collected the flight forecast giving particulars of the en route weather, including winds and temperatures aloft, internal and alternate forecast. Captain Hanley discussed the weather conditions with First Officer Whyte and gave him instructions regarding the preparation of the flight plan.

6.2 Having given First Officer Whyte his instructions, Captain Hanley then saw to the signing of the aircraft's papers and went out to the aircraft to find First Officer Whyte already there, either engaged in the checking of the radio equipment, or having just completed that check.

6.3 According to the evidence given at the Teevan Inquiry, Captain Hanley and First Officer Whyte went through the pre-starting check list, First Officer Whyte reading out the items and Captain Hanley checking them. In the case of the fuel quantity check, the co-pilot turned the selector switch while Captain Hanley watched the gauge.

6.4 Again according to the said evidence of the pilot and co-pilot, the check of the cockpit fuel selectors was read out by First Officer Whyte who himself moved the starboard selector to the right main position. Captain Hanley stated that he then moved the port selector to the left main and checked the starboard selector in the right main position by putting his hand across and feeling it.

6.5 The aircraft was then taxied out to the runway, where the run-up and pre-take off check were completed and, after receiving its clearance, the aircraft took off at 9.36 a.m.

7. Teevan Report

7.1 The Teevan Report, apart from dealing with the above facts, dealt with the flight itself and the investigation of the wreckage of the aircraft. It then went on to deal in detail with the probable cause of the loss of power to the engines of the aircraft. The conclusions of the Teevan Report are set out at page 18 thereof and are as follows:

7.2 "54. The primary cause of the accident was loss of engine power due to fuel starvation. The Court finds that this was caused by selecting the port engine to the Right Main tank to which the starboard engine was also selected.

55. The loss of engine power alone was not the sole cause of the accident, which could have been avoided had the crew diagnosed the cause of the trouble and changed the fuel feed to another tank.

56. The failure to diagnose fuel starvation was probably due to two circumstances: i.e. firstly the lack of co-ordinated effort by the Pilot and First Officer after the engines cut; secondly the knowledge of the crew that ample fuel for the flight was on board and their belief that the engines were drawing from their respective main tanks.

57. The actual forced landing of the aircraft in conditions of low cloud, poor forward visibility and unfavourable terrain was skilfully executed and resulted in the passengers escaping unharmed."

7.3 The Teevan Report then gave answers to questions submitted to the Court by the then Minister for Industry and Commerce. The first six questions and answers in that series do not appear to be controversial. The remainder were potentially controversial and were as follows:

7.4 "7. Q. Were there any features of the flight, or symptoms observed, or occurrences during the flight, which were unusual or abnormal?

A. No. There were none such prior to the loss of power.

8. Q. Did the examination of the wreckage reveal anything of significant abnormality in the aircraft or its condition?

A. No.

9. Q. Were the correct operating procedures and practices used by the crew:
(a) before the flight,
(b) during the flight, up to the time of the loss of power of the engines,
(c) after the initial loss of power, up to the time of landing?

A. (a) Yes: In the sense that the prescribed procedures and practices had been carried out but an inadvertent mis-selection of the port cockpit fuel selector was made in the course of the pre-starting cockpit check.

(b) There was a failure by the Captain to observe the Company's Regulation (prescribed in the Pilots' Handling Notes) for the use of carburettor hot air.

(c) No systematic check with reference to the engine instruments was made by either of the pilots, to ascertain the cause of the loss of power. The setting of the pitch of the propellers to fully fine was purposeless, was a wrong procedure – it increased unnecessarily the rate of descent and could have endangered the aircraft had the engines picked up.

10. Q. What was the probable cause of the accident?

A. The primary cause of the accident was the loss of power of both engines due to fuel starvation resulting from the inadvertent mis-selection of the port fuel selector. Notwithstanding this, the accident, in the circumstances, could have been avoided and was ultimately due to the failure by both pilots to diagnose the reason for the loss of power and to take proper remedial action.

11. Q. Was the accident (a) caused or (b) contributed to by any act or omission on the part of any person or party? If so, how, and by what person or persons or parties?

A. (i) The Captain was solely responsible for the initial error of inadvertently selecting the port cockpit fuel selector to the Right Main fuel tank prior to take-off. This error led to, but need not have resulted in, the accident.

(ii) For the ultimate cause of the accident as given at 10 above, both pilots were responsible.

(iii) Both pilots were equally responsible for the failure to observe a disparity of contents in the fuel tanks en route. This contributed to the accident."

8. The Issues

8.1 After the Minister had agreed in the year 2000 to the holding of a second inquiry (hereinafter called "The Second Inquiry"), preliminary meetings were held between the legal representatives of the Hanley Family, Christopher Doyle (Advisory Counsel for the Minister and the Attorney General) and the Chairman of the Second Inquiry with a view to agreeing the issues to be dealt with by the Second Inquiry. Agreement was made between the parties attending the said preliminary meetings, that the two issues for the Second Inquiry should be:

(1) Is there any evidence now available that was not available to the Court of Inquiry which by itself or together with the evidence that was available to the Inquiry, might have led it to reach a different conclusion?

(2) Was it reasonable for the Court of Inquiry based on the evidence to conclude as a matter of probability that fuel mismanagement had been the cause of the crash?

8.2 Appearances at the Second Inquiry are as set out in appendix 1 herein.

9. Submissions of the Hanleys on the Second Issue

9.1 Written submissions were prepared on behalf of the family of Captain Hanley (hereinafter called "The Hanleys") who also submitted the documents described in appendix 2 herein.

9.2 In addition to the said documents, the Hanleys produced on 26.3.02, during the Second Inquiry, a further 21 documents and an audio tape. This being an informal inquiry, it was agreed that the said documents and tape could be relied on by the Hanleys without formal proof. The said 21 documents and audio tape are described in appendix 3 herein. Evidence was given at the Second Inquiry by the persons mentioned in appendix 4 herein.

9.3 The Second Inquiry was somewhat hampered by the fact that the transcript from the Teevan Inquiry was not complete, and that some of the other documents were not completely legible.

9.4 Submissions were made by the Hanleys in relation to both issues, but, in the first instance, in relation to issue no. 2, which will now be considered. It was argued that it was not reasonable for the Teevan Inquiry based on the evidence before it, to conclude, as a matter of probability that fuel mismanagement had been the cause of the crash.

9.5 In the first instance, it was suggested that the fuel consumed by the flight in question indicated that, even if both engines had been fed off the main starboard fuel tank, this tank would not have been exhausted by the time the engines failed. It was suggested that because the aircraft in question had travelled from Dublin to London on the previous day and had consumed only 110 gallons on that trip, it was unlikely to have exhausted the 115 gallons which were admittedly in the starboard main tank on leaving Dublin on 1.1.53. If one were to calculate the consumption at 71.5 gallons per hour as per the evidence of Captain Wade at the Teevan Inquiry (see transcript of Teevan Inquiry, day 4, page 12, hereinafter referred to as "T4.12"), then, given that the engines failed on 1.1.53 at approximately 10.58 a.m., the aircraft had travelled 1 hr. 22 mins., and was likely to have consumed almost 98 gallons. Of the 10 gallons allowed for taxiing, as per the flight plan (see Section 1 of appendix 2, page 145, hereinafter referred to as "Sect. 1.45"), if one allows 7 gallons for taxiing prior to departure (considerably more fuel is used in taxiing prior to takeoff, than after landing), the total used at the time of the engine failure would be approximately 105 gallons. But given the wide variation in fuel consumption for the journey in question as evidenced by the statement of Captain Wade (Sect. 1.221), it is not felt that the discrepancy between the fuel likely to have been used and the amount of fuel carried in the starboard main tank is such as to rule out the possibility of both engines having been fed from that tank only from departure from Dublin.

9.6 It was suggested by Mr. Allen, the expert called on behalf of the Hanleys, that if there had been a west wind assisting the aircraft on the flight from Dublin to Birmingham, the fuel consumed would have been approximately 100 gallons. However, the flight plan (Sect. 1.45 under "w/v ") shows that the wind direction was 360, i.e. from the north, and Mr. Allen agreed that in that event, the wind would have no effect on the fuel consumption of the aircraft. The Route Aftercast furnished by Mr. Freeman of the British Air Ministry on 3.1.53 showed that the wind up to 5,500 feet was at approximately 30 degrees, at 28 knots.

9.7 A further point adduced to prove that both engines could not have drawn from the starboard main tank, was that the short duration of flow of fuel from the port main tank after the crash, showed that that tank (which had contained 120 gallons when leaving Dublin on 1.1.53) could not have contained that amount of fuel when the aircraft crashed. The damage to the port main tank was such that the stopcock, though open, remained in position.

9.8 In relation to the rate of flow from the port tank, this had been estimated during the Teevan Inquiry at 14.7 or 17.6 (or 17.8) gallons per hour. The point was made by Mr. Forde S.C. on behalf of the Hanleys that, if no fuel had been used from the port tank, then that tank would have taken 8 hours to drain (see minute of P.J. McCabe [Chief Aeronautical Officer] dated 10.7.75 [Sect. 8.73]). If the rate of flow was 14.7 gallons per hour this would be correct. If the rate of flow was 17.6 gallons per hour, then the flow would have lasted for almost 7 hours. But the evidence of when the flow from the port main tank ceased after the accident is unclear. What appears to be relied on is the silence at the scene of the accident after several hours. This appears to be an indefinite means of establishing when the flow from the port main tank ceased.

9.9 Another point used to disprove fuel mismanagement as a cause of the crash was the interval which occurred between the stopping of the two engines. That interval appears to have been 6, 7 or 10 seconds. According to Captain Hanley at the Teevan Inquiry (T4.50, 58), the interval was 6 to 10 seconds. Mr. Allen at the Second Inquiry contrasted the 3 second gap between the stopping of the engines on a subsequent Aer Lingus test, when deliberate fuel starvation was induced, and the length of time which elapsed between the stopping of the two engines on 1.1.53. It is not considered that that time difference is sufficiently significant to indicate whether fuel starvation or water in fuel was the cause of the stoppage.

9.10 Mr. Allen also relied on photographs of the port and starboard carburettors, and in particular the facts that air flows through the wire mesh into the carburettor, and as the photograph shows, the starboard mesh was concave (in the direction of air flow), and Mr. Allen expressed the view that this indicated that ice may have caused that to happen. He was, furthermore, of the view that, since there were no recorded incidences of ice involving that engine since it was last overhauled, and since a mechanic overhauling the engine, if he saw the mesh so distorted, would be likely to remove the distortion, it followed that ice entering that carburettor proved that icing conditions were present on 1.1.53. However, a mechanic would not necessarily remove the distortion from the mesh, since the distortion would have no affect on the running of the engine, so that it does not follow that that mesh was damaged by icing on 1.1.53. Even if there was ice on the mesh of the starboard carburettor, it does not necessarily follow that the ambient temperature was sufficiently low to freeze water, if present, in the fuel. Furthermore, Mr. Allen suggested that if the mesh collapsed, this would have caused the engine to protest. But no evidence was given to the Teevan Inquiry of any engine irregularity prior to the stopping of each engine.

9.11 Athough Mr. Allen sought to show that water in fuel was a likely cause of the stoppage of both engines, a very strong point in the opposite direction is that, if both engines drained from the same tank, they would inevitably stop within a short period of each other, whereas, even if there was water in the port main tank, and the port engine drew from the port tank, and if there was

water in the starboard main tank and the starboard engine drew from the starboard tank, it is most unlikely that the water in the fuel would have caused both engines to stop within 10 seconds of each other after a continuous use of more than 1 hour and 22 minutes (allowing for taxiing prior to takeoff).

9.12 During the Second Inquiry allegations of both bias and unfairness during the Teevan Inquiry, were made on behalf of the Hanleys. Before dealing with these allegations, it is not considered that either of these factors can be relevant to the Second Issue unless either or both of them result in it having been unreasonable for the Teevan Inquiry to have reached a conclusion, based on the evidence, that, as a matter of probability, fuel management had been the cause of the crash.

9.13 An allegation of bias was made on the basis that, at a pre-hearing investigation on 23.4.1953, Mr. O'Sullivan (Aeronautical Section) had stated that on the available evidence, the most probable cause of the accident appeared to be that the Captain had been in error in operating both engines from the one tank and in not correctly diagnosing the cause of the failure of the engines (Sect. 2.30). It does not appear that that allegation of bias is well founded, since that opinion was apparently the opinion of Mr. O'Sullivan at that stage and it cannot be responsibly suggested that the Chairman and his three assessors at the Teevan Inquiry commenced that Inquiry with any particular view as to the cause of the crash. It is true that the statement of Mr. Probert (Aeronautical Officer, Department of Industry and Commerce) dated 14.1.1953 (Sect. 2.3) states:

"After discussion it was agreed on the evidence obtained that the accident was probably caused by fuel starvation due to both engines drawing fuel from the one tank. The above statements, with the exception of that Ms. McCloskey, were taken primarily to obtain further information from the aspect of fuel starvation; no facts emerged from them contrary to this line of thought."

It is therefore true that fuel starvation was the working hypothesis. However, other hypotheses, such as water in fuel, were also considered by the Teevan Inquiry. It is not accepted that the Teevan Inquiry was biased.

9.14 In relation to the second issue, this is interpreted as related to the evidence which was actually adduced before the Teevan Inquiry. Accordingly it is considered that the question of whether further evidence should have been adduced is not relevant to the second issue.

9.15 It was alleged that the Teevan Inquiry was conducted in an unsatisfactory manner, and in particular that it ought to have been inquisitorial, rather than adversarial. Whereas, by definition, the Inquiry was investigative, it does not necessarily follow that it ought to have been inquisitorial, rather than adversarial, since in this regard regulation 10.2 of the Air Navigation (Investigation of Accidents) Regulations, 1928, under which the Inquiry was conducted, provides:

"The Court shall hold the investigation in open court in such manner and under such conditions as the Court may think most effectual for ascertaining the causes and circumstances of the accident and enabling the Court to make the report hereinafter mentioned."

9.16 It was submitted on behalf of the Hanley family that the Teevan Inquiry pre-judged the question of water in fuel, possibly on the basis of what the Irish Shell Limited witnesses had said in evidence on the second day. In this regard, it is suggested that on day 9, the Chairman of the Teevan Inquiry had stated that "….. there was no justification for the suggestions which had been made about water having been found in any serious extent." (Irish Times 30.5.53). But that quotation continues on to refer to the fact that Mr. Murnaghan S.C. (Counsel for Aer Lingus) had said that the only serious instance of water having been found, was in Liverpool. This was clearly a reference to the incident which occurred at Liverpool Airport, Speke on 2.2.53, and possibly also included the incident at that airport on 6.2.53 as is made clear by the publication in the Irish Times of 1.6.53 (reporting on day 10 of the Teevan Inquiry), which reported that there was a considerable argument advanced by counsel on behalf of Captain Hanley to the effect that the Aer Lingus inquiry into the Speke incident should be adduced in evidence. Counsel for Aer Lingus had submitted that that report was not complete at that stage, but the report into the Speke incident, prepared by Mr. Bourke (assistant to Development Engineer, Aer Lingus) was apparently submitted on 9.2.53, since Counsel for Captain Hanley appears to have been aware of at least some of its contents, during the hearing of the Teevan Inquiry on 30.5.53. Since the transcript of day 10 is incomplete, one must rely on the Irish Times publication of 1.6.53 in relation to the argument whereby counsel for Captain Hanley sought the Aer Lingus report into the Speke incident. Counsel for Aer Lingus had submitted that the Aer Lingus report had not then been completed. It may well be that the report referred to in that regard was a report intended to be prepared by Aer Lingus, as distinct from the report submitted to Aer Lingus by Mr. Bourke. With the benefit of hindsight, it seems that the Bourke report would indeed have been of considerable relevance to the Teevan Inquiry. However, it is not considered that the ruling made by the Chairman of the Teevan Inquiry not to call for what was then known as the Interim Report, or to insist on getting it, was, at that stage, evidence of bias against, or, foreseeably unfair, to Captain Hanley.

9.17 It is suggested on behalf of the Hanley Family that once the Minister for Industry and Commerce and his advisors formed the firm view that the outcome of the Inquiry would in all likelihood be one that would reflect adversely on Captain Hanley, his professional reputation, his career and his very livelihood, Captain Hanley should have been apprised of this fact. But it is considered likely that Captain Hanley was aware, at all material times, that the outcome of the Teevan Inquiry could have serious adverse consequences for him.

9.18 It is alleged that Captain Hanley ought to have had access to the daily transcript of the Teevan Inquiry. However, what is not clear is whether Captain Hanley or his advisors sought same. In the absence of proof that the daily transcript was sought on behalf of Captain Hanley, it cannot be stated that it was unfair not to provide same to Captain Hanley.

9.19 It is alleged on behalf of the Hanley Family that Captain Hanley or his advisors ought to have been present at meetings prior to the Teevan Inquiry, at which the proposed procedure at that Inquiry was discussed. After it was decided to hold such an Inquiry, several such meetings were held including one on 17.4.53, at which it was discussed that Captain Hanley might suffer seriously in his profession as a result of the Inquiry. (Sect. 2.28). On the other hand, several other parties who might suffer as a result of the Inquiry were not present either. It would have been preferable that all parties whose reputation was likely to suffer as a result of the Inquiry should have been invited to one or more of the pre-Inquiry meetings. However, it is reasonable to assume that Captain Hanley was aware, at all material times prior to, and during, the Hanley Inquiry of the extent to which his reputation and profession were at risk.

9.20 It is also submitted that, at the said pre-Inquiry meeting on 17.4.53, it was agreed that various statements made by the pilots would not be used as evidence, and that the pilots would be at liberty to alter their testimony in Court, and that their earlier statements could not be brought forward in Court against such alteration, and that that agreement was breached. However, Aer Lingus was not a party to that meeting or that agreement and, accordingly, even though the parties to the meeting on 17.4.53 had made that agreement, it was not binding on Aer Lingus which was entitled to cross-examine Captain Hanley at the Teevan Inquiry on the basis of any allegedly inconsistent prior statement made by him. It is also noteworthy that no objection to the use of those statements was made on behalf of Captain Hanley during the Teevan Inquiry.

9.21 The submission made on behalf of the Hanley Family to the effect that counsel for the Minister should not have indicated to the Teevan Inquiry how the eleven questions put to that Inquiry should be answered, is not a valid objection.

9.22 The objection made on behalf of the Hanley Family based on the many anomalies in the transcript of the Teevan Inquiry is well founded in so far as that transcript is incomplete. It also appears that the transcript is defective in that evidence given by Mr. Stephen Mullinder on 29.5.53, is not recorded as having been given on that date, but, mistakenly, as having been given on the following day. However, that error does not appear to be of any significance.

9.23 There were flaws in the initial investigation of the accident on 1.1.53 in that, for example, the outer portion of the starboard wing of the aircraft had been removed by firemen, rather than left where it had been deposited by the force

of the impact. Likewise no fuel was preserved for analysis, for example, for the purpose of testing whether same contained water. It is not considered, however, that any shortcomings in the investigation were necessarily prejudicial to the interests of Captain Hanley.

10. Submission of Irish Shell Limited

10.1 Counsel on behalf of Irish Shell Limited ("Irish Shell") urged in relation to both issues that the Second Inquiry should not come to a definite decision in relation to the cause of the accident, given the considerable length of time which had elapsed since the Teevan Inquiry. It was argued that it was unnecessary to reach a firm decision as to what occurred, in view of the issues raised. Effectively Irish Shell argued that the conclusions reached by the Teevan Inquiry should stand since that Inquiry had the benefit of first hand information at a time much closer to the events themselves.

11. Conclusions regarding the Second Issue

11.1 Having regard to the above, it is concluded that it was reasonable for the Court of Inquiry, based on the evidence to conclude, as a matter of probability, that fuel mismanagement had been the cause of the crash on 1.1.53.

12. Issue No. 1

12.1 This issue is related to the effect which new evidence, not available to the Court of Inquiry might, by itself, or with other evidence which was available to that Inquiry, have led that Inquiry to reach a different conclusion. It is considered (and indeed conceded by Counsel on behalf of the Hanleys) that "might" in this context, is related to a reasonable possibility.

12.2 The Hanleys' main reliance in relation to new evidence is the accident which occurred at Liverpool Airport, Speke, on 2.2.53.

12.3 In relation to the first issue, we are not concerned with the question of fairness or unfairness to Captain Hanley. This applies, for example, in relation to the exclusion at the Teevan Inquiry, of the Aer Lingus Inquiry and the British Police (Criminal Investigation Department) Inquiry into the Speke incident. The report by Mr. Bourke (the date of submission of which is illegible and could be either 9.2.53 or 9.2.55) appears to have been submitted on 9.2.53 (for the reason referred to in paragraph 9.16 hereof. The essential facts of the Speke incident was that an aircraft EI-ACL, a Douglas "Dakota" operated a scheduled flight from Dublin to Speke Airport, Liverpool on 2.2.53. The flight was normal in every way. At 5.50 p.m. on that date the aircraft engines were started up for the next flight. After about 75 yards taxiing, the aircraft was brought to rest, and at that moment the port engine stopped gradually. While the crew were trying to restart it, the starboard engine also stopped.

12.4 On 4.2.53, Mr. Bourke, in considering whether to place the Speke incident in the hands of the police, decided to contact Aer Lingus "….. before taking a step which might involve very undesirable publicity." On 6.2.53, a bowser which had supplied the aircraft in question with fuel, was tested for water, and none was found. Inspector Censi suggested that the bowser be driven around the apron for a few minutes and the drain cocks again run. Thereafter a quantity of one pint of dirty water was drawn off. In a further test, where four gallons of water were deliberately added to the fuel in the bowser, and then attempted to be drawn off from the drain cocks of the bowser, it was found that 5 ½ pints of water were unaccounted for. Among the conclusions of Mr. Bourke were:

"1. The water found in the main tanks of aircraft EI-ACL on February 2, 1953 at Speke Airport was pumped in from the re-fuelling vehicle during the normal turn around operation …

4. The method of measuring water content by using a water detecting paste on the dipstick is not satisfactory unless an absolute level parking place is available for the vehicle."

12.5 The British Police (C.I.D.) report into the Speke incident is dated 5.3.53. It concluded that the water drained off the tanks of EI-ACL was a little over a gallon and in the region of nine pints. It was felt that the aircraft could have flown from Ireland to the U.K. with as much as 3 ½ pints of water in either main fuel tank. It also referred to a further incident at Speke Airport on 6.2.53 in which a Cambrian "Rapide" G-ALAT aircraft was involved, having arrived uneventfully from Cardiff that morning. The aircraft was refuelled with six gallons of petrol to each of the fuel tanks, from bowser no. 9909Q. Preparatory to take-off, the aircraft taxied about 200 yards, when the starboard engine failed. That engine failure was found to have been caused by water drawn into the engine from the fuel tank. The two fuel tanks yielded a total of approximately one and one-third pints of water. It was concluded that at least two thirds of a pint of that water had been supplied with fuel from the bowser.

12.6 Both the Aer Lingus report and the C.I.D. report into the Speke incidents, would have been of considerable relevance to the Teevan Inquiry. However, it is considered that their introduction into evidence would not have resulted in any reasonable possibility of the Teevan Inquiry reaching a different conclusion. Insofar as the C.I.D. report into the Speke incidents is concerned, it appears that the letter from Mr. Teevan S.C. (as he then was) addressed to Mr. Hanley dated 17.11.72 refers to that report, and states that Mr. Teevan S.C. and those of the assessors (who assisted him in the Teevan Inquiry) who were resident in Ireland, came to the conclusion that that report would not have led to any different finding (of the Teevan Inquiry) from that which had been promulgated.

12.7 At the Aer Lingus Inquiry into the accident of 1.1.53, Captain Hanley himself was clearly aware of an incident in Paris in November, 1952, where 16 lemonade bottles of water were drained from an aircraft fuel tank or tanks. He also referred to other incidents of water found in aircraft fuel tanks. Those other cases would also have been relevant to the Teevan Inquiry, though it is not clear why Captain Hanley could not have obtained further details of them before the Teevan Inquiry commenced.

12.8 The statutory declaration dated 24.1.75 and undated notes of an interview of him, indicate that the evidence of Francis Weaver, a fireman who attended at the scene of the crash on 1.1.53, and who was not called as a witness at the Teevan Inquiry, was unlikely to have made any significant difference to the Teevan Report. The statutory declaration dated 24.1.75 of Horace Weaver, a fireman who also attended at that time, states at paragraph 6, that the persistent splashing of liquid which he heard, was taken by him to be fuel falling into the ditch from the underside of the starboard wing. That evidence would have been unlikely to have in any way affected the outcome of the Teevan Inquiry since the drainage points of the main port and starboard tanks were no more than two feet apart. Furthermore, even if there had been approximately 62.5 gallons in the starboard main tank (if only the starboard engine had been fed from that tank), that tank would have emptied before Horace Weaver arrived. The hole in the underside of the starboard main tank was fist sized, and Horace Weaver did not arrive at the aircraft until at least 15 minutes after the crash.

12.9 Mr. Stevens was spoken to by Ms. Patricia Hanley on the phone in December 1993, but did not give evidence before the Teevan Inquiry. When compared with the tape recording of the same conversation, it is clear that the typed version has several inaccuracies. Considerable amounts of the conversation recorded were not included in the typed version, which is also inaccurate in some places in relation to the identity of the person speaking. The taped version, unlike the written version does not indicate, for example, that Mr. Stevens was aware from which tank fuel flowed after the accident, since he merely agreed with the suggestion made to him by Ms. Hanley in that regard. Also, Mr. Stevens, who was only14 years old at the time of the accident, recalled that the aircraft in question circled the area several times, which is clearly inaccurate. His evidence was unlikely to have had any effect on the result of the Teevan Inquiry. The evidence of William O'Keeffe (who did not give evidence at the Hanley Inquiry), a passenger on the plane, and who alleged that he was virtually positive that the sound of fuel trickling from the plane was coming from the right wing, was unlikely to have made any difference to the Teevan Inquiry result because of the closeness of the drainage points on the main port and starboard tanks.

12.10 Mr. and Mrs. Pritchard, were interviewed by Ms. Hanley in approximately 1974. Mr. Pritchard made a statutory declaration on 3.12.74. They did not give evidence at the Teevan Inquiry. The evidence of Mr. Pritchard, insofar as he saw fuel coming from the right starboard side of the plane would not have made a difference, again for the reason of the close proximity of the drainage points of the two main tanks. He and Mrs. Pritchard (his wife) could also have given evidence insofar as they noted "absolute stillness" at the accident scene at 4.00 p.m. to 5.00 p.m. on 1.1.53, thereby indicating that no fuel was still flowing from the port tank. It does not follow from the fact that the Pritchards did not hear noise, that the flow from the port main tank had ceased.

12.11 Evidence given by Captain Whyte at the Second Inquiry was to the effect that, in exiting from the aircraft after the crash, Captain Hanley would likely have found it convenient to stand on the port fuel selector, which may have resulted in that fuel selector falsely indicating that the port engine was drawing from the right starboard main tank. However, the considerable tilt of the cockpit to port as shown in the photograph (figure 5) indicates that the port fuel selector was likely wholly or partially obstructed on a vertical plane by the elevator trim wheel, and the port engine propeller pitch control, thereby rendering the port fuel selector impractical as a place on which Captain Hanley could stand. Also, given that the port selector valve was found after the accident to be in the starboard main tank position, and the cables from the port fuel selector to the port fuel valve, were found to be slack, the position of the port fuel selector after the crash, is of minor significance. If Captain Hanley did stand on the port fuel selector, it is difficult to understand why he did not say so at the Teevan Inquiry.

12.12 The evidence of John M. Allen, a U.K. Aircraft Engineer at the Second Inquiry was strongly supportive of water in the fuel of the aircraft in question, (which may have turned to ice), thereby producing fuel starvation to both engines. It is considered that Mr. Allen did not present any new theory as to why water in the fuel of the aircraft caused the crash, nor as to why fuel mismanagement did not. It is felt that Mr. Allen did not provide any expertise which was not present at the Teevan Inquiry. Nor did he provide new scientific data or computations.

12.13 On 26.3.02, at the Second Inquiry, Ms. Patricia Hanley submitted in evidence the documents set out in appendix 3 hereof. It is not considered that any of these documents might reasonably have led the Teevan Inquiry to reach a different conclusion.

12.14 The answer to the first issue is, accordingly, in the negative.

Dated this 7th day of May 2002

Signed: Patrick E. Keane

Patrick E. Keane S.C.
Chairman

Signed: C.M. Stubben

Captain C.M. Stubben
Assessor

Signed: K.A. Darcy

Kevin A. Darcy
Assessor

APPENDIX 1:

APPEARANCES:

1. Michael Forde S.C. and Jane O'Neill B.L. (Instructed by Michael E. Hanahoe, Solicitors) for the Hanley Family.

2. Paul Fogarty B.L. (Instructed by McKeever Rowan) for Irish Shell Limited.

3. Christopher Doyle, Advisory Council (Office of the Attorney General) for the Minister for Public Enterprise and the Attorney General.

4. Captain Patrick Whyte appeared in person, assisted by Captain Bothwell.

APPENDIX 2

Documents submitted on behalf of the Hanley Family for the Purposes of the Review of the Investigation chaired by Thomas Teevan SC into the Causes and Circumstances of the Accident which occurred on the 1st January, 1953 to the DC3 Aircraft EI-ACF.

LIST

Section 1 – File No. 6 – Documents No. 1 – 225 – Formal Investigation of Accident to EI-ACF (1/1/53) First List of Documents prepared for or by the Department of Industry and Commerce. (All documents in file).

Section 2 – Pre-Inquiry Meetings to obtain further statements from witnesses, Memoranda of Pre-Inquiry Conferences held in the Chief State Solicitor's Office and in the Department of Industry and Commerce.

1. Memo dated 9th January 1953 signed by Mr. Probert Inspector of Accidents at the Department of Industry and Commerce.

2. Memorandum signed by Mr. Probert Inspector of Accidents at the Department of Industry and Commerce on 14th January 1953.

3. Memorandum dated 19th January 1953.

4. General Summary of the Circumstances of the Accident (Undated).

5. Memo dated 18th February 1953.

6. Memorandum dated 20th February 1953.

7. Memorandum dated 21st February 1953.

8. Document entitled Extract from Report of Departmental Conference No. 288 dated 23rd February 1953 plus Memo dated 24th February 1953.

9. Letter to Mr. Teevan dated 30th March 1953.

10. Memorandum dated 3rd April 1953.

11. Memorandum dated 8th April 1953.

12. Memorandum dated 13th April 1953 – Meeting with Mr. Shanagher and Mr.Teevan SC.

13. Memorandum dated 16th April 1953 – Interview with MCA officials in London (Mid-March 1953).

14. Memorandum of Conference with the Chief State Solicitor on 17-4-53 re Investigation into accident to EI-ACF.

15. Report of Meeting dated 23rd April 1953.

16. Report of Meeting dated 13th May 1953.

17. Report of Meeting held in the Chief State Solicitors Office dated 15th May 1953.

Section 3 – Relevant legislation (Copies held in Department).

1. Air Navigation (Investigation of Accident) Regulations 1928.

2. Air Navigation (Investigation of Accidents) Regulations 1928 (Amendment) Regulations 1943.

3. Air Navigation (Personnel Licensing) Order 1951.

4. Air Navigation (Personnel Licensing) Order 1966.

5. Air Navigation (Investigation of Accident) Regulations 1957 (3 copies).

6. Air Navigation (Notification and Investigation of Accidents and Incidents) Regulations 1997.

Section 4 – Ministry of Civil Aviation (MCA) Inquiry

1. Annex 13 of the ICAO Regulations – Aircraft Accident Enquiry.

2. Statement of Captain T.J. Hanley made on 3rd January 1953. (See item No. 1 in File No. 6 – Section 1 above).

3. Statement of Mr. Newton MCA (No. 75 of File No. 6 – Section 1).

4. British Civil Accident Report No. C607 (MCA report) (No. 76 of File No. 6 – Section 1).

5. Statement of Mr. Cannon – witness to MCA investigation.

6. Copy letter from IALPA to Secretary of Department of Industry and Commerce dated 2nd March 1953.

7. The MCA Investigators – Eleven Points. (For replies to 11 points by Captain Hanley see Numbers 18 and 19 of File No. 6 in Section 1).

8. Letter from A. O'Coinneain, Department of Industry and Commerce to George McGrath, Solicitor, 9th May 1953.

Note – Many of the statements prepared for the MCA inquiry are included in **Section 1** above.

<u>Section 5</u> – Internal Aer Lingus Inquiry

1. Terms of Reference of Company Inquiry.

Extracts from transcript of evidence at Company Inquiry:

2. Evidence of Mr. Brocklebank.

3. Captain Hanley re water in fuel incidents.

4. Evidence of Mr. Cannon.

5. Evidence of Mr. F.C. Delaney.

6. Evidence of Captain Hanley.

7. Evidence of Captain Wade.

8. Evidence of First Officer Whyte.

9. Handwritten copies of statements by First Officer Whyte to the Company Inquiry.

10. Captain Hanley re evidence of First Office Whyte.

11. Transcript of final day of Aer Lingus Inquiry, 28th February 1953.

<u>Section 6</u> – Photographs of scene of forced landing in 1953 and of aircraft, and sketch of accident prepared by MCA. (Copies of Nos. 3 to 9 attached). The Department holds original prints of the other photographs and the original sketch).

1. Photographs "Figures 1 – 5".

2. Photograph of cockpit control panel.

3. Photograph of aeroplane and policeman given to Hanley family by Firemen in the 1970's.

4. Photograph showing wing in tree given to Hanley family by Firemen in the 1970's.

5. Photograph showing close-up from Figure No. 5 (Sergeant Thomas and Captain Hanley exchanging notes).

6. Photograph showing close up of starboard engine.

7. Photograph showing close up of starboard side.

8. Photograph showing close up of port engine.

9. Photocopy of photograph showing Mrs. Pritchard and Fireman.

10. Photographs of valves and carburettors.

11. Sketch of Scene of scene of Accident to EI-AC 1-1-53 prepared by MCA January 1953.

<u>Section 7</u> – Witness statements from relevant witnesses not called by the Court of Inquiry and letter from Colonel Teague.

1. Statement of Fireman Francis Weaver sworn on 3rd December 1974.

2. Statement of Fireman Horace James Weaver sworn on 25th January 1975.

3. Note of conversation between Ms. Patricia Hanley and Mr. John Stevens (witness to the forced landing – but not called to give evidence) in December 1993.

4. Ms. Patricia Hanley's account of meeting with Mr. and Mrs. Pritchard in the 1970's – Document headed '1970's'.

5. Statement by Samuel Herbert Pritchard sworn on 3rd December 1974.

<u>Section 8</u> – Documents relevant to the IALPA review in 1975 and Removal of endorsement on Captain Hanley's licence in 1977.

1. Letter to Captain Pat Donoghue, President IALPA from Thomas McKeown dated 9th September 1974.

2. Handwritten letter dated 18th January 1975 from Captain Wallace (Pilot of Flight 520 Dublin – Paris on 19th November 1952 where water was found in fuel) to Captain Donoghue.

3. Letter to Mr. P. Barry, T.D., Minister for Transport and Power dated 11th February 1975 from IALPA.

4. Comments on IALPA letter dated 12th February 1975.

5. Document headed Appendix 1 An Appraisal by Eric F. Brereton requested by IALPA dated June 1975.

6. Revised sketch of scene of accident prepared by Eric Brereton in 1975 during appraisal requested by IALPA.

7. Report of Meeting dated June 1975 stamped E. Mortimer.

8. Memorandum from Civil Aviation Division.

9. Memorandum – Hanley Case.

10. Document headed Accident to DC-3 aircraft EI-ACF on 1/1/53.

11. Internal Department Memo by P.G. McCabe, Chief Aeronautical Officer (Airworthiness), dated 2nd July 1975.

12. Internal Department Memo by P.G. McCabe dated 10th July 1975.

13. Internal Department Memo dated 18th December 1975 from Chief Aeronautical Officer (Operations).

14. Memorandum from E. Mortimer dated September 1976.

15. Letter dated 16th February 1977 from Attorney General's Office.

16. Memo by S. O'Giollain re removal of endorsement from Captain Hanley's licence dated 28th March 1977.

17. Report of meeting re removal of endorsement from Captain Hanley's licence dated 6th April 1977.

18. Letter to Captain Hanley from Minister for Transport and Power dated 4th May 1977.

19. Memo from S O'Giollain to Mr. Freehan dated 19th May 1977.

20. Letter from Padraig Faulkner, Minister for Transport and Power to Captain P. Donoghue, 3rd August 1977.

Section 9 –The Liverpool Incident (Items 1 and 2 already supplied to Department).

1. Report of Investigation into Incident – Aircraft EI-ACL. Speke Airport. 2nd February 1953. Submitted by C.G. Bourke Assistant to Development Engineer on 9th February 1953.

2. Liverpool C.I.D. Report into Accident involving EI-ACL at Speke Airport, Liverpool, dated 5th March 1953.

3. Extracts from The Irish Times dated 30th May 1953 and 1st June 1953.

4. Letter to "Mr. Hanley" (**recte** Ms. Patricia Hanley) from Judge Teevan dated 17th November 1972.

Section 10 – The Teevan Report

1. Report of the Formal Investigation into the causes and circumstances of the accident which occurred on 1st January 1953 to the DC-3 Aircraft EI-ACF by Mr. Thomas Teevan S.C. dated 9th June 1953 (hereinafter referred to as the Teevan Report. Copy held by the Department).

2. Letter to Judge Teevan from J.S. O'Doherty dated 24th April 1974.

3. Report from Department of Industry and Commerce on experience of providing a verbatim transcript for the Formal Investigation of accident to Aer Lingus aircraft EI-ACF on 1st January 1953.

4. Letter from Mr. Teevan, Attorney General, to Mr. Shanagher, Department of Industry and Commerce dated 26th November 1953.

5. Distribution of Daily Transcript.

Section 11 – Press Reports

1. Press Reports of Teevan Inquiry (already supplied to Department).

2. Irish Press and Irish Independent Reports of Inquiry dated 2nd June 1953 (Report of final day of Inquiry).

3. Official Press Announcement of Report of Teevan Inquiry and action taken against pilots.

4. Irish Times, 14th July 1953, Inquiry Report and action taken against pilots.

5. Irish Times, 16th February 1974 and 11th April 1974.

6. Sunday Independent Articles – 11th December 1977 and 18th December 1977.

Section 12 – Miscellaneous

1. Details of EI-ACF compiled by F.C. Delaney 14th January 1953.

2. Captain Hanley's comments on the Questions asked by the Minister for Industry and Commerce.

3. Document headed 'Third Aer Lingus Double Engine Failure between January 1, 1953 and April 11, 1953.' (Part of the schedule presented to the Board of Inquiry by Mr. McGonigal.

4. Extract from Report of Departmental Conference dated 1st June 1953.

5. Captain Wallace – Extract from V. Report.

6. Extract from Air Safety Bulletin – 1973.

7. US Civil Aeronautics Board – Bureau of Safety – "Accidents in which fuel contamination was involved – 1962 – 1964".

8. Extract from 'Emergency! Crisis in the Cockpit", by Stanley Stewart.

9. US National Transportation Safety Board – Aircraft Accident Report Reeve Aleutian Airways, 16th February 1982.

10. Report of water in engine incident on flight from Dublin to Liverpool, 7th August 1949.

11. Documents entitled “Transcript Anomaly #1 and #2”.

12. Booklet containing newspaper reports of proceedings of the Court of Inquiry.

13. Report on Aer Lingus Investigation into incident involving aircraft EI-ACL at Speke Airport, Liverpool (Bourke Report).

14. Report of C.I.D. Investigation into accident involving aircraft EI-ACL at Speke Airport, Liverpool.

15. Booklet of newspaper reports of proceedings of Teevan Inquiry.

APPENDIX 3

1. Copy of Mr. Allen's C.V. submitted by Mr. Forde S.C. to Chairman.

2. Original photograph of carburettor screens of ACF.

3. Photographs of cockpit area 7 and 8.

4. Letter submitted by Ms. Hanley from Ms. Lettice Bowlby (passenger) to Captain Hanley dated 2.1.53.

5. Original letter submitted by Ms. Hanley from Ms. Elinor Morris (passenger) to Captain Hanley dated 3.1.53.

6. Original letter submitted by Ms. Hanley from Mr. A.J. Stephens to Ms. Hanley dated 1.12.93, regarding arrangements for phone call.

7. Audio tape submitted by Ms. Hanley of conversation between Ms. Hanley and Mr. Stephens.

8. Original letter submitted by Ms. Hanley from Mr. A.J. Stephens to Ms. Hanley dated 9.5.93.

9. Original letter submitted by Ms. Hanley from Mr. T. McCarthy, Warwickshire County Council Fire Officer to Ms. Hanley dated 16.9.74, plus Farnborough ticket.

10. Undated original hand written notes submitted by Ms. Hanley from a Mr. Watson to Ms. Hanley.

11. Original hand written notes dated Aug/Sept '74 submitted by Ms. Hanley regarding questions to be asked re accident.

12. Original scrap of paper submitted by Ms. Hanley containing name and address of Captain Hanley.

13. Original page of report (Appendix XIV of the original Police report of Elizabeth Cassidy, air hostess) submitted by Ms. Hanley dated 5.2.53.

14. Original Captain's voyage report dated 21.11.52 (EI-AFA) submitted by Ms. Hanley.

15. Page of tech log 19 – 20.11.52 (Captain W.A. Wallace) submitted by Ms. Hanley.

16. Copy page of Aviation Safety Network dated 28.7.01 submitted by Ms. Hanley regarding incident to DC on 5.2.47.

17. Copy page dated 7.8.49 (ACC/ALC/69) submitted by Ms. Hanley regarding incident to EI-ADC.

18. Original Captain's voyage report dated 10.9.52 (EI-ACT) submitted by Ms. Hanley.

19. Terms of reference for Committee of Inquiry dated 6.1.53 submitted by Ms. Hanley (J.F. Dempsey, General Manager/copy).

20. Original folder of hand written family notes of Committee of Inquiry submitted by Ms. Hanley.

21. Copy of press query dated 8.12.77 from Michael Denieffe, of Sunday Independent.

22. Reply dated 9.12.77 to Sunday Independent query, submitted by Ms. Hanley.

APPENDIX 4

Witnesses:

1. Patricia Hanley
2. John Allen
3. Michael Denieffe
4. Patrick Donoghue
5. Brendan Flanagan
6. Patrick Whyte
7. Kevin Humphreys
8. Anthony Baker