



**AIR ACCIDENT
INVESTIGATION UNIT**

REVIEW
OF IRISH & UK FILES
ON THE LOSS OF THE AER LINGUS VISCOUNT
ST. PHELIM
REGISTRATION EI-AOM
ON 24 MARCH 1968

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PREFACE

The Aer Lingus Viscount St. Phelim, registration letters EI-AOM operating as Flight 712 from Cork to London crashed into the Irish Sea near the Tuskar Rock in County Wexford at approximately 12.15 hours local time on 24 March 1968. All sixty one persons on board were killed.

A Report of the Investigation carried out into this accident was published in 1970. This investigation was conducted by officials of the Aeronautical Section of the Department of Transport and Power.

The exact cause of the accident has never been established. Speculation has continued since the time of the accident, prompted by a hypothesis posed in the Report, that the St. Phelim may have been initially upset by the possible presence of another airborne object, drone or missile in its vicinity at the time.

On the thirtieth anniversary of the accident, following newspaper articles and television programmes focusing on the possible involvement of U.K ships and missile ranges on the Welsh Coast in the downing of the St. Phelim, the U.K. Ambassador to Ireland met with relatives of the victims of the St. Phelim and offered to assist the relatives in establishing the exact nature of the role of the UK Ministry of Defence in this accident. The Minister for Public Enterprise, Mrs. Mary O'Rourke, T.D., also met with the UK Ambassador and it was jointly agreed that Irish and U.K. officials would review all files held relating to the accident to see if the cause of the accident could be established.

The following is the Report of that Review. As such, it does not follow the format set out in International and National Regulations for the reports of formal aircraft accident investigations.

Report of the review of EI-712, St. Phelim,

Tuskar Rock, 24 March 1968

INTRODUCTION

The Aer Lingus Viscount St. Phelim crashed into the Irish Sea on Sunday, 24 March 1968, at approximately 12.15 hours near the Tuskar Rock Lighthouse whilst en route from Cork to London. The crew of two pilots and two cabin crew and fifty seven passengers were killed. Fourteen bodies were recovered from the sea, 13 of these were positively identified. There were citizens of Ireland, the United Kingdom, United States, Switzerland, Sweden and Belgium on board the aircraft.

The accident was investigated under the Air Navigation (Notification and Investigation of Accidents) Regulations 1957.

The report of the investigation into the accident was published by the Stationary Office in 1970. The Report is laid out in the Standard International Civil Aviation Organisation (ICAO) format for Accident Investigation as specified in the "International Standards and Recommended Practices, Aircraft Accident and Incident Investigation, ANNEX 13, to the Convention on International Civil Aviation". The Report comprised 20 pages and detailed appendices comprising 130 pages were prepared under the following headings:

APPENDICES

1. Report on search and salvage – “Operation Tuskar”.
2. Transcripts of tape recordings of R/T exchanges between EI-AOM and Air Traffic Services (Air Traffic Control Services)
3. Meteorological data
4. Investigation of recovered wreckage –
 - (a) airframe;
 - (b) engines and propellers
5. Investigation of auto-pilot
6. Summary of witnesses’ statements – map of witnesses’ locations.
7. Photographs

The appendices were not published but have been available for inspection by interested parties at the offices of the Department of Public Enterprise (then Department of Transport and Power), since publication of the report. However, in response to public interest, the Report and the full Appendices were published on the Air Accident Investigating Unit web site, www.irlgov.ie/tec/aaiu/aaiumain.htm, in 1999.

The Report reached the following conclusions:

- “1. *The aircraft was covered by a valid and current Certificate of Airworthiness, and by a current maintenance release issued in accordance with Article 18 of the Air Navigation (Airworthiness of Aircraft) Order, 1964 (S.I. No. 141 of 1964).*
2. *The Flight Crew were properly licensed and qualified of the execution of their duties.*
3. *The flight proceeded normally after take-off until 33 seconds after acknowledging an ATC instruction from Shannon to change radio frequency to that of London Airways.*
4. *A signal was intercepted by London Radar at 10.58.02 reading "Echo India Alpha Oscar Mike with you". Eight seconds later, another signal was intercepted reading "Twelve thousand feet descending spinning rapidly". No further communications were received from the aircraft.*
5. *The aircraft went into the sea at between 11.10 - 11.15 on a steep flight path with low forward speed (less than 130 knots) and with a very considerable vertical component of speed. The attitude on impact was of the order of 15° nose down, right way up, and probably slightly banked right wing down.*
6. *For a reason that cannot be determined from the evidence available, the aircraft went into a spin or spiral dive or similar manoeuvre at 17,000 feet, from which a recovery appears to have been effected at some height lower than 12,000 feet. The recovery manoeuvre could not be achieved without inflicting some structural deformation on the airframe, most probably on the tail planes and elevators, causing impairment of controllability in the fore and aft (pitching) plane.*
7. *A portion of the elevator spring tab from the port elevator probably became detached while the aircraft was airborne.*
8. *A defect found in the Automatic Pilot was most fully investigated by ground and air tests. It is considered that this defect could not have been the cause of this accident.*

Substitution of an elevator spring for a rudder spring, found in the rudder torque tube would have but a minor effect on the flight characteristics (feel) of the aircraft.

These defects taken together would have an effect on the flight characteristics of the aircraft to a minor but insignificant extent, which in the case of the Auto Pilot, can be discounted by the safety measures included in the design of the equipment, and in each case by the fact that unwanted forces can readily be overridden by manual control action by the pilot. No other pre-impact defects were found in the engines, propellers, instruments or equipment.

9. *The Flight Crew were wearing their safety harness including the shoulder straps.*
10. *The aircraft flew in a disabled condition over the sea for a period of at least 10 minutes (during which no radio signals were received from it) after which fore and aft control was finally lost, and the aircraft descended with a high vertical component of speed, in a stalled condition with engines throttled back, until it struck the sea.*
11. *The aircraft was substantially intact when it entered the sea, except for the probable loss of all or part of the elevator spring tab. It was demolished on impact and sank immediately. The impact was unsurvivable.*
12. *There is evidence which could be construed as indicative of the possible presence of another aircraft or airborne object in the vicinity which, by reason of collision, or by its proximity causing an evasive manoeuvre to be made, or by its wake turbulence, might have been the initiating cause of an upsetting manoeuvre resulting in the Viscount entering a spin or spiral dive.*

There is no substantiating evidence of such a possibility, but it cannot be excluded for it is compatible with all of the presently available evidence.

Under the heading 'Probable Cause' the Report found:

There is not enough available on which to reach a conclusion of reasonable probability as to the initial cause of this accident.

The probable cause of the final impact with the sea was impairment of the controllability of the aircraft in the fore and aft (pitching) plane”.

The report made no safety recommendations or any other recommendation.

Significant ASPECTS OF THE CRASH and Subsequent Search and Salvage

The St. Phelim was flight planned to route from Cork to Tuskar, thence to Strumble Head in Wales following airways Blue 10 Green 1 which was the standard route from Cork to London.

On its departure from Cork, the St. Phelim was routed directly eastwards to maintain separation from an aircraft inbound to Cork. On seeing that the St. Phelim was almost routing directly from Cork to Strumble, the Shannon Air Traffic controller sought and obtained a direct routing for the St. Phelim to Strumble from London ATC. This is evident from the ATC transcript of the radio and telephone exchanges between the Shannon ATC and London ATC and between Shannon ATC and the St. Phelim contained in Appendix II to the 1970 Report ATC Transcripts.

This revised routing brought the aircraft towards the point Bannow which is a notional point on the aeronautical charts, depicting the changeover point between Shannon and London ATC. See Annex A.

The transcript of the Shannon ATC tape indicate that the St. Phelim passed Bannow at 1057 and was estimating Strumble at 1103.

There is no record of the St. Phelim contacting London ATC in the accepted normal fashion.

The Report states "at 1057.29 the flight acknowledged an instruction from ATC Shannon to change frequency to that of London Airways". This was acknowledged by the laconic reply consisting of repetition of the frequency concerned – "131.2". This exchange of messages was quite in line with normal practice, though not in accordance with formal procedure, but this is not thought to be any particular significance.

At 10.58.02, 33 seconds later, London Radar intercepted a call – unfortunately simultaneously with another call from a different aircraft but which was later confirmed as "Echo India Alpha Oscar Mike with you". This message was not in the form generally used by Aer Lingus flight crews, in which the call sign used is the flight number. Furthermore, the message did not begin with the usual preamble, in that it did not contain the call sign of any ground communication station.

The message was not in the recognised form of a distress or urgency message. Nevertheless, it seems probable that the message was intended to convey an element of urgency or distress, and that the aircraft was in difficulties at the time of transmission.

At 10.58.10, a message was intercepted by London Airways/Radar, eight seconds after the reception of the message "Echo India Alpha Oscar Mike with you". This second message was at first and by many hearers of the recording, interpreted as "Five thousand feet descending spinning rapidly".

This message was also intercepted by Aer Lingus flight 362 and by BOAC flight 506, each of which immediately reported the fact to London Airways.

There was considerable background noise in the recording, and, therefore, the record was subjected to intensive research by experts, including the Civil Aeronautics Board and the FBI in the USA, to whom a copy of the record was sent for analysis. Acoustic research to eliminate unwanted noise was undertaken by the Institute of Industrial Research and

Standards, and after repeated play-back of a re-recording it was later agreed by the majority of listeners that the first word, which had been thought to be “Five” was in fact “Twelve”

The relevance of this particular information is that once it became known that the St. Phelim had not established normal contact with London Airways, then the position report by Bannow at 1057 became the last known and identifiable position of the aircraft. By deduction therefore, if the aircraft was by Bannow at 1057 and was spinning at 1058, then the downed aircraft had to be between Bannow and Strumble, ie in the United Kingdom Flight Information region (UKFIR). Because of this, and also because the last radio call was made within the UK FIR, it was reasonable to assume that the aircraft had come down within the UK FIR. Consequently the search for the missing aircraft was a UK Responsibility, under International Agreement.

Based on this assumption therefore, the position Bannow became the datum for the initial search effort on 24 March, 1968. An later analysis of the aircraft’s reported ETA for Strumble would have indicated that the last call was made 5 minutes, or 20 miles West of Strumble, well within the UK FIR and closer to the Welsh coast than the “By Bannow” position.

The first sighting of floating wreckage, however, came on the 25 March 1968 near the Tuskar Rock Lighthouse approximately 20 miles away from the position Bannow, or approximately 5 minutes at normal cruising speed, for a Viscount.

Thus, the fact that the initial search for the aircraft was focused on a position 24 miles from the actual position where the aircraft was finally located, set the scene for a misinterpretation of why the UK ships, first to partake in the search, went to this initial search area i.e. Bannow, and not where the St. Phelim was found i.e. Tuskar Rock. Tuskar Rock is located within the Shannon (Irish) FIR, 10 miles from the UK FIR boundary.

When floating wreckage and bodies were found near Tuskar Rock, then the search focused on what transpired to be the correct area. However, once the first bodies and the floating debris from the St. Phelim were recovered to Rosslare on the 25 and 26 of March, there was still no definite position for the location of the submerged aircraft.

The UK ships engaged in the initial search withdrew on the 27 March, and the second phase of operation Tuskar began with minesweepers requested by the Irish Government on a repayment basis from the UK Navy, to try to locate the aircraft wreckage on the sea bed.

The lack of certainty as to where the actual submerged aircraft lay, and the use of minesweepers rather than trawlers to search the bottom, thus taking until the 5 June, 1968 some three months after the crash, to finally locate the aircraft on the sea bed, has over the years contributed to speculation that there was a desire *not* to find the submerged aircraft.

Contemporaneous with the sea search witnesses were interviewed in the Tuskar and Hook areas of Wexford. The witnesses statements and interviews as outlined in both the Report and the Appendices contributed not only to speculation that there was an aircraft other than the St. Phelim in the area at the time, but also to considerable difficulty in deciding where best to concentrate the efforts to search for the aircraft on the sea bed.

Once the aircraft had been finally located 1.75 NM east of Tuskar Rock, 252 feet below the surface on 5 of June, the decision was made to raise the wreckage and beach it.

Considerable anticipation arose that the aircraft and the remains of the crew and passengers not already recovered (47 in all) could now be brought ashore. This would enable burial of the victims and detailed examination of the wreckage.

To this end a detailed military operational order was prepared ANNEX B to accomplish this harrowing task.

However, the effort to raise the wreck was unsuccessful. This again led to speculation, which has been added to media comment in recent years, that there was no desire on the part of the UK authorities to accomplish this task.

The Salvage Operation

This aspect of operation Tuskar has contributed continually to the speculative theories. The report states, again under the heading **History of the Flight** *'The position of the main wreckage remained obscure in spite of prolonged and diligent search by sonar equipped ships of the British Navy and trawling by Irish trawlers – "Glendalough" from Kilmore Quay and "Cu na Mara" of the Irish Fisheries Board (An Bord Iascaigh Mhara). Eventually, on 5 June 1968 "Glendalough" hauled in position 1.72 nautical miles from Tuskar Rock with Tuskar bearing 280 , in 39 fathoms and brought up a quantity of positively identifiable wreckage. The "Cu na Mara" in the same location also brought up wreckage. On the following day more wreckage was brought up by these trawlers, and divers from H.M.S. Reclaim confirmed a mass of wreckage "like a scrap yard" in this position. Subsequent salvage operations confirmed that a major portion of the aircraft at least was located here. Two eye witnesses, one a sailor on a coastal vessel, who thought he had seen an aircraft crash into the sea but did not report it at the time, and another witness on shore, who saw a splash in the sea near the Tuskar Rock, gave the time as between 11.10 and 11.15. The position lines of these two witnesses approximately cross the location where the main wreckage was eventually found'.*

The Report states under the heading **Damage to Aircraft** *'The aircraft was totally demolished by violent impact with the sea. The bulk of the wreckage was found in 39 fathoms of water with all parts lying in close proximity.*

About 60-65% of the aircraft (by weight) was recovered, and included the major parts of three engines, a few parts of the fourth, and all four propellers, the almost complete primary structure of the wings from tip to tip, and the fin and rudder.

None of the wreckage displayed any evidence of fire or explosion. No part of the tail planes or elevators was recovered, with the exception of small portions of the spring tab and trim tab.

The recovered wreckage revealed extensive damage to the whole structure, which virtually disintegrated.

The Appendix No.1 - **Report on Search and Salvage "Operation Tuskar"** which is laid out in diary or journal, records the following:

5th June

1200 *"Glendalough" hauled in position 1.72' from Tuskar with Tuskar bearing 280 ° in 39 fm and brought the following wreckage to surface:-*

- (a) *Main fuselage 650 Station to part of Dorsal fin including Upper Main door frame, Fort Aft.*
- (b) *Galley Power control Panel*
- (c) *Window frame believed to be the one immediately forward of the main door.*
- (d) *Waste pipe from forward toilet.*

1400 *“Cu na Mara” hauled same position and got following*

- (a) *3ft. Length hat rack padded bar*
- (b) *Unidentified piece – probably wing Piece.*

1300 *“Glendalough” hauled same position and brought up*

- (a) *Window rubber with handle from No. 5 window, portside, from forward.*
- (b) *Primary silencer from pressurisation and air conditioning system position.*
- (c) *Small piece perspex window 2” X 2”*

6th June

1400 *“Glendalough” hauled same position and brought up*

- (a) *Part of forward main cabin door.*
- (d) *Main spar outer wing 7 ft. off.*
- (e) *Rolls Royce Dart Engine air intake.*
- (f) *Passenger Air conditioning panel.*
- (g) *Galley Hot Jug.*

6th June

1430 *“Cu na Mara” hauled same position and brought up*

- (a) *Engine nacelle cowling*
- (b) *Small piece of fuselage structure passenger window area.*

H.M.S. "Reclaim" investigated position by diving. Confirmed mass of wreckage – "Like a scrap yard".

2330 *Due to tides operations abandoned until Tuesday 11th June "Cu na Mara" returned Dublin to report back 1400 Tuesday 11th. Glendalough returned Kilmore Quay to report back 1400 Tuesday 11th. "Shoulton" and "Reclaim" sailed for Plymouth.*

"Cliona" returned Base.

7th June (1200)

Co-ordination Centre closed down until 1400

Tuesday 11th June.

11th June

"Cu na Mara", "Glendalough" and "Cliona" returned area and resumed bottom search clear of wreckage area.

12th June

H.M.S. "NURTON" (Cdr. Seymour) and H.M.S. "Bronnington (Lt. Cdr. Perry) resumed bottom search East of wreckage.

13th June

H.M.S. "SHOULTON" HMS "Reclaim" and CSV "Uplifter" rejoined – preparing moorings and positioning of "Reclaim"

15th June

H.M.S. "Bronnington" withdrew.

16th June

"Reclaim" on moorings attended by "Shoulton", and "Uplifter", "Nurton" investigating. "Cliona" keeping small craft clear.

Report of survey of bottom.

"Wreckage 75' long, 15' wide and up to 5' high. Like a junk yard". Survey 605.

Picked up

*1 small piece seat rail
4 ft. hat rack
3 ft. push pull control
Fishingreel
Teleflex Control
Front and rear seat leg
Nose wheels
1 Prop blade
1 Washbasin
Large piece of fuselage skin – green 10' X 6 X 5*

*Piping which appears to be pressurisation ducting.
Tubing – engine bearer.*

17th June

*H.M.S. “Nurton” withdrew
Report (1) Starboard outer wing completely shattered.*

(2) Port wing detached from root

*(3) Rear fuselage section detached at trailing edge of
root.*

(4) Passenger floors broken into small sections.

(5) Light luggage rack shattered into small pieces.

(6) All passenger seats failed in forward direction.

(7) One propeller blade visible.

(8) No engine seen

*(9) Big piece which could be nose section forward of
leading section of wing, with debris scattered over it.*

19th June

Extract from urgent verbal report from “Reclaim”

(a) Think all in one piece

(b) Nose wheel bracing is only lift

(c) Cockpit and fuselage-30 to 40 feet

(d) Wings detached

(e) Strapping.

21st June

*Centre spar and wing wreckage pulled on heaving.
Wreckage landed by “Reclaim” and “Uplifter” 1400.*

22nd June

*“Stood down” operations – tides too strong – until
15th July. Terminated trawling activities until
further notice. H.M.S. “Shoulton” and CSV
“Uplifter” left area.*

*Irish Lights laid wreck buoy seaward if wreck
position “Cliona” withdrew to Base.*

It is clear from the foregoing that the three separate, but related, activities

- (1) the initial search
- (2) the search for the wreckage on the sea bed
- (3) the salvage of the wreckage,

were each, for separate reasons, unsuccessful. The search on the Sunday 24th focused on what was the last known position of the aircraft ‘by Bannow’, but this transpired to be not where the aircraft was finally located. The correct position being at Tuskar some 20 miles away.

In other words the initial search was in the wrong area.

Under international agreement on Search and Rescue, the search was the responsibility of the UK authorities notwithstanding that the search was for an Irish registered aircraft, because the initial indications were that the aircraft had come down within the UK FIR. Although Irish Air Corps Aircraft were in the search area within an hour and thirty minutes, an Irish Naval presence by way of the LE Macha did not occur until 26 March. Thus from the time it was decided that the St. Phelim was down the response was co-ordinated by the UK.

Similarly, when the search for survivors was called off on the 27 March and the second phase of the operation the search to locate the wreckage began, again the UK authorities in the form of the Royal Navy, nominally under the direction of the Irish Naval Service and the Department of Transport and Power Accident Investigators, were effectively in charge. As has already been noted this search took from 29 March until 5 June to locate the aircraft.

Having located the aircraft wreckage on the 5 June, the third phase, the salvage operation began. This operation, because of the failure to lift a large portion of the fuselage in one piece on the 22 July, which resulted in the wreckage slipping from its ropes having just broken the surface, was also regarded as a failure.

Therefore, it can be seen that, despite the fact that very little material describing these three phases of Operation Tuskar either in the report or the appendix ‘Operation Tuskar’ was actually published, it has crept into the public perception, aided by the paucity of availability of information on these operations, that:

- a) The UK ships first to arrive to the search area deliberately went to the wrong area when the St. Phelim was first reported missing.
- b) That having eventually found the correct area where the aircraft lay on the 25 March, that the efforts to pinpoint the wreckage on the bottom of the sea were deliberately delayed for three months.
- c) That the efforts to raise the wreckage in July were deliberately botched by the Royal Navy to thwart the Irish Investigators efforts to establish the cause of the crash.

Compounding the above, when the Investigator published his report it focused, apart from tests on a fault found in the Auto Pilot, almost exclusively on the possible presence of another aircraft viz

2.1.4.9 *‘If the aircraft seen over Fethard-on-Sea was not EI-AOM, then some other aircraft must have been in the vicinity. The number of witnesses who described the aircraft include the two whose evidence is most remarkable. Witness No. 2 describes the aircraft as being enveloped in a cloud up to the wings, and that this cloud appeared to be revolving and travelling along with the aeroplane.*

This witness also heard a subsequent bang which died away like thunder. Witness No. 1 saw the aircraft emerge in a sharp turn from three small black clouds “as if fired from them”. These accounts could be satisfactorily explained by a supersonic aeroplane coming out of a dive, causing a boom and the small clouds and then flying past witness No. 2 with the wing covered in condensation cloud typical of near sonic speed in humid air. (This phenomenon should not be confused with the condensation trail seen behind aircraft at great heights).

The aircraft with part of wing and tail brightly coloured “as if on fire” and seen by other witness in Fethard-on-Sea was almost certainly the same one, since the times and direction of flight agree. (The aircraft disappeared towards the Hook Head – Saltees direction – south to south east of Fethard-on-Sea).

2.1.4.10 *Enquiries have not elicited any other information regarding the possible presence of another aircraft in the vicinity, but if the evidence of time of impact is accepted, and this seems to be reasonably reliable, the conclusion that there was such another aircraft in the area is inescapable. No aeroplanes have been reported missing, but there remains the possibility that an unmanned aircraft, either a drone target aircraft or a missile might have been there. It is to be noted that the firing ranges in the U.K. were closed on Sunday 24 March 1968*

Several witnesses from locations on shore as widely separated as Hook Head, Witness No. 6, (south of Fethard-on-Sea) saw an object in the sea in the vicinity of the Coningmore Half Tide Rock during the afternoon of March 24 and one witness No. 21 on shore near Carnsore Point saw a large splash in the area at or about 12.00 noon local time.

This evidence would not be inconsistent with the supposition that an unmanned aircraft had fallen in the sea, and remained afloat for some hours. No further evidence of this has come to light, and no sighting was made by any of the search aircraft in the vicinity during the afternoon and on the days following.

Witness No. 7 saw a ship pass between the floating object and the shore, but as it continued on course, he concluded that the object was of no interest. The area was later searched with no result, and no trawlers recovered anything from the area which is frequently fished. Nevertheless, the evidence of the sighting is regarded as sound and not readily set aside.

2.1.4.12.1.4.11 *There have been several accounts of “upsets” of aircraft being caused by such factors as clear air turbulence, stalling while in climbing attitude, evasive manoeuvres to avoid collision with another aircraft or wake turbulence from another aircraft. The two former causes do not seem probable though not impossible. But either of the second two possibilities would, in the light of the evidence discussed in the foregoing paragraphs, seem to become rather more credible.*

2.1.4.12.1.4.12 *Taking into account all of the presently available evidence and assuming that the observations of sightings, sounds and timing by the few witnesses available were reasonable accurate and reliable, it is possible to evolve a hypothesis which rationalises the otherwise inconsistent elements in the*

evidence, and presents a coherent, if improbable story.

This hypothesis envisages that while Viscount EI-AOM was in normal cruising flight at 17,000' and within 6 minutes of reaching Strumble Head, another aircraft, which could have been a manned or unmanned aeroplane or a missile, passed in close proximity, possible even colliding with the tail of the Viscount, causing an upset which led to a manoeuvre which was either a spin or a spiral dive from which the Viscount was recovered in a disabled condition, to fly thereafter for approximately 10 minutes over the sea before control was finally lost.

The other aircraft could have been the one seen over Fethard-on-Sea, and might have fallen in the sea near the Saltee Island.

In considering this very speculative theory, attention must be given to a number of matters which discount it's credibility.

These include the fact that no aircraft, civil or military, manned or unmanned, were reported, or known to have been in the area at the relevant times, nor was any aircraft other than EI-AOM reported missing on that day.

The missile and target ranges on the Welsh coast are closed on Sundays, and were known to be inoperative on Sunday 24 March 1968.

No aircraft carriers were operating in the area.

The altitude of 17,000' at which EI-AOM was cruising is considered unlikely to be used by military aircraft.

The manoeuvre of recovering a loaded Viscount aeroplane from a spin or a spiral dive would require a very remarkable feat of airmanship on the part of the pilots. In fact there is only one known case in which this was effectively accomplished during a test flight by expert test pilots. Even in that case, the airframe suffered some distortion of the tail unit. It is difficult to account for the lack of communications during the presumed 10 minutes before the final catastrophe. The aircraft may have been too low for V.H.F. communication with ground stations, but if there were transmissions they should have been picked up by other aircraft.

On account of these matters, the hypothesis must remain in the realm of speculation and on present evidence cannot be given a higher status than a remote possibility. '

This particular hypothesis which is acknowledged by the author as being improbable and conclusion 12 (*‘There is evidence which could be construed as indicative of the possible presence of another aircraft or airborne object in the vicinity which, by reason of collision, or by its proximity causing an evasive manoeuvre to be made, or by its wake turbulence, might have been the initiating cause of an upsetting manoeuvre resulting in the Viscount entering a spin or spiral dive.*

There is no substantiating evidence of such a possibility, but it cannot be excluded for it is compatible with all of the presently available evidence’)

has formed together with the doubts cast on the Search and Salvage efforts, the basis of speculation which has been ongoing since 1968.

It has prompted a book:

‘Tragedy at Tuskar Rock’ Dermot Walsh
Mercier Press 1982

Hundreds of Newspaper and Magazine
articles

Several T.V. documentaries

Several Parliamentary Questions

On the thirtieth anniversary of this crash following an RTE Prime Time television programme, a committee of relatives of the victims was invited to meet and discuss the implications in both this TV programme and the generally held beliefs that the aircraft had been brought down by a missile or airborne object, that a less than thorough effort was made to locate the wreckage and that the UK Ministry of Defence was responsible for the loss of the St. Phelim.

All of the above are no doubt prompted by:

1. The inconclusive nature of the 1970 Report of the investigation
2. The introduction of the idea of the possible presence of another airborne object which may have been the cause of the initial upset to the Viscount.
3. The initial search for the St. Phelim on the 24 March ’68 being 20 miles from the place where the aircraft was found.
4. The operation to locate the wreckage on the sea bed taking from March to June.
5. The disappointment at the lack of success in raising the fuselage on the 22 July ’68 which effectively destroyed any chance of recovering the remains of the 47 crew and passengers, and the possible loss of parts of the aircraft which may have helped in establishing the probable cause of the loss of the St. Phelim.

In 1998 on the thirtieth anniversary of this crash, an RTE Prime Time documentary examined several aspects of the St. Phelim crash.

The programme focused on the following:

1. Activity of the Welsh missile ranges.
2. Activity of the Royal Naval Ships HMS Penelope and HMS Hardy.
3. The unsuccessful attempt to lift the wreckage.

Following this programme members of a group of relatives of the victims of the St. Phelim were invited by the UK Ambassador to Ireland, Dame Veroncia Sutherland, to meet and discuss the involvement of the UK Ministry of Defence in this accident.

Following a meeting between the Minister for Public Enterprise and the UK Ambassador, it was agreed that a review would take place by both Irish and British Officials to establish if any new light could be shed on the cause of this accident, and to furnish the relatives with any information on the various aspects of the crash.

These were to include all aspects of the involvement of the all British Military elements in the search and salvage of the St. Phelim, and the activity of Military Ranges on the Welsh Coast.

Concurrent with this activity the group of relatives also met the Minister for Public Enterprise, Mrs. Mary O'Rourke, TD.

FORMAT OF THE REVIEW

Irish and UK officials met in Dublin in March 1999 to agree a structure by which the considerable volume of material accumulated could be examined to establish if any new information could be found on either side which could establish the cause of the accident.

The main areas of consideration were best characterised by the nature of the questions posed by the relatives, and in some cases by the Irish Investigating Authorities into certain aspects of:

- (a) The initial upset and crash of the aircraft, and the immediate search and rescue efforts.
- (b) The search for and salvage of the St. Phelim from the sea at Tuskar.
- (c) The possibility of the existence of another airborne object in the vicinity of the St. Phelim at the time of its initial upset.
- (d) The aircraft, its airworthiness, its operation, and its crew. (This to be carried out by the Irish Authorities)

It was agreed by both sides that initially a list of questions posed by the relatives would be answered by the Irish side where the information to substantiate the answers was available to them. Where the information was not available in the Irish Files, then the question would be passed to the UK side for possible answer. The list was expanded to include some questions posed by the Irish Authorities to the British and also some questions posed in relation to the Accident down through the years by the Celtic League.

The full list of questions and the answers given by the Irish Authorities were presented to the British for their observation and discussion at a meeting in London in May 1999. The answers given by the British Authorities, with some observations, in September 1999 are attached in Annex C.

In reviewing the Irish Files information was sought from Government Departments, Defence, Taoiseach, Marine, Health, Justice and various Government Agencies, Health Boards etc. to establish if any material was held by any such agency which could contribute to the review. Some files were held by the Department of Defence and the log books of the Naval Service Ships LE Cliona and LE Macha were available for examination at the military archives in Cathal Brugha Barracks.

Aer Lingus made all the material held in relation to the loss of the St. Phelim, by them, available to this review.

The following files were reviewed. These files are composed of administrative and technical files and are numbered 1 to 54/2000 for the purposes of this review.

Number	File Name
1/2000	EI-AOM General 24/3/1968
2/2000	EI-AOM Tuskar Accident
3/2000	Aer Lingus Viscount EI-AOM (EI-712) 24 March, 1968. ATC Reports, R/T Transcripts and Met "Aftercasts"
4/2000	Flight Crew Particulars
5/2000	EI-AOM. Fatal Aircraft Accident near Tuskar Rock, Co. Wexford, 24 March, 1968. Documents received from Aer Lingus.
6/2000	EI-AOM. Fatal Accident near Tuskar Rock, 1968. January, 1999 -
7/2000	Assessment of the Propellers installed in EI-AOM
8/2000	Medical Evidence
9/2000	EI-AOM Structure and Controls
10/2000	EI-AOM Auto Pilot reports
11/2000	Confidential:- General Correspondence
12/2000	Search Operations
13/2000	Search Operations
14/2000	EI-AOM
15/2000	EI-AOM Lab reports – Details of wreckage
16/2000	Electrical and Avionic equipment
17/2000	Papers relating to Aer Lingus Flight 712
18/2000	Examination of cabin height indicators
19/2000	Exhumation of Grave in Crosstown Cemetery, Co. Wexford
20/2000	EI-AOM Analysis Part II
21/2000	Tests and Research
22/2000	EI-AOM Report Part 1 – Investigation Part II - Analysis and Conclusions
23/2000	"Operation Tuskar". Extracts from Signal logs.
24/2000	Accidents - Aircraft Aer Lingus Viscount EI-AOM in Sea - March 1968 – Assistance to D/Transport & Power.
25/2000	Reports from the Royal Navy of the SAR and Salvage of Aer Lingus Viscount 712, 24 March, 1968 - 27 August, 1968. "Operation Tuskar"
26/2000	EI-AOM - Requests any Foreign Government made for requests for Death Certs, Documentation.
27/2000	EI-AOM Reports and Correspondence
28/2000	General Correspondence
29/2000	Draft report on wreckage analysis
30/2000	Report on aircraft damaged by deliberate detonation of explosives and a note on the Bird strike hazard to aircraft
31/2000	EI-AOM Tuskar Rock. Newspaper Clippings
32/2000	EI-AOM Photographs
33/2000	Accident to Aer Lingus Viscount EI-AOM on 24 March 1968. Expenses
34/2000	EI-AOM Tuskar Rock crash. Correspondence with a person in a Place of Detention
35/2000	Representations to Minister re: Aer Lingus Viscount Accident at Tuskar Rock 1968. Correspondence 1990 – 1993
36/2000	EI-AOM. Replies for Minister's Signature Correspondence 1992 - 1998.
37/2000	Tuskar Rock replies for Minister's Signature Outstanding 1998
38/2000	Reply for Minister's Signature to: Mr. J.P Moffatt, Secretary General, Celtic League. 18/12/98
39/2000	Meeting with Ministry of Defence 24/5/98
40/2000	Correspondence 1994

41/2000	EI-AOM - Tuskar Rock Correspondence 1996/1997/1998. (incl. some replies for Minister's Signature and General Correspondence)
42/2000	EI-AOM - Replies for Minister's Signature. 1998
43/2000	EI-AOM. – Correspondence and replies for Minister's Signature incl. Celtic League 1999.
44/2000	EI-AOM - Documents relating to meetings between Ivan Yates T.D and Captain Douglas Wyles.
45/2000	Viscount APS Forms
46/2000	Brian O' Shea Correspondence re: Tuskar
47/2000	Dowty Rotol Report
48/2000	Interim Reports
49/2000	Letters Re: Tuskar
50/2000	Appendices Only
51/2000	Appendix
52/2000	PQ's – Dept. of Defence
53/2000	Witness – Letters N.C – etc
54/2000	Press Cuttings

The material provided by the U.K. Authorities in support of the answers to the questions posed by the relatives committee are listed below. A covering letter from the U.K. Ministry of Defence accompanied these documents and contains the following observations:

We hope that our response will lay to rest the myths that have developed in relation to this event. It is my view that allegations about MOD responsibility have invariably been based on misunderstood or misrepresented information. As I hope our Irish colleagues will appreciate, we have been completely open and forthcoming in response to their requests for information.

In reviewing available documentation we have discovered no information that might shed light on the cause of the crash. Having carefully examined all the suggestions and accusations of British military involvement, we have found nothing to support the theory that the aircraft was hit by a British missile, aircraft or drone. We are convinced that the MOD was in no way responsible for, or caused, the crash of the Aer Lingus Viscount aircraft St. Phelim. This note takes the opportunity to address the four main areas of concern in general terms. It has been agreed by David King of the DETR's Air Accident Investigation Unit.

Search and Rescue

The Royal Navy was not in the area at the time of the crash. It provided humanitarian assistance in the search and rescue operation. The RN vessels took several hours to get to the area of the crash. On hearing of the crash, despite it being a Sunday when flying did not normally take place, the RN immediately organised and deployed its available helicopters to the search operation. Initially, on 24 March 1968, the search and rescue operation was hindered by the lack of accurate position data for the Aer Lingus Viscount. However, despite this initial difficulty the search and rescue operation was conducted efficiently and the RN recovered the first body on the morning of 25 March within 30 minutes of it being sighted by a RAF Shackleton.

Questions have been raised concerning why the log-books of some of the vessels involved concerning the relevant period are missing. In fact out of seven RN vessels involved in the search and rescue and salvage operation (Op. TUSKAR) only two (those of the HMS HARDY and CLARBESTON) cannot be located today. This may have been due to incorrect administrative procedures during refits/decommissioning shortly after the period in question or because the logs were used for enquiries into the SAR and salvage operations at the time and not subsequently returned to their ships. The unavailability of these logs is compensated for by the detailed official reports of proceedings produced for Commander in Chief, Plymouth (full copies attached, summarised in “The Report of the SAR and Salvage of Aer Lingus Viscount 712, 24 March-27 August, 1968: Operation TUSKAR” which has already been passed to the Irish authorities).

Missile

There have been a number of suggestions that either a missile or target drone from RAE Aberporth or another MOD site might have been involved in the accident. None of our planes, target drones or missiles were lost or damaged on Sunday 24 March 1968 and, in addition, no target drones or missiles which required a target from Llanbedr were launched on that day. RAE Aberporth was closed on the day of the crash (as was Llanbedr). Research by MOD historians and discussions with those involved in our enquiries (both those involved at the time and current experts) has found no suggestion that any RN or RAF exercises were conducted in the Irish Sea on 24 March. Additionally we have found no evidence of RAF flights in the area on the day and the RN ships nearest to the crash site did not carry surface to air missiles. Any incident involving a civilian aircraft would have been reported and recorded at the time.

It has been suggested that a missile, drone or target might have strayed outside the test range at RAE Aberporth. Whilst this could not have happened on 24 March because the range was closed it is worth noting that all drones and targets operating in the range area have been tracked to splash position. A small number of missiles have gone out of control and landed beyond the range boundary but we have been able to account for them.

Mechanical Failure

The report of Irish Inspector of Accidents, Mr. R.W. O’Sullivan, did not rule out a possible mechanical failure caused by a defect or failure in the elevator and/or tailplane as a cause of the accident. He refers to the portion of spring tab that was found on a beach and not in the area where the bulk of the wreckage was recovered as possible evidence for this. Mr. E. Newton, who was involved in the UK Air Accident Investigation Branch’s support of R.W. O’Sullivan’s investigation, has drawn to our attention to the fact that in 1980 another Viscount 800 series aircraft crashed out of control, in Indonesia, and accident investigators linked this to problems with the elevator tail spring tab. We have no view on the likely causes of the St. Phelim crash. However, we would hope that the attention being given in this review of documents to allegations of a military cause does not divert attention from the possible, and according to Mr. Newton probable, mechanical explanations of the crash.

Salvage

The RN was involved in the salvage operation at the request of the Irish Government on a repayment basis. The overall operation achieved considerable success in salvaging a considerable amount of material in extremely difficult conditions, as was acknowledged by the Irish Government at the time.

The lift of the main fuselage section of the Viscount that was undertaken on 22 July 1968 failed to lift the fuselage intact as was hoped. Having spoken to current MOD salvage experts and the commanding officer of HMS RECLAIM, himself an experienced diver, we are satisfied that correct procedures were followed in attempting a very challenging lift in adverse conditions – conditions which would be deemed too dangerous to operate in today with the equipment that was available then. I have spoken to the Commanding Officer and he states emphatically that the decision on the lift was taken by him and the salvage officer in consultation and in the light of the changing circumstances and opportunities as they saw them at the time. There were no hidden or sinister motives for the lift.

Finally, as a result of our further and exhaustive searches we have found a complete set of signals (enclosed) between Portsmouth and HMS Reclaim which might help in piecing together the sequence of salvage events. We also enclose the material on the Stiletto as requested; it was not used or even tested by MOD until after the accident. We believe that we have now answered the extensive list of questions raised by our Irish colleagues. If there are residual questions we would, of course be happy to attempt to address them. The invitation to our Irish colleagues to visit the Aberporth range still stands.

DOCUMENTATION IN SUPPORT OF THE UK MOD'S RESPONSE TO QUESTIONS ON THE CRASH OF THE ST PHELM

- 1) Official RN reports of proceedings. Supporting papers to Doyle, O'Driscoll & Associates' Question 7.
 - a) CinC Plymouth letter forwarding Op TUSKAR Report dated 10 February 1969.
 - b) HMS PENELOPE Report dated 27 March 1968.
 - c) HMS HARDY Report dated 29 March 1968.
 - d) Senior Officer Search Force's Report dated 1 May 1968 (incomplete).
 - e) Senior Officer Search Force's Report dated 24 May 1968.
 - f) Operation Order TUSKER 1/68 dated 11 June 1968.
 - g) HMS NURTON Report dated 21 June 1968.
- 2) "The Report of the SAR and Salvage of Aer Lingus Viscount 712, 24 March to 27 August, 1968: OPERATION TUSKER" dated 10 February 1969.
- 3) RNAS Brawdy Air Officer of the Day's Log for 24 March 1968. Supporting paper to Relative's Questions List A Question 4.

- 4) Supporting Paper to Relatives' Questions List B Question 5.
- 5) Supporting Papers to Relatives' Questions List B Question 7 and Celtic League Question 7.
 - a) DERA Annex B: Wreckage Examined on the Fishguard/Rosslare Ferry at Fishguard.
 - b) DERA Annex E: Salvage of Wreckage from Aer Lingus lost over Irish Sea.
- 6) DERA: RAE Aberporth/Llanbedr -Evidence of Closure on Sunday 24th March 1968. Supporting Papers to Celtic League Question 5 and Irish Government Supplementary Question 3.
- 7) DERA Annex F: Aberporth Danger Area. Supporting Papers to Celtic League Question 9.
- 8) MOD Comments on extracts from PRO supporting papers to Question arising from 24 May meeting and referred too in Supplementary Questions 1 and 2.
- 9) DERA: STILETTO Including Identification Findings on Target Wing held by the Irish AAIU June 1999. Supporting Papers on Stiletto.
- 10) Shorts Brothers of Belfast: STILETTO documents and MOD Summary Sheets.
- 11) Operational Signals: SAR and Salvage Ops.
- 12) Comments from:
 - a) Capt. of HMS HARDY
 - b) Capt. of HMS PENELOPE
 - c) British Air Accident Investigation Branch Officer who advised and assisted Irish Dept of Transport and Power during the investigation.
- 13) DERA: Review of UK Anti-Aircraft Weapons 1968 Vintage -Performance, Status and Aberporth/Llanbedr "Connection".
- 14) Comments on Thunderbirds and the Royal Artillery/TA.

Comparison of Irish and UK material Operation Tuskar

Apart from the Appendix 1 Operation Tuskar and the brief references in the text of the 1970 Report, several lacunae have existed in the general understanding of the exact nature of the search and salvage operations. The reports furnished by the UK for this review allow a clearer explanation of the exact nature of these operations, in particular the UK Report on Operation Tuskar, the Salvage Phase, which is attached to this Report as **Annex C**.

The on/off nature of Search and Salvage operation is clearly articulated as being unsatisfactory from the Royal Navy view point, as shown on the following extract from Annex C:

Notes: At the start of this operation the orders were to keep the cost down. To do this it was decided to use only one minehunter and a CMS in support. To avoid the dangers of breaking up the wreckage, trawlers were not used at the start of the first phase. The Irish authorities agreed with this but they had a different reason. They did not want the bodies disturbed whilst there was still a chance of recovering them in a recognisable state. In addition the local trawlermen said they never fished near the TUSKAR ROCK because there were no fish and the bottom was too rocky. _

Search Assets Available 24 March 1968

It is clear that following the initial realisation in Cork and Shannon Air Traffic Control centres that the St. Phelim was missing, that the Irish assets available to assist in the search for the aircraft on the 24 March were limited to an Air Corps Dove and an Alouette III helicopter. As stated in the Report, at 1310 hours on the 24 March there were 10 aircraft from the UK in the search area.

Command and control of the search operations was passed to the LE Macha on 26 March when she relieved HMS Hardy as search co-ordinator.

On 29 March the search and rescue effort was terminated and the search and salvage phase begun.

Irish records show that no capabilities to carry out such operations existed in Ireland and that the UK were requested by the Department of Transport and Power, through the Irish Ambassador to London, to provide assistance following receipt of sanction from the Department of Finance. This was provided by a mine sweeper and a mine hunter, HMS Clarboston and Shoulton.

The Irish File titled Search Operations records:

The Inspector of Accidents reported on 26th March, 1968 that the British Naval Vessels which had been carrying out the search for the wreckage of the Aer Lingus Aircraft were withdrawing as the rescue phase of the operation had terminated. The Secretary having cleared the matter with the Department of Finance, I asked Dr. O'Sullivan, Department of External Affairs, to approach the British Ministry of Defence through the normal diplomatic channels asking that the H.M.S. Hardy should return to assist in the search; he agreed to do this.

Dr. O'Sullivan telephoned on the morning of 27th March and said that the British Ministry of Defence felt that the H.M.S. Hardy would not be suitable for the type of operations now needed. They offered the services of one mine hunter or possibly two at a cost of £1,000 a day each. They said that the services of recovery vessels would also be needed and they would cost about £335 a day each. There would probably be additional costs for overtime and incidentals. The recovery vessels in turn would need to be assisted by trawlers which could be arranged locally. I passed this information to the Inspector of Accidents who in fact was discussing the matter with the Director of the Naval Services at the time. Both agreed that a mine hunter would be more suitable than H.M.S. Hardy and they felt that one would be sufficient for the present, the recovery vessels being called in later if their services should become necessary. I asked Dr. O'Sullivan to arrange with the British Ministry of Defence for the services of a mine hunter in the search area as soon as possible. He undertook to do this immediately.

In the introduction to this paper an extract from the Appendix to the 1970 Report appears on pages 6/7 to 10.

Examination of the original draft of this Report clearly indicates that certain information on the divers' reports quoted was excised, this is further corroborated in the now available U.K. Search and Salvage Report, e.g.

The divers reported that the remains of the fuselage consisted of a skeleton of transverse ribs, stripped of the skin plating from 4 feet above seabed level. These circular rib frames were angled forward towards the cockpit and had no doubt taken up this position by the shock of impact. It appeared that the aircraft was in fact lying the right way up on the seabed, resting on the edge of a deep sand hollow. The wings were sheared off the fuselage and like the rest of the tangle of wreckage constituting the fuselage proper, the cockpit was open at the top and badly wrecked internally.

Some bodies were seen within the tangled fuselage frames but the interior was in such confusion with loose wreckage piled here and there, that it was not possible to get a clearly defined aircraft shape from the wreckage.

The decision to excise this information was obviously taken to lessen the impact of the fact that the twisted wreckage still contained several bodies even after three months in the sea. The Search and Salvage report also indicates the policy with regard to the use of trawlers.

There is much criticism of the decision not to use trawlers in the early stages of the search but the reasons are now apparent and were of the highest motivation, not as has been suggested as a desire not to find the wreckage.

FINANCIAL ASPECTS

It is apparent from the review of the Irish files that from an early stage i.e. May 1968, the cost of the search and recovery was posing problems for the Irish Authorities.

A constant battle for adequate funding is clearly evident from exchanges between, the Department of Transport and Power and Aer Lingus and the Department of Transport and Power and the Department of Finance.

The cost factor was still being discussed before the final effort to find additional wreckage was made in August 1969. Initially sanction was refused for funding of another trawling operation. However, the Minister for Transport and Power persuaded the Minister for Finance to sanction the necessary expenditure which resulted in considerable success, as the fourth propellor and other additional wreckage was recovered.

Examination of Irish Files on the Search operation show that when initial sanction from the Department of Finance referred to on page 24 was received it was not envisaged that the operation would continue indefinitely.

As the costs mounted, the Minister for Transport and Power sought assistance to defray the costs from the UK Ministry of Transport (Board of Trade), Aer Lingus and through Aer Lingus, the manufacturer of the aircraft

The Board of Trade advised that the Minister should not anticipate a financial contribution but equally should not expect that the costs of the Royal Navy ships engaged in the operation would be excessive.

Aer Lingus, in reply to the Minister indicated that to continue with the search for the wreckage was the right thing to do, but that Aer Lingus that year was anticipating a loss of in excess of £300,000 and would probably be trying to avoid seeking a subvention.

The aircraft manufacturer said they would help with the Investigation. However, there is no record that they gave financial assistance towards the costs of recovery.

As the costs mounted and with little prospect of success in recovering either the bodies or the aircraft particularly after the unsuccessful lift of the 22nd July, the Department of Finance said *that they appreciate fully the need for a technical examination of the recovery prospects. It is the kind of case, however, where an administrative decision is called for because the Technical people would be loth to decide a halt to recovery while a prospect of success obtained and would not have due regard to the other considerations involved. Taking a broad layman's view and apart from the financial question he thought we had done enough.*

The decision was, however, taken by the Minister for Transport and Power, Mr. Erskine Childers, after consultation with Mr. William Rodgers, Minister of State, Board of Trade, that one more effort would be made in August to recover the wreckage.

Participation by British vessels in this operation ended on 21 August. Trawling operation continued until 5th October.

All the operations failed to retrieve the cockpit, the inner portion of the wings, the rudder, tailplane and elevators, obviously vital components in establishing the break up pattern of the aircraft.

One more trawling effort was sanctioned in July 1969, again only after insistence by the then Minister for Transport and Power, Mr. Brian Lenihan to the then Minister Mr. Charles Haughey.

Viz.

Letter from Department of Finance to the Secretary of the Department of Transport and Power:

18 Iúil 1969

An Rúnaí

An Roinn Iompair agus Cumhachta

I am directed by the Minister for Finance to refer to your minute of 10 July proposing a resumption of salvage operations for recovery of the wreckage of the Aer Lingus Viscount which crashed off the Wexford coast on 24th March, 1968.

The Minister has adverted to the fact that financial sanction was accorded to all your Department's previous proposals which involved very extensive salvage operations throughout most of the year 1968 and which cost the Exchequer upwards of £140,000. It is inferred from your minute under reply that this expenditure was virtually nugatory in so far as the recovery of any useful evidence was concerned and that the prospects of success for the resumed operations now proposed are highly speculative. In the Minister's opinion all reasonable measures have already been taken and public funds should not be committed to any further expenditure particularly since the sum of £2,000 mentioned might well have to be considerable exceeded under pressure if public interest, now dormant, were resuscitated. The Minister regrets accordingly to be unable to sanction the proposal.

Reply from Minister for Transport and Power to the Minister For Finance:

22 July 1969
C J Haughey Esq TD
Minister for Finance

Dear Charlie

I write to you with reference to the recent refusal of your Department to sanction additional expenditure not exceeding £2,000 on a further effort to recover parts of the wreckage of the Aer Lingus Viscount which crashed off the Wexford coast in March, 1968, by the use of a local trawler.

The need for this further expenditure is set out at some length in my Department's official minute of the 10th July. The additional trawling has been formally requested in writing by the Inspector of Accidents appointed under the statute to carry out the preliminary investigation into this accident. It is his considered recommendation that this exploratory operation by trawler should be authorised at least on a trial basis, and if initially successful, should be continued for as long as useful material is being recovered.

The onus rests on me both under national legislation and under the relevant International Convention to ensure that all practicable steps are taken to enable the cause of this crash to be ascertained. You will appreciate that we may yet have to face pressure for a Public Inquiry into this crash and we could not possibly defend, before a Public Inquiry, refusal of this reasonable request of the Inspector of Accidents for limited further trawling.

I have fully considered the aviation policy and other non-financial considerations involved and my Department has discussed with Aer Lingus the possibility that further trawling operations would give rise to damaging publicity. I am satisfied that the marginal unfavourable publicity which might be caused would not, and should not in any case, be allowed to outweigh the overriding considerations of safety and the public interest.

I appreciate the concern of your Department about the substantial expenditure already incurred. The great bulk of this expenditure was in respect of the assistance rendered by the British Navy. On the information then available the employment of these specialised craft and personnel offered the best, if not the only possibility, of recovering wreckage or bodies. Moreover, in the state of public opinion at the time, we had no option to employing them. In the event it was the Kilmore trawler, which it is now proposed to re-employ, which rendered the most useful assistance. While the cost of the British assistance might, therefore, be regarded as largely nugatory in a technical sense, the further expenditure now proposed is certainly insignificant and refusal of it on financial grounds alone would be completely indefensible if it ever became public.

I cannot, therefore, allow myself to be put in the position of refusing the modest further efforts now requested by the Inspector of Accidents in the discharge of his statutory duties. I should be grateful, therefore, if you would look into the matter urgently and let me have a favourable decision as soon as possible. You will appreciate that the possibility of useful trawling depends on the state of the tides and the weather and that there has already been considerable delay.

Yours sincerely

Brian Lenihan

Reply from Minister for Finance to Minister for Transport and Power:

31 July 1969

*B Lenihan Esq TD
Minister for Transport and Power
Kildare Street
Dublin 2*

Dear Brian

I have your letter of 22 instant regarding the proposed resumption of attempts to recover parts of the wreckage of the Aer Lingus Viscount which crashed off the Wexford coast in March, 1968.

I am reluctant to agree to further expenditure of public funds on search operations which can at this stage have only very limited prospects of success. It seems to me that all the practicable steps to ascertain the cause of this crash have already been taken. However, if you consider that your responsibility under national legislation and under the relevant International Convention demands that you concede the request now made by the Inspector of Accidents for an additional trawling search I am prepared to sanction expenditure of £2,000 for this purpose. The resumed operation should be undertaken on a trial basis only and if not initially successful should not be proceeded with.

Yours sincerely

CJ Haughey

This final trawling efforts yielded a significant amount of additional wreckage, in particular:

A significant amount of additional wreckage was recovered, which included the No. 3 propeller complete, and a major portion of the fin and rudder, still attached to each other. A portion of the trim tab of the rudder was also recovered.

These recoveries can be accepted as ample justification for the resumption of the trawling operations this summer, for at least they eliminate elements of conjecture regarding the integrity of the fin and rudder structure at the time of impact with the sea, and confirm opinion that all four propellers were on the aeroplane at that time.

These difficulties are also referred to in the UK Report on the Search and Salvage under General Observations and Conclusions.

It was unfortunate that the operation was curtailed when it was. From the start it was difficult to plan a progressive salvage operation. On arrival at TUSKAR on 20th May, I was told by the Chief of Irish Naval Staff 'that if the aircraft was not found in this phase his Government would call us off'.

When the aircraft was found we were given one chance to raise it. This attitude prevailed throughout the operation, each visit was the last. Trying to work under these terms in addition to the general difficulties encountered in an operation of this nature had its effect on all concerned. The general feeling was always trying to grab what we could in case we were not coming back. I feel this is no way to run a major salvage task.

Miniature Submarine

In March 1970, with the agreement of the Department of Foreign Affairs, a further trial search was carried out at Tuskar by a two man miniature submarine, "Pisces", developed and owned by the Vickers Shipbuilding Group Barrow in Furness, Lancashire. The attempt to locate any further Viscount wreckage was abandoned due to the impossible conditions on the sea bed at Tuskar where the tide was running at 6 knots and limiting visibility to a mere three feet. The Pisces returned in May 1970 to Rosslare and carried out further 'dives' from it's mother ship, Vickers Venturer. Using television cameras the Pisces located small pieces of wreckage but did not locate any of the missing major parts, particularly the tail plane and elevators and the starboard side passenger emergency door or the freight and baggage hold doors. This was the final effort to locate the missing parts of the St. Phelim and was unsuccessful. These efforts by the Pisces were reported in all the Irish daily newspapers of the time.

THE AIRCRAFT

Note:

It is not normal practice in Aircraft Accident Publications to identify individuals by name.

However, in the interests of clarity and given the exceptional circumstances of this review, individuals named in documents published in this review are identified.

Department of Transport and Power

Mr. R.W. O'Sullivan
Capt P.G. McCabe
Mr. M. Maxwell
Mr. B. O'Reilly

Aer Lingus

Mr. J. Butler
Mr. T. Mehigan
Mr. F. Begley

The St. Phelim was a Viscount 803, serial number 178, built by Vickers Armstrong for KLM Royal Dutch Airlines in 1957 and initially was registered as PH-VIGXX. She was transferred to the Irish Register and re-registered as EI-AOM in 1967. She was not fitted with a Cockpit Voice Recorder (CVR), a Flight Data Recorder (FDR), or an Emergency Locator Beacon (ELT).

The requirement to carry such equipment was not mandatory on aircraft of her age.

During this review, Departmental files were received from the IAA. One of these, titled "EI-AOM", but otherwise un-referenced, contained the results of inspections of maintenance records of EI-AOM, made following the accident, and other miscellaneous records.

EI-AOM

A. Analysis of Maintenance File

Two items of concern were found in this file:

- 1.1. According to available information, on 18 Dec 1967, EI-AOM underwent an Inspection Visit 2.04. The '2' indicates Inspection/Visit Chart Issue No. 2 and the '04' indicates the 4th inspection in this chart. The aircraft then underwent an Inspection/Visit 2.05 on 8 March 1968. The paperwork in relation to the 2.04 inspection was found to be missing in 1968.
- 1.2. A large amount of research was done after the accident, regarding the maintenance operating plan used for EI-AOM and defects on the aircraft found during analysis of the maintenance records. This research was not referred to in the Final Accident Report. This paper examines the circumstances of this omission.

1. The 2.04 Inspection Records

An Aer Lingus memo (Annex D) dated 3 Jan 1968 from T. Mehigan to the Chief Inspector, and copied to A. Prod M, notes that all but one of the work cards relating to the 2.04 inspection have been mislaid, and that the last known location of the records is in the Planning Office, No. 1 Hangar on 22 Dec 1967. This letter is also stamped. The stamp is not clear but it appears to that of the office of the Chief Inspector, Aer Lingus and also features what appears to be "Mr Begley" written in the stamp box, and the date " 4 Jan".

There is an Aer Lingus letter (Annex E) from J. Butler, to M.S.S., copied to CPCE, dated 3 Jan 1968, noting the fact that the work cards for Inspection 2.04 have not been received in the Quality Central Records Office, and noted that all efforts to find the records have proved fruitless.

It further notes a similar occurrence involved in a recent accident, which was the subject of an investigation. In this case the records were eventually found.

It appears that Mr. Begley, who signed the 2.05 Inspection also signed off the 2.04 Inspection, where he stated, to the best of his recollection, that there were no carried forward defects on the 2.04 Inspection, relating to the work cards, as listed in his letter. This letter is dated 9 days after the accident to EI-AOM. (Ref Annex F)

Mr. R.W. O'Sullivan, G. McCabe and J. McStay were interviewed on 31 Jan and 1 Feb 2000. The report of these interviews is attached. (Annex E and F)

In summary these interviews showed:

Mr. O'Sullivan had no recollection of the above events. He is now 95 years of age.

Mr. McCabe stated that the fact that the paperwork of the 2.04 work package was missing was known to the Department prior to the accident, and that some defect rectification work-cards, raised in the course of the 2.04 inspection, were found. He further stated that he was satisfied that the 2.04 inspection was carried out.

Mr. McStay did recall that some inspection paper-work relating to EI-AOM was known to be missing during the course of the investigation, but he was not aware when this was discovered.

2. Inspection Contents

A copy of the Inspection Chart Issue No. 2 is attached (Annex I). This lists the Work Groups to be accomplished at each inspection, and is taken from the Operating Plan (Annex J)

1. An A check is carried out on both inspections.
2. A BB check is done on 2.04 and a BA check is done on 2.05
3. A CA check is carried out on 2.05; no corresponding check is required on 2.04.
4. A DD check is required on the check 2.04. The 2.05 check does not require a DD check, but does require a DA check.
5. An ED group check is required on 2.04 and EE group on 2.05
1. No other checks are called on either the 2.04 or 2.05

The following identifies which work cards are called up on the 2.04 Inspection which are not repeated on the 2.05 inspection:

Comparison of Inspection BB Group with BA Group:

There is only one work-card in the BB group, # 1295. This is not called up on the BA group.

Listing of DD group:

The DD group comprises the following work-cards:

1060	1061	1062	1256	2007	2011	2030	2050	2057	2164	2206
3561	4005	4006	4007	4008	4029	4030	(Total 18)			

Comparison of ED Group with EE Group:

The ED Group comprises of work-cards:

1012	1013	1123	1259	2165	2229	3540	3545	4035a	4036(a)
R469	R470	R471	R472	2004	(Total 15)				

None of these work-cards are called up on the EE Group.

Therefore, there is a total of 34 work cards that called up on 2.04 and not called on the 2.05 inspection.

Examination of work-cards listed in Mr. Begley's letter (Annex F) shows that every BB, DD and ED work card (34 in all) are listed in his letter, i.e. he has effectively stated that there no carried-forward defects on the group of 34 work card completed at the 2.04 inspection, which were not repeated on the 2.05 Inspection completed on 8 March 1968.

Defect Repair Card

There is a letter on the file from J Butler, the Chief Inspector of Aer Lingus, to the Department, dated 10 June 1968, which is a covering note for attached documents relating to EI-AOM. The first document listed is a Card No 15 from Inspection 2.04 (i.e. the 15th repair card arising from the 2.04 inspection). A hand written note on the file records that this items was placed with the records of EI-AOM while the other attached documents were to be retained on the Departmental file.

3. Contents of Work Cards

Searches of the files and records of the Department, the IAA and Aer Lingus have failed to discover a set of the Aer Lingus Viscount maintenance work cards, including those mentioned in para. 2 above. Therefore it has been impossible to establish the actual content of the work cards and to identify the aircraft systems and items to which they refer.

4. Maintenance Operating Plan

The maintenance operating plan used by Aer Lingus for the maintenance of its Viscount fleet was based on the guidelines issued by the manufacturer of the aircraft. However over the years it was extensively modified and the work cards to be accomplished on each inspection, as part of the maintenance operating plan, were drawn up by Aer Lingus. The maintenance operation plan was submitted for approval to the Department, and any changes to the plan had to be approved by the Department.

5. Post-Accident Inspection of EI-AOM Recent Maintenance Defects

The Departmental File (see page 33) above contains an analysis of the recent defects found on EI-AOM. This information gathered from the maintenance records of EI-AOM and was prepared by Mr. B O'Reilly, an Inspector of the Department, after the accident.

The analysis consists of several lists including:

Significant Defects and Rectification (less avionics) from 7/3/68 back to certification of inspection no. 2.04. (12 pages).

Significant Defects and Rectification (less avionics) taken on inspection 2.05 (1+ pages).

Significant Defects and Rectification (less avionics) taken from 24/3/1968 back to 2.05 inspection (1 page).

Significant Defects and Rectification (less avionics) taken between inspection 2.03 and 2.04 (11 pages).

There are other lists, comprising Avionics autopilot, radio, hostess reports, and other defects (exceeds 30 pages).

List of Defects on Flying Controls Lock System from 23/10/67 to 22/3/68 inclusive (prepared by B. O'Reilly) (1+ pages).

6. Post-Accident Inspection of EI-AOM Maintenance

Operation Plan

The Departmental file (para 1) above, contains an analysis of the maintenance operating plan of EI-AOM, and is signed by B. O'Reilly, an Inspector with the Department of Transport and Power. This analysis was completed after the accident. See Annex K attached.

It notes that the Inspection Operating Plan was changed from Issue 1 to Issue 2 around March, 1967. This had significant impact on the maintenance plan for the aircraft. The analysis notes that many errors were made in converting to the 2nd Issue of the Operating Plan, particularly with regard to inspection items being called due at an incorrect time. Some items were called at 1/3 of the time requirement, while others exceeded their due time by a factor of 4. The analysis continues to list a total of 6 pages of errors in the maintenance scheduling of EI-AOM.

7. Aircraft Log Book

The file contains copies of the pages from EI-AOM's log book. The table below lists the days between 1 Dec 1967 and 23 March 1968 when the aircraft was entered as "NF" (Not Flown). The right hand column lists the probable reason why the aircraft did not fly on the days in question:

<u>DATE</u>	<u>POSSIBLE REASON FOR NF</u>
08 Dec 1967	Not known
13 Dec 1967	Modification done Dowty VP.2422 (new cylinder)
18 Dec 1967	2.04 Inspection
25 Dec 1967	Christmas Holiday
26 Dec 1967	Christmas Holiday
27 Dec 1967	Christmas Holiday
14 Jan 1968	Not known
05 Feb 1968	½" crack found on fuselage skin; possible inspection for continuation of the C of A.
13 Feb 1968	Defect rectification (aircraft seats)
07 Mar 1968	2.05 Inspection

8. Renewal of Certificate of Airworthiness

According to Mr. McCabe, there was no specific inspection conducted on these aircraft for the renewal of the C of A. Instead the paper work was inspected, and if the aircraft was being maintained in accordance with the maintenance schedule approved by the Department, over the previous 12 months, then a certificate for the continuation of the C of A would be approved by the Department, and a new C of A would be issued on the basis of this approval.

The file shows that an Inspection Report for the Certification of the Certificate of Airworthiness for EI-AOM was certified by M. Maxwell of the Department on 6/02/68, following an inspection of the aircraft at Dublin Airport on 5/2/68 (Copy attached Annex L, page 1). This document certifies that the aircraft documents are in order. This certificate was initialled by R.W. O'Sullivan (Aeronautical Officer), but not dated.

A form, Ae SF1, (copy attached Annex L, page 2) which accompanied the above certificate, signed by M. Maxwell gives details of the C of A inspection. It notes that the last main base check was done in Scotland on 13/2/1967, after which an Irish C of A was issued. It then states that it has not done a major check since then, but was due a Check 3 on 21/3/1968. It further states that the log books were checked and found to be in order.

9. EI-AOM Accident Report

There is very little reference to the maintenance history of EI-AOM in the Final Report of the accident. There is no reference to the 2.04 inspection or the missing paperwork in the Report. Nor is there any reference to the list of defects in the recent history of EI-AOM, errors in paperwork, component scheduling, Hostess Tech. Reports, and a number of other discrepancies, as noted in the Departmental file.

10. Aircraft Record Keeping 1968

Mr McCabe's comments (Annex E) regarding the poor quality of record keeping in Aer Lingus, in relation to aircraft maintenance records in the 1960's, is significant. Furthermore the employment of maintenance personnel from a non-aviation background was perceived as a important factor. As is noted in the letter referred to in para 1 above, the missing inspection paperwork in relation to the 2.04 inspection was not the first instance of such an occurrence.

It should also be noted that the records keeping and the Maintenance Operation Plan at that time were held solely in an extensive paper system, as this was prior to the computerisation of such records and processes.

11. Analysis

- 11.1. The three letters by Aer Lingus Staff, the recollection of Mr. G. McCabe, and the reference to discovered defect rectification cards relating to the 2.04 inspection, indicate that the 2.04 inspection was completed on 18 Dec 1967.
- 11.2. The recollection, as given in his letter of 2 April 1968, of the inspector who signed off the 2.04 inspection was that there were no deferred defects, on that inspection, relating to any of the work-cards that were not completed as part of the subsequent 2.05 inspection.
- 11.3. With regard to the C of A renewal certification, there is an anomaly in that the Inspection form states that the next inspection due is a Check 3 while the Inspection Chart calls for a 2.05 inspection.
- 11.4. A full check of the paperwork, at the time of the C of A inspection, would have revealed the missing paperwork for the 2.04 inspection of December 1967. It may be noted that at the date of certification for the continuation of the C of A, the 2.05 check had not been completed, and consequently the certification status of the 2.04 items that were scheduled to be repeated in the 2.05 inspection would also have been of concern.
- 11.5. There are three possible scenarios:
 - 11.5.1. The missing 2.04 inspection paperwork was known to Mr. Maxwell, and possibly to Mr. O'Sullivan, but they were satisfied that the 2.04 inspection was done, and decided not to comment on it at the renewal of the C of A. This would be in keeping with Mr. McCabe's recollection. However, it must be stated that to simply ignore the missing paperwork, and not to obtain supporting paperwork, such as the letter of Mr. Begley produced after the accident, would be most unusual.
 - 11.5.2. The missing paperwork was known to the Department Staff, and they called for a re-accomplishment of the 2.04 inspection, or they requested the subsequent 2.05 inspection to be brought forward, and that this inspection should include 2.04 items not on the 2.05 schedule. These would have been normal courses of action, but there is no evidence that either was taken. There is positive evidence that the 2.05 inspection was not brought forward.

- 11.5.3. The missing paperwork was not known to the Department Staff at the time of the certification for the continuation of the C of A (5/2/1967) or even prior to the accident. The absence of any Departmental papers referring to the missing paperwork, prior to the accident supports this possibility, but is in conflict with the recollections of Mr. McCabe.
- 11.6. On balance, the absence of Departmental papers referring to the missing 2.04 paperwork, the particular absence of a reference to this matter in the C of A renewal paperwork, and the fact that Mr. Begley wrote his letter after the accident, rather than at the time of C of A renewal, indicates that the missing paperwork was not known to the Department Staff prior to the accident, and was not discovered during the C of A renewal process.
- 11.7. The errors in the maintenance plan of EI-AOM, and possibly other aircraft in the Aer Lingus Viscount fleet, were present for over one year when the accident to EI-AOM occurred. While the initial error arose in the Maintenance Planning section of Aer Lingus, as a result of the change from Issue 1 to Issue 2, it was not detected by Departmental staff, who were responsible for the approval of the maintenance plan.
- 11.8. The renewal of the C of A of EI-AOM, in February 1968, in particular failed to detect the errors in the maintenance Operating Plan, and especially that a number of checks were not being accomplished at the appropriate periodicity.
- 11.9. The errors in the maintenance operating plan and the list of defects on EI-AOM in its short career with Aer Lingus was fully investigated by the Department after the accident. It is difficult, if not impossible, to explain why this material was not included and discussed in the final Accident Report of EI-AOM, to determine if these matters had any bearing on the accident. However, there is no evidence that the aircraft's maintenance history was a factor in the accident. It is unsatisfactory that the Departmental staff member who approved the aircraft for continuation of its Certificate of Airworthiness, in particular certifying that the aircraft documents were in order, was also responsible for the investigation.
- 11.10. With the set-up of the Irish Aviation Authority (IAA) and the separate Air Accident Investigation Unit (AAIU), in the early 1990's, such conflicts of interest no longer exist.
- 11.11. Mr. McCabe's comments regarding the omission from the Final Report of EI-AOM's maintenance history, and the errors in the maintenance operating plan, and the absence of any discussion in the Report in these facts are notable. No reason for the omission of these items from the report could be positively determined.
- 11.12. While the loss of records and the errors in the Maintenance Operating Plan of EI-AOM must be a matter of concern, the available evidence is that this errors were by no means unique to EI-AOM. There is evidence that there were significant failures in these areas within Aer Lingus at the time, and that these were not being detected by the Department. However it must be noted that this was in the days before computerisation and it is generally accepted that the problems experienced in Aer Lingus were widespread within the international aviation industry at the time.

B. Wreckage Analysis

A detailed analysis of the recovered wreckage was carried out at Baldonnel by Department of Transport personnel, experts from the UK Air Accident's Branch Board of Trade and a specialist in explosions from the Woolwich Arsenal. A comprehensive report on all recovered wreckage including excellent diagrams are all included in the appendices to the 1970 Report.

Section 9 of Appendix 4 (a) deals with the Tailplane and Elevator.

Tailplane and Elevator

The items recovered were the inner 18" of the elevator spring tab and outer 39" of the elevator trim tab. The tailplanes, elevators and the fuselage structure in the tailcone area were all missing.

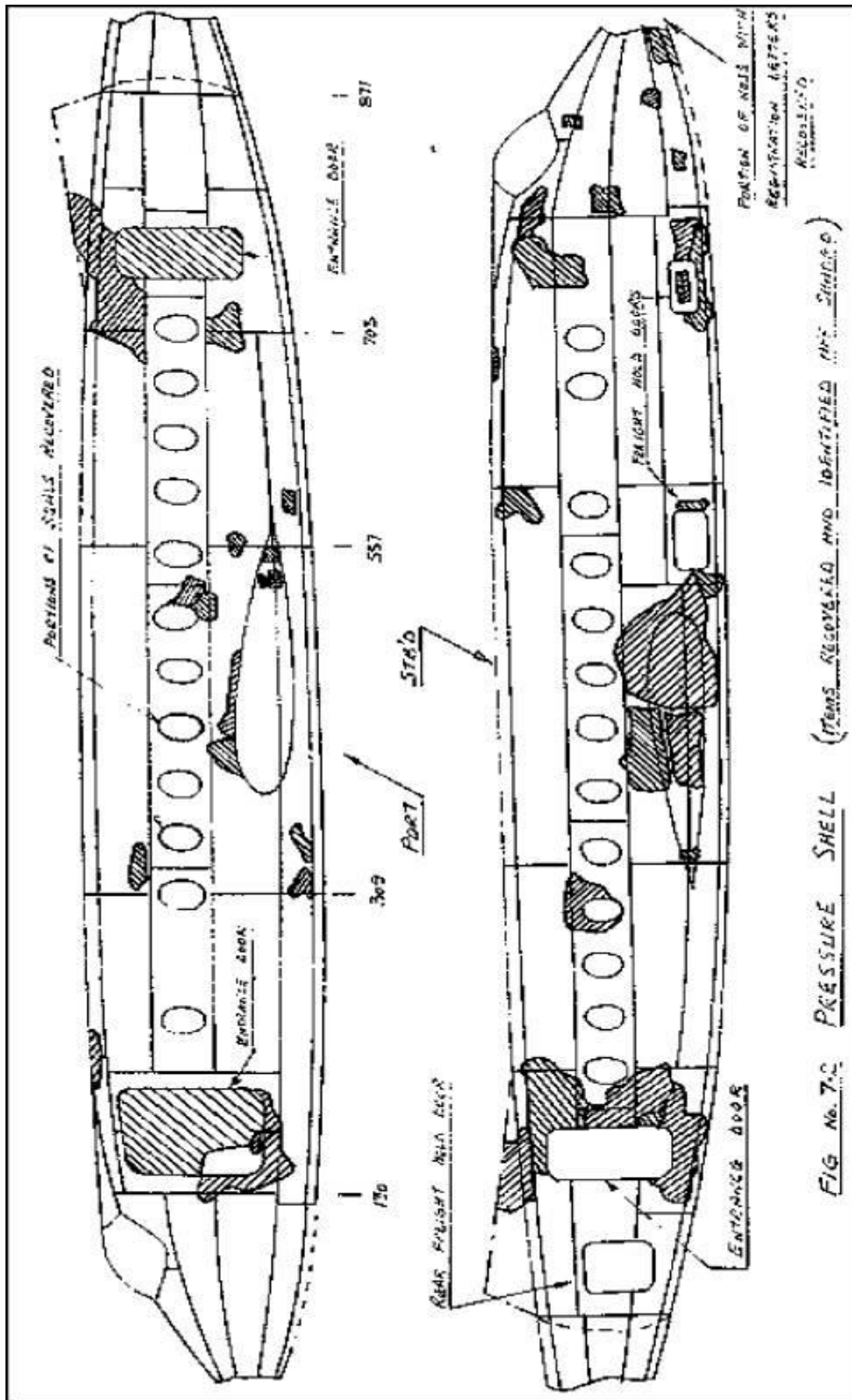
The portion of the trim tab was recovered in the main wreckage area but the portion of spring tab was washed up on the beach between Greenore Pt. and Rosslare Harbour.

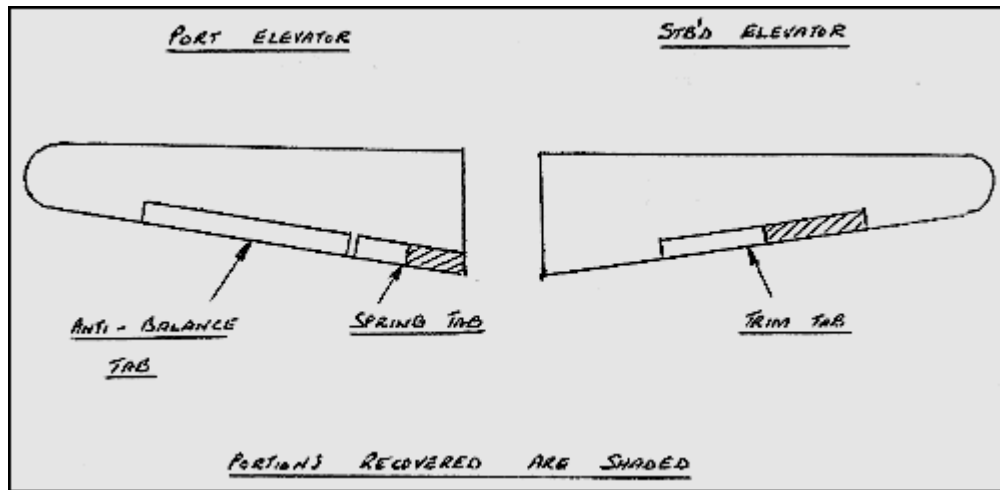
Both tabs had fractured just clear of the skew bar attachment points and had been pulled clear of the end hinge spigots. The position of the fractures on both tabs is where failure may be expected under impact loads, i.e. fracturing just inb'd and outb'd of the skew bar attachment leaving a small length attached to the skew bar.

Wreckage investigation has shown that the aircraft struck the water at a shallow angle with moderate forward speed and a high velocity of descent. This implies that some longitudinal stabilisation or control was available at impact.

The following diagram is taken from Appendix 4(a) Airframe and Equipment. As stated the shaded areas are the items recovered.

The section on the Fuselage Pressure Shell deals with the doors as follows:





Note: Of the four doors on the starboard side, three were not recovered, and only fragments of one, as detailed in Appendix 4 of the Report.

Doors There are six pressure sealed doors. Two on the port side and four on the starboard side. Refer to fig. 7.2.

The seals from the front and rear entry doors on the port side were recovered and the pressure bottle from the nose-bay complete with gauge, charging point, filter, valves and local piping. Gauge reading 480 p.s.i. The max normal is 300 and min. 50. Also recovered was the emergency pressure valve fitted at floor level by the front entrance door. The lever was in the emergency position, i.e. open to cabin. The high gauge reading and the position of the lever on the emergency pressure valve were almost certainly caused by impact loads and no significance is attached to them.

Forward Entrance Door (port side) This door and part of the surround structure were recovered and it was possible to establish that the door was intact and securely locked at impact.

The bottom of the door was badly damaged and the front lower corner was missing. The distortion of the lower surround structure was similar to that of the door and it was apparent that the main impact loads were supplied via the lower surround structure in an upward and aft direction. The overall pattern of distortion suggests that the door separated by peeling outwards and upwards starting from the bottom forward end. Most of the door operating mechanism was intact the top and bottom front latch pins were missing but the remaining four were attached and in the door closed position. The external handle was attached and closed, but the internal handle was missing. _

Rear Entrance Door (Port Side) The door and upper portion of the surround structure were recovered and again it was possible to establish from the damage that the door was intact and securely locked at impact. The impact loads were predominantly up, supplied via the lower surround structure. The bottom of the door was folded up and out, finally separating from the fuselage by peeling outwards, starting from the bottom.

Front Cargo Hold door (Starboard Side) The lower half of the surround structure and two small pieces of the door including the handle were recovered. The severe fragmentation of the door could only take place if it was in position and securely locked at impact. _

Rear Cargo Hold door (Starboard Side) _____ Some of the surrounding structure was recovered but nothing of the door, and it is impossible to say if the door was in position at impact.

Rear Entrance Door (Starboard Side) This door is similar and opposite to the rear entrance door on the port side. The surround structure at the top, bottom and forward sides of the door was recovered. The break up pattern of this suggests that the latch pins were engaged, also the outside skin on the forward side near the top had been forced out slightly, most likely by the door edge at impact. The indications thus are that the door was intact and closed at impact.

Rear Freight Door (Starboard Side) Nothing of the door or surround was recovered. The rear freight hold was empty and is not normally accessible from the cabin.

Summary of Conclusions

The evidence available does not eliminate the possibility of a defect or failure in the elevator and/or tailplanes having contributed to the accident. In this respect it is significant that the portion of the spring tab was found on the beach and not in the main wreckage area.

C. Removal of Wreckage

1

The recovered wreckage was taken at intervals related to the recovery operation to a hangar at the Irish Air Corps Base at casement Aerodrome Baldonnell in County Dublin.

Several requests for access to the wreckage were made to the Inspector of Accidents from the legal representatives of some members of the crew and other families of victims. Access to the wreckage was not granted on the basis that under the Regulations of 1957 the Investigation was in private to the Minister.

Subsequent to the publication of the Report, it was contemplated by the Department of Transport and Power that a notice should be placed in the newspapers indicating that the wreckage could be examined by interested parties.

After some internal discussion it was decided that this action was over cautious and although the draft notice for publication had been prepared, it was not published.

On the 25 November 1970 the wreckage was released to the owners, Aer Lingus, by the Inspector of Accidents.

Viz:-

*The Secretary
Aer Lingus – Irish International Air Line
P.O. Box 180
Dublin Airport*

25 November 1970

Dear Sir

Accident to Viscount EI-AOM

I am directed by the Minister for Transport and Power to inform you that, no requests for inspection of the wreckage having been received from any of the parties who had earlier shown interest in the matter, the wreckage is hereby now formally released to you.

Perhaps you will make the necessary arrangements with the O.C., the Air Corps for its early removal from Casement Aerodrome, where it now lies.

Yours faithfully

*R.W. O'Sullivan
Inspector of Accidents*

This was acknowledged by Aer Lingus:-

*Mr RW O'Sullivan
Inspector of Accidents
Department of Transport & Power
Civil Aviation Division
O'Connell Bridge House
Dublin 2*

25 November 1970

ACCIDENT TO VISCOUNT EI-AOM

Dear Mr O'Sullivan

Thank you for your letter of 25 November informing us that no requests for inspection of the wreckage have been received and that the wreckage was no formally released to us for removal from Casement Aerodrome.

I have passed your letter to our Assistant General Manager (Technical), Capt. R N White, for necessary attention.

Yours sincerely

*Niall G Weldon
Secretary*

Parties seeking access to the wreckage were then instructed to contact Aer Lingus if they wished to examine the wreckage. However, Aer Lingus asked the Department to provide a person from the Aeronautical Section to accompany any parties who wished to see the wreckage and this was agreed, and it was agreed that the wreckage would be kept until January. The wreckage however, was inadvertently disposed of, in December, without being examined by any party. Notes on the Departmental file indicate that Aer Lingus disposed of the wreckage. This may have been due to a miss- understanding between the Department and Aer Lingus.

Note:- Access to the wreckage for technical inspection purposes should not be confused with general viewing of the wreckage which took place specifically for media purposes in 1970.

WITNESS STATEMENTS

A considerable portion of the 1970 Report relies heavily on the reports of witnesses in the Hook and Wexford areas. In particular the alleged sightings of an object in the sea near the Coningbeg half tide rock.

The UK Search and Salvage 1969 Report states:

A number of reports had been received of incidents in the vicinity of the SALTEES islands. As a fix of sorts had resulted, Captain CONNELL accompanied the Investigator to the area, and after some days patient work it was established beyond reasonable doubt that what had appeared to be a big splash followed by an object floating in the sea for two hours was in fact the effect of a heavy swell on a half tide rock known as the CONNIGMORE ROCK. This was confirmed by interrogation of two merchant ships which passed through this area at the relevant time. Later in the operation a helicopter search was made of the beaches of these islands, with negative results.

This information is clearly at variance with the witness information on the sighting of objects in the sea, contained in the 1970 Report. Another question that has been continually posed in relation to the three Lighthouse Keepers on the Tuskar itself. The UK Report furnished to the review contains the following account of the interviews with the Lighthouse Keepers.

On 4th April one of the TUSKAR ROCK Lighthouse Keepers was relieved and opportunity was taken to interview him. A point which had been causing concern was that all the evidence pointed to a splash point not far from TUSKAR ROCK yet the keepers had reported neither seeing nor hearing anything. This was quickly resolved. On the 24th March there had been a heavy swell, and under these conditions the sea rushes into the caves with which the rock is honeycombed and produces a constant series of loud bangs. Any noise of an aircraft crash would thus have gone un-noticed. As regards the sighting, the keepers were taking their exercise at the relevant time and the concrete exercise strip was wooded from approximately 250° through North to about 110°, thus only the southerly aspect provided a view. Had they been sheltering, or even lighting their cigarettes, the sheltered spot where this normally occurs is even further wooded.(NOTE is last word correct?)

The other alleged sightings of aircraft, in particular the references to the aircraft over Fethard with the “wings and tail on fire” also form the basis of an aircraft being in the area at the same time as the St. Phelim, yet the initial “spinning” message is deemed to have occurred past Bannow. Therefore, the link between an aircraft at Fethard going in a south-southeast direction is very tenuous with the St. Phelim spinning at 1058, twenty miles away.

The 1970 Report refers to the presence of an Irish Air Corps Dove being in the area during the search for the St. Phelim on the 24 March, and the fact that the Dove had orange markings on the wing tips and tail, but eliminates the Dove being the “other” aircraft, on timing. The Irish Search File contains an unsigned note as follows:

Flight of Dove on day of accident

He left Baldonnel at 1.20 Summer Time with intention of going to Cork and then by VOR radial to Strumble. At Carlow he redirected to Waterford arriving there between 1.45 and 2.05, went down left bank of river over Fethard and Hook descending from 3000 to 700 over sea. He flew S.E. toward Bannow to the right of Saltees and then to Strumble and back to Tuskar. A Shackleton was searching to West of Bannow and a Canberra to East of Bannow. He saw nothing significant in the sea around the Saltees nor around Tuskar.

The flight path of the Air Corps Dove corresponds exactly with the flight path of the “other aircraft” referred to in witnesses’ statements.

Aer Lingus on behalf of Transport and Power interviewed eighteen people in Cork airport in relation to ATC clearances, passenger boarding, baggage loading, refuelling and general preparation of the St. Phelim for its flight on 24 March 1968.

The most significant points to emerge on reviewing the report of these interviews which are held on the Irish file “Witness Statements”.

Under the heading Ground Ops Loaders. Mr. X who cleaned the baggage holds 2 and 3 said he was aware of the indicators he had to check to see that the doors were properly closed. Hold no 4 was not used on the departing 712 flight and accordingly was not checked before departure. The drill which was carried out was that the hold was checked on arrival the night before by loader X who would have closed the hold door.

The loader in question was not available for interview at this time – 10 April 1968. A statement was finally taken by Aer Lingus from this loader and forwarded to the Department of Transport and Power which was:

On the evening of Saturday, March 23rd, 1968, I opened the door of the aft hold NO. 4 Viscount EI-AOM after its arrival at Cork Airport. This was done for the purpose of unloading any freight or baggage which may have been loaded therein. When finished I locked the door in the usual manner, as the aircraft was remaining overnight at Cork.

This statement was signed and dated on 25 September 1969 eighteen months after the accident.

The Aer Lingus interviews on behalf of Transport and Power included an interview with the Taxi driver who drove the crew to and from the airport each day. He said “*He overheard a conversation between the crew members, on the Saturday night, that their trip from Manchester was a bit rough. He did not regard the conversation as unusual or significant*”.

The Report stated, *The checking of hold-4 was not considered satisfactory. Since the accident we were told that hold-4 is now being checked before the departure of the morning flight.*

Details of the Crew

The report details the qualifications of the two pilots, under the usual headings, and their duty and flight times tabulated as follows

(NOTE there are no times in the table)

DATE	FLT. NO.	ROUTING	CREW
	702	Dublin/Cork	Capt O'Beirne F/O F/O Heffernan A/H's Kelly A/ Coughlan M
21/3	710/713	Cork/London/Cork	Capt O'Beirne F/O F/O Heffernan A/H's Kelly A/ Coughlan M
22/3	710/713 760/1	Cork/London/Cork	Capt O'Beirne F/O F/O Heffernan A/H's Kelly A/ Coughlan M
23/3	710/713	Cork/London/Shannon	Capt O'Beirne F/O F/O Heffernan A/H's Kelly A/ Coughlan M
24/3	712	Cork/London	Capt O'Beirne F/O F/O Heffernan A/H's Kelly A/ Coughlan M

NEW WITNESSES

A small number of new witnesses were interviewed during the course of this review including a person held in a place of detention within the State.

Two of these witnesses lived near Cork Airport and were not interviewed during the original investigation. Both live near the airport at Cork, and both recalled that they saw the St. Phelim depart Cork. Both were of the view that the aircraft was not "normal". It was pointed out to both of these witnesses, that the aircraft appears to have flown normally from Cork until approximately 10.58 when the first signs of any problem were encountered and this was reflected in the 1970 Report. It was also pointed out that had the St. Phelim developed problems immediately after takeoff, it is unlikely that it would have continued on its way to London but rather would have returned and landed at Cork. Both witnesses accepted this point and were thanked for their input.

Another witness was interviewed near Wexford, and recalled that on the Sunday 24th March 1968, he was tending cattle in his father's field and he gave the following statement to this present review.

On the Sunday, 24 March 1968, I was tending stock in the fields below the wooded area of Tory Hill at about 12 O'clock. A large aeroplane approached the field that I was in as if to land. The aeroplane came from the Tramore direction. I ran from one field to the next and lay flat on the ground. The aeroplane turned right away from the Hill, gained height and flew out towards the Tuskar and The Saltees which can be clearly seen from this spot. The aeroplane then dived down into the sea. I paid no further notice and when I got home I told my father of what I had seen. He said that it was on the news that an aeroplane from Cork had gone down near the Welsh Coast. I did not contact the police or anyone else about what I had seen. I went down to Rosslare to see the bodies and wreckage being landed. I was twelve or thirteen years old at the time.

All of the above witnesses sought no publicity and do not wish any contact with the media.

The fourth witness, stated that he watched the St. Phelim with two others, now deceased and saw the aircraft spinning and descending, but did not see it impact with the sea. The witness reported that he was in the Dungarvan area at the time, and with his friends saw what he believed to be the St. Phelim climbing out from Cork over the sea and then spinning and descending. As this observation is consistent with the 1970 Report, it is not considered to be of a new or significant nature. When questioned as to what action he took at the time, the witness replied that he had informed his local Garda Sergeant who is now deceased.

During the course of this review, the UK MOD stated the restrictions of the UK Official Secrets Act would not be applied to any current or ex member of Her Majesty's Forces, or any body else, who might come forward with new evidence relating to the accident of EI-AOM, or to the subsequent search and recovery operations. To date, no such personnel have come forward with any new evidence.

MISSILES

Possible Airborne Object Drone Missile Aircraft, Manned or Unmanned

The hypothesis posed by the 1970 Report suggests the St. Phelim being initially upset by the possible presence of another airborne object, either an aircraft, manned or unmanned, or a drone or missile.

The Irish files show that:

On the 23rd of April 1968, a letter was received from the Air Accident Investigation Branch of the UK, Board of Trade Civil Aviation Department, it states inter alia

"In answer to your question concerning missiles, I have checked with the Department responsible and have been told that the ranges at Aberporth and Manorbien were both closed on Sunday 24th March" .

In 1974, following the discovery of part of a Jindvik pilotless target aircraft in the nets of Wexford trawler, the following series of questions were posed by the Irish Authorities to the UK Authorities.

and cited the following responses:

18/9/'74

*Mr. W. Tench,
Chief Inspector of Accidents,
Department of Trade,
Accidents Investigation Branch,
Shell Mex House,
Strand,
London, WC 2R 0DP.*

Sir,

Accident to Aer Lingus Viscount EI-AOM on 24-3-'68

The recovery of a portion of aircraft wreckage near Rosslare Harbour on 29/5/'74 identified as a part of the wing structure of a British Military drone aircraft "The Jindivik", has led to renewed speculation as to the cause of the accident both in the British and Irish news media and to a number of parliamentary questions in the Dail. In view of the continuing public interest and speculation concerning the involvement of another aircraft, drone or missile we are considering preparing an addendum to the report which will as far as possible deal finally with the problem.

With this aim in view may we request your assistance in obtaining answers to the following questions:-

- 1. Can it be stated that no military aircraft either carrier or land based were operating over the St. George's Channel, between Strumble and the Wexford Coast on 24/3/'68 at the time of the Viscount accident?*

2. *Were any notams issued indicating activity on 24/3/'68 in the danger areas near the Welsh Coast, North or South of airways GI and R.14.?*
3. *Is Llanbedr the only base on the West Coast used to launch the Jindivik and do they provide targets only for missiles fired from the Aberporth range, or may they also be used for missiles fired from ships?*
4. *Can it be stated that no Jindivik aircraft or indeed any target was launched on 24/3/'68?*
5. *We would appreciate any general information which may be released on details of the Jindivik/missile operations, particularly as regards any safety measures which would prevent encroachment beyond the designated danger areas in the event of loss of control or other malfunction.*
6. *Biological studies of marine growth on the Jindivik wing wreckage recovered on 29/5/'74 indicated that it spent some six months to a year in the comparatively shallow waters of the South Trench where it was trawled up and possible two to four years in deeper water. There were no identifying marks on the item to relate it to a particular aircraft or date when shot down. Since the main role of the Jindivik and I quote from Jane's "is for towing Radar enhancing devices", the mortality rate may be low. Is it possible therefore to even approximately relate this wreckage to a particular aircraft and date and place of destruction?*
7. *On the 24/3/'68 there were apparently some missile equipped British Naval Craft in the vicinity of the St. George's Channel. (H.M.S. Penelope is one that is mentioned). Can it be stated that no missiles were fired from any of these craft at the time of the Viscount Accident? An indication of the position of the ships at the time of the accident would be most useful.*
8. *Viscount EI-AOM was equipped with a Collins 621A-I ATC transponder. Was it possible at that time and under any circumstances for this transponder to cause a mis-identification and inadvertently trigger a missile response?*

We consider that the information requested above is necessary to enable us to deal competently with the many questions raised.

Yours faithfully.

*P.G. McCabe,
Chief Aeronautical Officer,
(Airworthiness.)*

*From: W H Tench CEng AFRAes,
Chief Inspector of Accidents.*

*Department of Trade,
Shell Mex House Strand,
London WC2R 0DP,
01-217 4305.*

REF:- EW/B/038

*Captain P.G. McCabe,
Chief Aeronautical Officer (Airworthiness),
Department of Transport and Power,
O'Connell Bridge House,
Dublin 2.*

27 November 1974

Dear Sir,

Accident to Aer Lingus Viscount EI-AOM on 24 March 1968

I refer to your letter of 18 September 1974 in which you posed a number of questions which has arisen concerning the possibility of a Jindivik drone target having been involved in the accident. I enclose at the appendix to this letter the considered answers to the questions raised which I have now received from the Ministry of Defence.

I should perhaps add to these answers the information that the Jindivik is a pilotless target drone radio-controlled from the ground and as far as I have been able to determine there are no Jindiviks in the UK which have been modified to operate as missiles with an inbuilt guidance system.

I hope this letter together with the attached appendix provides you with the information you require.

Yours faithfully.

*W H Tench, CEng AFRAes,
Chief Inspector of Accidents.*

ANNEX

Question 1 There were no military aircraft operating in the area at the time of the Viscount accident. The only military movements in the area during the day were two Royal Air Force helicopters from RAF Chivenor and one RAF Shackleton aircraft from RAF St Mawgan which took off after the accident to search for survivors.

- Question 2 No Class 2 NOTAMs were issued relating to activity on the 24th March 1968 in the vicinity of airways G1 and R.14, within danger areas or otherwise. There is no central record of relevant Class 1 NOTAMs since the normal retention period does not extend back to 1968.*
- Question 3 Llanbedr is the only place on the West Coast used to launch the Jindivik. Jindivik targets are provided for missiles fired from the range head at Aberporth and also for missiles fired from ships and aircraft operating within the designated range area of Cardigan Bay.*
- Question 4 No Jindivik aircraft, or any other target, or any missile, was launched from Aberporth or Llanbedr on 24th. March 1968. This was a Sunday when the range establishments are normally closed in any case, and both Aberporth and Llanbedr were inoperative on that day.*
- Question 5. Jindivik targets have limited areas of operation and each sortie follows a specific flight plan. Any departure from the intended track is detected promptly and corrective commands are sent immediately. If the corrective command is not obeyed, a "destroy" command is sent which causes the Jindivik to dive into the sea. The Jindivik has duplicate receivers tested automatically every 5 seconds throughout the flight. Reception of a "destroy" command by either receiver triggers four separate control actions any one of which is sufficient to cause the Jindivik to dive into the sea. Failure of the main command transmitter at Llanbedr either automatically Brings on the "target destroy" actions or, if the Jindivik is sufficiently remote from land, automatically initiates on orbit command in the target causing it to circle until the standby transmitter at Llanbedr is switched on (a matter of seconds). Similar precautions are in operation for unmanned Meteor aircraft targets.*
- Each missile has a calculated safety area within the designated danger area. If the missile is seen to be going outside the safety area, as detected by range instrumentation, it is immediately destroyed. If the facility for receiving the "destroy" command ever fails in the missile, the destructive mechanism is designed to operate automatically and immediately.*
- Question 6 Because there are no distinguishing marks on the wreckage found on 29 May 1974, it cannot even approximately be related to a particular target aircraft. On average, about 8 Jindiviks and 2 unmanned Meteor targets come down in the sea from all causes each year. The undercurrents in Cardigan Bay disperse wreckage widely and Jindivik wreckage has been washed up on the Irish and Welsh coasts, the Isle of Man and the coast of Cumberland, indicating drift of over 100 miles in some cases. No Jindivik has ever been lost track of, all have been tracked to splash point.*
- Question 7 The only Royal Naval ships in the area at that time were HMS Penelope, HMS Hardy, HMS Invermoriston and a Mooring, Salvage and Boom Vessel. None of these ships was armed with missile systems.*
- Question 8 All radio receiving equipment is susceptible to interference from unwanted transmissions. Equipment on missiles and Jindiviks is designed to be as secure as is operationally possible. In the nature of things, a missile should be designed to be little affected by radio jamming, otherwise it is*

not operationally satisfactory. There is always a finite, although small, possibility that an extraneous signal will break through. However, if it does and the missile or Jindivik veers from its safe course, range instrumentation should detect this and the procedures outlined in answer to Question 5 would come into effect. On the actual date in question, it would have been impossible for the Collins 621A-I ATC transponder on the Viscount to affect a missile or target because no missile or target was fired.

Recent Drone Finding

Part of a Drone was submitted to the Air Accident Investigation Unit by a lady from Wexford in January 1998. She remembered the object being found by her father on a Curraclloe strand in Wexford about 25 years previously and was retained by him at his residence in Wexford. On reading an article in a newspaper, the lady contacted Aer Lingus as she felt it may have been of relevance to the accident to the St. Phelim. The Air Accident Investigation Unit took possession of the object with the lady's consent and carried out research to establish its nature and origin. It was identified as the rear portion of the left wing of a super sonic target drone designed by the Beechcraft Aircraft Corporation of the USA. The U.S. Military designation of the drone is AQM-37A. This drone was capable of being launched from aircrafts and ships, as well as from ground based facilities.

The drone was exported to many other countries, including the U.K. and France. It was also manufactured under licence by Shorts of Belfast, where it was known as the SD.2 Stiletto.

It has not been possible to fully establish the launch date of this drone. Different parts of the wing section carries two different serial numbers. UK records indicated that SD.2 drones carrying both these serial numbers were launched off Gibraltar. Further research conducted by the AAIU confirms that the UK did not have the capability to launch this type of drone before July 1968, four months after the accident of EI-AOM. Further detailed information on this type of item was furnished by the U.K. Authorities and is referred to further in the answers supplied to the Review by them. In their submissions to this Review, the U.K. Authorities submitted the following material in relation to parts of missiles or drones dredged up from April 1968 to date.

DERA

Annex C to DERA/RANGES/AIR[A131-114101106 dated 10 May 1999

AER LINGUS VISCOUNT - FURTHER WORK DERA ABERPORTH COMMENTS ON SALVAGE ASPECTS

C1 As for the SAR efforts, RAE Aberporth had no direct involvement in the salvage operation but, from the earliest days was asked to identify bits of wreckage trawled up from the sea bed in the vicinity of the crash site. The connection with Aberporth being that a number of these recovered items bore markings that were similar to those carried by target aircraft operated by RAE Lianbedr.

C2 The first such request was received on. 5 April 1968 and was inspected by Aberporth/Lianbedr staff at Fishguard on board the Fishguard/Rosslare ferry ship

on 6 April and it was confirmed that the items shown had come from a target aircraft.

C3 Subsequent such requests were received up to 1974 and most were identified as pieces of various target aircraft types viz Firefly U8, Meteor U 1 51U 16 and Jindivik, used by Aberporth/flown from Llanbedr over the years.

C4 In a letter of 3 July 1974, the then Principal Inspector of Accidents at the Board of Trade wrote "we are satisfied that these pieces had no bearing on the Viscount crash of 1968".

C5 Despite such assurances, the discovery of target aircraft bits and pieces in the Viscount crash area led to much speculation amongst the conspiracy theorists that a target aircraft must have been involved (collided with the Viscount).

C6 The fact that bits of three different target types (para C3) were recovered from the general area of the crash site would indicate that it was, perhaps, a natural collection point for debris. It is known from the Range's own attempts using RN divers to recover bits and pieces from the sea bed that there are severe undercurrents in Cardigan Bay.

C7 The following extracts from DERA Aberporth files may help to place these finds in context:

- In 1971, a fin from a missile boost motor was trawled up close to the Conninberg Light Vessel (precise location unknown but understood to be off the South East Coast of Ireland). the boost motor to which the recovered fin would have been attached would have separated from the missile some 3 seconds after launch and impacted in the sea a few thousand yards from Aberporth Rangehead.*

- In 1974, the then Superintendent of RAE Rangers, in commenting to MOD on these recovered bits from the Viscount crash area commented as follows:*

"On average about 15 Jindiviks are shot down annually. Cardigan Bay undercurrents disperse wreckage widely. Jindivik wreckage has been washed up on the Irish and Welsh coasts, the Isle of Man and the Coast of Cumberland, implying driftage of over 100 miles from nearest sea entry point. No A7divik has ever been lost track of. all have been tracked to splash point.

- It may also be worth noting that up to March 1968 something of the order of 35 Fireflies, 200 Meteors and 99 Jindivik had been shot down over Cardigan Bay. By 1974, the Jindivik total had risen to 150.*
- The Firefly drone was withdrawn from service in 1963 yet bits were still being found at least 5 years later.*

Missile Ranges on the Welsh Coast

The U.K. Authorities submitted the following material as evidence of closure of the missile ranges at Abberporth and Clannbeder on 24 March 1968.

DERA

RAE ABERPORTHILLANBEDR - EVIDENCE OF CLOSURE ON SUNDAY 24 1h MARCH 1968

1 General

- 1.1 Copies of the Aberporth "Daily Trials Summary Sheets" for the days of Friday 2213168 and Monday 2513168 are attached in Appendices 1 & 2. These are not very clear being handwritten and updated during the actual working day. They also contain many abbreviations, which are not necessarily obvious to everyone, particularly if not involved in this type of work. In section 2 a sanitised copy of the sheets has been produced, with some of the abbreviations expanded. This is to make it clearer and easier for the reader to understand the information contained in the two Daily Trials Summary Sheets. A more detailed explanation of the sheets then follows in section 3.*
- 1.2 In 1968 the "Daily Trials Summary Sheets" served as both Forecast and Outcome summaries. Hence the sheets show changes to the initial bookings including new bookings and cancelled trials. The system used was of the loose-leaf variety with a page for each day the Range was open. It was not practice to produce blank sheets for those days when the Range was closed. Hence there never has been sheets for the two days of the weekend of the 23'd124th March 1968, only those for the Friday 22 nd before and the Monday 25` after.*
- 1.3 These records basically show that the last trial at Aberporth, before the Aer Lingus crash on the 2413168, started late on Friday evening 2213168 at 20:30 and completed at 2:30am on Saturday 2313168. The Aberporth Air Control log supports this information. Copies of the successive pages from the log for the period 19'h to 28` March 1968 are given in Appendices 3 & 4. Air Control, or Air Traffic Control as it is also called, would be involved in nearly all trials undertaken on the Range as the bulk of trials contain air borne assets or as a minimum require air clearance. On the Daily Trials Summary Sheets in question all the completed trials also appear on the Air Control log except:
 - The Internal "Optics Tracking/Sighter firings" (sorties 4002114 to 4002117), which are short range, short time rocket firings which do not have any significant Air Control involvement. Air Control would only need to confirm a clear airspace in the very local area around the launcher on one of the Range's launcher pads.*
 - The internal "Weekly Radar positions/Sea Targets" (sorties 0677108), which was a check on the positions of the moored sea targets and did not require any Air Control involvement.**

1.4 *The last trial booked to take place on Friday the 22/3/68 was code serial no 596 (9421102) and the first booked to take place on Monday 25/3/68 was 597 (0912156). Since 597 immediately follows 596 it confirms that no trials were booked for or took place on Sunday 24/3/68. Trial 591 started on Friday evening and was completed early Saturday morning, which in Range terms is therefore regarded as a Friday Trial which went into overtime. This carryover of the late Friday trial into the early hours of Saturday has caused confusion particularly as it has been stated in the past that Aberporth Range was closed for the weekend of the 23^d/24th of March 1968. In Range terms this is correct but with hindsight could have been worded better. What is clear from the Daily Trials Summary Sheets is:*

Aberporth Range closed for operations approximately 2:30am on Saturday morning (23/3/68) and remained closed until about 8:00am on Monday 25/3/68.

1.5 *Any operations at Llanbedr involving Targets being flown on the Aberporth Range would have needed, as a minimum, parts of the Aberporth Range to be open and operational, including the sections which generated the Daily Trials Summary Sheets and Air Control log. Any such activities would have been recorded on these documents. The Air Control log states that the last airborne target out of Llanbedr, a manned Meteor, returned to base (R.T.B.) at 16:15 on Friday 22/3/68 and the first after the crash was 14:10 on Monday 25/3/68. These times are supported by the Daily Trials Summary Sheets, which only give the start times and not normally the finish times. The Llanbedr site would have closed for operations very soon after 16:15 on Friday. From the Aberporth records the conclusion is that:*

Llanbedr closed for operations approximately 16:15 on Friday 22/3/68 and remained closed until at least 00am on Monday 25/3/68.

This statement is also confirmed by a combination of the following documents:

- Appendix 5, the Jindivik Flying Authorisation sheet covering the weekend of 23rd/24th March 1968 period, state that flight number 1725 was conducted on Friday 22^d March 1968 and the succeeding flight number 1726 was on Wednesday 27th March 1968. This record also shows that both Jindiviks returned to base, which was at Llanbedr. This appendix confirms that there were no airborne Jindivik (Pilotless aircraft) activities, at Llanbedr, for the weekend of 23rd/24th March 1968.*
- Appendices 6 & 7, Manned and Meteor pilotless Flying Authorisation sheets covering the weekend of 23rd/24th March 1968 period, state that flight 139 took place on Friday 22nd March 1968 and the succeeding flight 140 on Monday 25th March 1968. These appendices confirm that there were no airborne Manned or Non Jindivik (Pilotless aircraft) activities, at Llanbedr, for the weekend of 23rd/24th March 1968.*
- Appendices 8 & 9, pages 99 and 100 of the Llanbedr operations log covering the weekend of 23rd/24th March 1968 period, has no recorded aircraft/target activities at Llanbedr on that weekend. Again these records confirm both Jindiviks, mentioned above in reference to Appendix 5, returned to base. These appendices confirm that there were no flying activities, at Llanbedr, for the weekend of 23rd/24th March 1968.*

Appendix 5 covered Jindivik pilotless activities and appendices 6 & 7 covered all other pilotless aircraft activities and all manned aircraft activities. Therefore these appendices cover all of the flying activities at Llanbedr and confirm, with appendices 8 & 9, that Llanbedr was closed operational during the weekend of 23'd/24h March 1968.

1.6 In 1968 Army service firings of Thunderbird by the Royal Artillery were undertaken at TERA Tycroes on the island of Anglesey, using targets flown from Llanbedr. Whilst Aberporth has no information on the status of Tycroes on 20 March 1968, they did not get a target from Llanbedr on that day.

1.7 Sufficient evidence exists, as detailed in this document, to show that Aberporth & Llanbedr were both closed on Sunday 24 th March 1968 and this information has been in the public domain for some years.

Despite assurances this subject has been returned to many times, particularly over the last ten years. The first formal request for information on the operational state of the Range was requested 2Y2 years after the crash, in a letter from our Accidents Investigation Branch dated 30th September 1971. The continual return to the subject since that date implies that there is a belief in some quarters that there has been an UK conspiracy to hide any evidences and then to keep quite about it. This is not the case.

To put the cover up conspiracy theory in perspective and to look at it as a practical proposition, it would have meant, as a minimum:

- 'Instructing' 100 to 120 staff at Aberporth (plus another 50 or so at Llanbedr, if a target was involved) that "they had not been at work that day"*
- Persuading their families of the same*
- Convincing the remainder of the workforce (another 300/400 individuals) that the Range did not work on that day - Sunday working was sufficient of a novelty that everyone would have know about it.*
- Erasing any reference to working on 24' March 1968 from all Range records, diaries, etc.*
- Involving the local population at one of the two sites if not both, (some of who were openly hostile to our operations) in the conspiracy. Aberporth for a missile firing and Llanbedr for any aircraft/target activity.*

It is impossible not to envisage that over the years someone, somewhere, would have 'talked' either from conscience or for money.

PRESS AND MEDIA

As can be expected with such an event as a fatal air crash with the loss of 61 lives, press and media interest in the Tuskar Rock was intense. Both British and Irish files recount the speed with which any piece of information was in the hands of the Press.

This was no doubt caused by the fact that Military Personnel and Public Servants at that time were not permitted or encouraged to speak to the media directly.

Most radio traffic could be easily monitored, and exchanges between search aircraft, ships and lifeboats were transmitted in clear plain language.

No proper press and media briefings took place and no facilities for press conferences were provided. This led to considerable speculation and ill informed comment.

When the Royal Naval salvage operations began, a code was established between the salvage teams and the Investigation Personnel on board the ships.

These difficulties are mentioned in the following note on the first phase of the operation sent to An Taoiseach by the Government Information Service dated 25 June 1968.

25 June 1968

Report on Viscount Wreckage

Taoiseach,

1. *First of the operation is now over. It concluded with the recovery of portions of the wreckage on Friday – bits of both wings and part of the main beam and one engine. The Royal Naval and Admiralty Ships involved have returned to their base in Plymouth.*
2. *The second phase of the operation will begin on July 15th. It is probable that the second phase of the operation will include the recovery of 30 to 40 feet of fuselage which appears, at the moment, to contain the remains of human bodies. The condition and so forth of these bodies cannot yet be determined.*
3. *It is possible that this piece of wreckage will contain elements of human remains when and if it is brought to the surface. There is no certainty of this however, as the remains are quite likely to disintegrate and sink when the wreckage is disturbed in the process of raising it.*
4. *Proper Press Liaison facilities will be set up before the operation begins.*
5. *Rumour and speculation should be reduced to a minimum by adequate Press facilities. This position, which was deplorable, has been substantially retrieved, by Press Liaison operations over the last week.*
6. *There were two main problems in recovering this situation*
 - (a) *Lack of any Press Information facilities up the 14th June, 1968.*
 - (b) *Serious security leak – lacks – involving telephone exchanges and/or ship's crews of the Royal Navy, it is thought.*

Information was in the hands of the Press as soon, sometimes sooner, as in the hands of official administration.

7. *The Press now seem prepared to co-operate on the basis that information will not be needlessly withheld and that speculation or rumour will be reduced to a minimum.*

Following a meeting between all the agencies engaged in the operation, a secure line "Secra phone" was installed between Rosslare and the Aeronautical Section Headquarters in Dublin by the Department of Posts and Telegraphs. A more structured approach was adopted for press relations including the provision of a caravan as a Press Office in Rosslare and the installation of additional telephone lines.

Mr. X arranged with Mr. X, Chief Engineer, Department of Posts & Telegraphs to provide an "untappable" line between the Rosslare Search Centre and Mr. R.W. O'Sullivan. Paragraph 7 of Report of Meeting of 24th June, 1968 refers. Mr. X informs me that they are arranging for the attachment of a "secrecy device" at both ends of the line in time for the search/recovery operations on 15th July, 1968. The effect of the device is that conversations can only be heard at either end.

ATC TAPES

Appendix 2 to the 1970 Report of the accident contains the transcripts of all exchanges recorded between the St. Phelim and the various ATC units with which it communicated. It also contains details of telephone exchanges between Shannon and London ATC on the proposed routing of the St. Phelim.

The only physical tape recording of the R/T of the St. Phelim and an ATC unit, located during this review, contains the last transmission of the St. Phelim to London ATC on frequency 131.2 Mhz with the message “*descending spinning rapidly*” thereon.

The actual tapes of the exchanges between the St. Phelim and the Irish ATC units have not been located by this review.

During the investigation in 1968 it was never definitively stated or proven that the voice heard was either that of the Captain or Co-Pilot. The only evidence on file is a hard written note to state “voice not Captain O’Beirne”. It was therefore assumed that the voice heard was that of the co-pilot, First Officer Heffernan.

The tape has been digitally enhanced and reproduced on CD for examination. No new information has been extracted from the examination of this tape. Details of the examination of the ATC tapes and the further examination carried out by the FBI are detailed in the original Report of 1970.

MEDICAL AND PATHOLOGICAL

Of the 61 passengers and crew on board the St. Phelim, the bodies of only 14 were recovered.

Detailed post mortem examinations were carried out on the first thirteen bodies recovered.

The examinations were carried out by Group Captain Kenyon Mason of the Royal Air Force Institute of Aviation Medicine. Lt. Col. J. Laffan of the Irish Army Medical Corps. and Chairman of the Civil Aviation Medical Board. Dr. Kieran Cuddihy of Waterford Regional Hospital and Dr. Quigley of Aer Lingus.

Valuable information to the Investigation was obtained from these examinations. Detailed medical reports are contained on the Irish Files of all examinations carried out.

The fourteenth body recovered was the torso of a middle aged male and identification was not possible by the methods available in 1968.

The body was buried in Crosstown Cemetery, Co. Wexford on the instructions of the appropriate medical and judicial authorities. An exhumation order was granted recently (1999-2000) to a member of the victims relatives group to establish the identity of the victim using DNA techniques and for possible re interment with the deceased members of his family.

The results of the Thirteen post mortems enabled the investigators to establish from the nature of the injuries observed, certain vital information to eliminate possible causes of the accident including, explosion, explosive decompression.

The original Report of the Aviation Pathologist to the Investigators suggested inflight break-up as the cause of the accident.

It is recommended that, because the nature of the medical reports is so detailed and graphic, they should not be released from the custody of the Departments Air Accident Investigation Unit to the State Achieves.

WARSAW CONVENTION

The Warsaw Convention is the International Convention which set the limit of the amount of compensation which can be paid to the relatives of victims of aircraft crashes, by the carrier involved. In 1968 this limit was approximately £7,000.

Article 25 of the Warsaw Convention provides that the carrier shall not have the right to avail himself of the provision of the Convention which limits his liability, if the damage is due to malice or to default which could be considered malice on his part.

Article 29 of the Convention provides that the right to damages shall be barred if any action is not brought within 2 years from the date of the accident.

As the 1970 report into EI-AOM was not completed until September 1970, thereby exceeding the two year limit, the attention of all the representatives of the victims was brought to Article 29.

This ensured that any person who was entitled to claim compensation under the convention was aware of the time limit to lodge such a claim.

The following letter from the Irish Files indicates the position in February 1970.

20 February 1970

A Chara,

I am directed by the Minister for Transport and Power to refer to this Department's letter of 6 Feabhra, 1970 in the above matter. It is noted from your acknowledgement of 10th February, 1970 that you are examining the record of claims made by the various dependants and are considering this Department's request that the parties who have not yet submitted claims should be advised of the two-year limitation specified in Article 29 of the Warsaw Convention.

The Minister was queried in the Dáil on last Thursday, 12th February, 1970 as to whether or not arrangements have been made to financially compensate the next-of-kin and especially the dependants of those who died in the crash. It is understood from verbal advice that, out of the fifty-seven who were killed in the crash, claims in respect of twenty-seven have been settled to date and that negotiations of settlement are proceeding in twelve other cases. It is also understood that notice of claims has been received in six other cases and that in the twelve remaining cases there have been no developments or claims so far.

In the light of the Dáil query in the matter the Minister undertook to arrange to have Article 29 of the Warsaw Convention brought to the notice of the parties who have not yet made any claims.

*I am accordingly to request that you will be good enough to advise the parties in question of the two-year limitation specified in Article 29 of the Convention as a matter of urgency and to confirm that you have so done to this Department as soon as possible.
Mise, le meas,*

It is of note that in certain cases some of the settlements exceeded the Warsaw limits. This was a matter between the claimants and the carrier.

CONCLUSIONS

- 1 The discovery of part of the elevator trim tab six miles from the location of the main wreckage indicates that the aircraft may not have been not totally intact entering the sea.
- 2 The UK authorities assumed initial responsibility for the search because the initial indications were that the aircraft had come down in the UK FIR.
- 3 The State did not have a Naval Service sufficiently equipped to adequately resource a Search and Rescue effort of the level of Operation Tuskar.
- 5 The State did not have the material resources to recover the wreckage of the St. Phelim from the sea bed.
- 6 The UK Ships to first arrive at the Search area, HMS Penelope and HMS Hardy were not missile equipped. They provided humanitarian assistance under International Search and Rescue Procedures.
- 7 The use of Royal Navy Ships to recover the St. Phelim from the sea bed presented the best and possibly the only solution to the requirement.
- 8 The lack of a financial commitment to indefinitely fund the Search and Salvage operation may have contributed to its limited success.
- 9 The decision not to use trawlers in the initial stages of the search for the wreckage was made by the Irish Authorities, and was made for sound humanitarian reasons, to hopefully recover the bodies of the victims for burial, and to avoid further break up of the wreckage.
- 10 Examination of the recordings of the transmission “*intercepted*” by London ATC on 131.2 mhz have not yielded any further information, or helped in identifying the voice heard.
- 11 There is no evidence to suggest that the recorded voice was not from the St. Phelim.
- 12 No tapes from any Irish ATC centre could be located during this review.
- 13 The Report does not refer to the non-retrieval of the rear entrance door (starboard side), rear cargo hold door (starboard side) and the rear freight door (starboard side).
- 14 The Report states that the tail plane and elevators were not recovered. It does not state that they were never seen.
- 15 Despite the search with sonar, for several months, and several separate trawling efforts between March 1968 and August 1969 and the search by the miniature submarine Pisces of the Tuskar area, the tail plane and elevators have never been located, with the exception of the spring tab found on a beach remote from the main wreckage, and a section of trim tab from the right elevator found in the main wreckage.

- 16 The possibility that the other aircraft, as reported by witnesses, was the Air Corps Dove was eliminated in the Report. This conclusion was reached solely on the estimated timings given by witnesses of the sighting. Yet its flight path, Fethard – Saltees – Strumble is exactly that of the reported sighting.
- 17 The UK position has not changed since the time of the accident with regard to:
- Closure of missile ranges.
 - No Naval or other military exercises in the area.
- 18 All pieces of missiles or drones trawled up by fishermen in or near the Tuskar area, and identified as Firely, Jindivik, Meteor, or Stilettoe components, were not connected with the St. Phelim.
- 19 No loss of any UK military or civil aircraft on 24 March 1968.
- 20 The report should have included or referred to the fault rectification and maintenance problems identified in the post crash inspection as contained in the Departmental File submitted to this review.
- 21 The Report and all files relating to the search for the St. Phelim, acknowledge the exceptional navigational skills and seamanship of Skipper Billy Bates of Wexford.
- 22 The interception, by the media, of situation reports from the Irish Investigators, on board search vessels or land-based in the Wexford area to their Headquarters in Dublin, fuelled speculation and rumour. This necessitated firm action by the Government Information Bureau in co-ordinating press releases and the installation of a secure telephone (scrambler) between Rosslare and the Department of Transport and Power.
- 23 The aircraft wreckage held at Casement Aerodrome, Baldonell, was disposed of without adequate notice to interested parties who may have wished to examine same.
- 24 The Minister for Transport and Power and Aer Lingus ensured that the provisions of the Warsaw Convention were brought to the notice of all parties eligible to claim for compensation under the said convention.
- 25 Despite taking 3 months to locate the St. Phelim on the sea bed, and the difficulties in establishing the flight path of the aircraft, the lack of radio communication between the St. Phelim and any ATC station, and the difficulties in constructing the last movements of the aircraft, the Report did not make any Safety Recommendation with regard to:
- Search and Rescue procedures in the Irish airspace.
 - The fitting of Cockpit Voice Recorders to Viscount Aircraft. (These were fitted by Aer Lingus to the remaining Viscounts after the Tuskar Crash).
 - The fitting of Emergency Locator Beacons to Irish Registered Aircraft

Increased Radar Coverage in Irish Airspace

The use of Secondary Surveillance Radar in Irish Airspace

- 26 Post mortems were carried out on all recovered bodies except one. These were carried out under proper procedures and contributed in a major way to the investigation. The procedures followed were agreed with the Chief State Pathologist and used specialist aviation pathologists both from UK and Ireland.
- 27 Inquests were conducted on the recovered bodies under the direction the proper legal and judicial authorities.
- 28 The decision to bury body No. 14 was taken by the appropriate legal authority at the time and the possibility as to identification using techniques available now were not known or available.
- 29 The possibility of a cause other than a collision or near collision with another airborne object being the initial cause of the upset to the St. Phelim does not appear to have been adequately examined in the 1970 Report.
- 30 Up to the end of 1995, 139 Viscount crashes been reported. 66 of these accidents have involved fatalities with a total loss of 1573 lives.

Source:- World Directory of Airliner crashes by Terry Denham

- 31 The Department of Transport and Power and the Department of Defence acknowledged in writing the great effort made by all the agencies of the State in coping as best they could with this tragedy. These included, the Defence Forces, CIE, Rosslare Harbour, B.I.M. Irish Lights, RNLI, and are detailed in full on the files.

EI-AOM Departmental File

Conclusions

- 32 The available evidence indicates that the 2.04 inspection was completed.
- 33 The available evidence indicates that there were no deferred defects relating to the 2.04 inspection which were not revisited during the 2.05 inspection.
- 34 There is no evidence to support any connection between the missing paperwork of the 2.04 inspection and the accident on 24 March 1968.
- 35 There were serious errors in the Maintenance Operating Plan of EI-AOM at the time of the accident. These errors originated within Aer Lingus.
- 36 The Department failed in its role of approving and auditing the Maintenance Operating Plan.

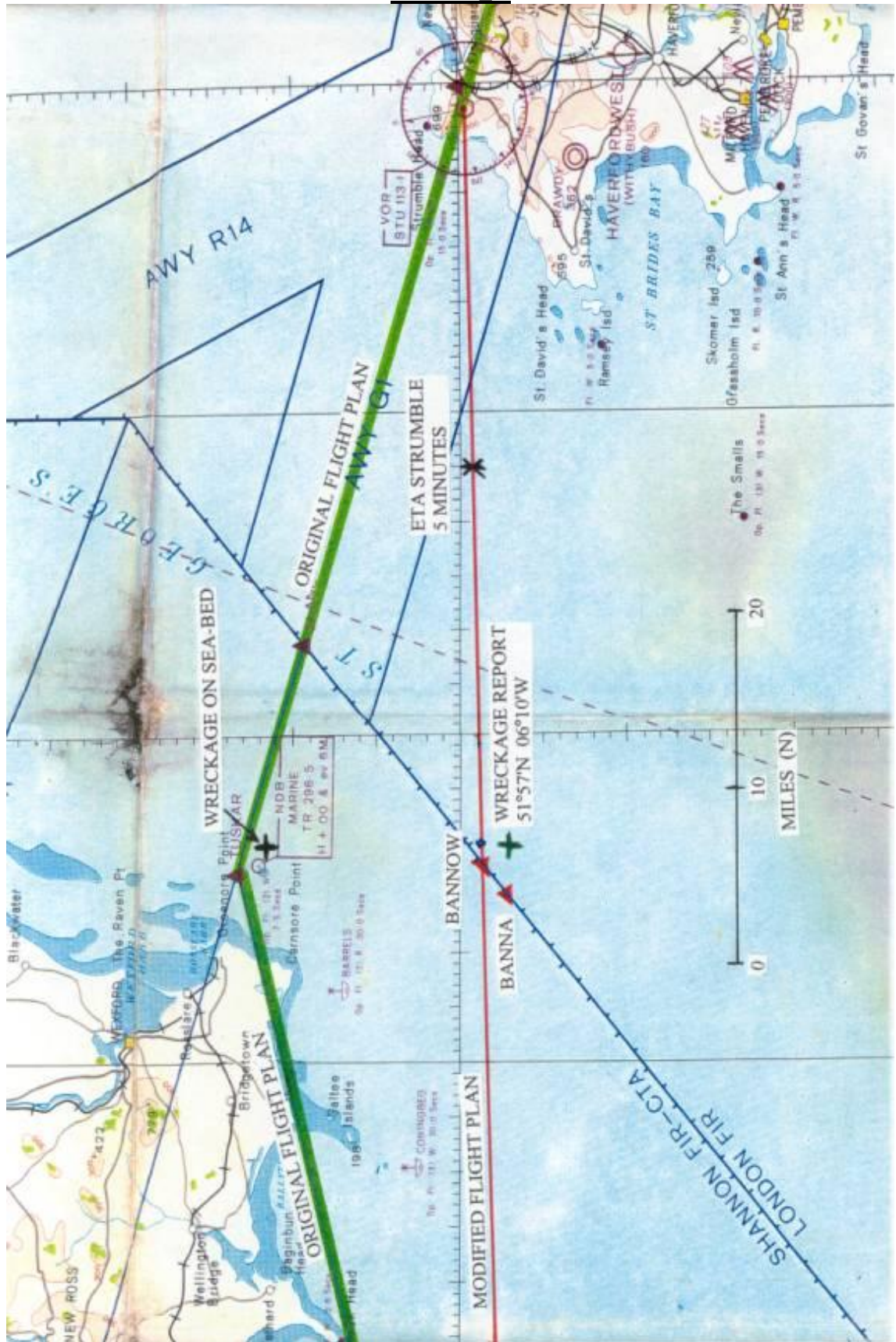
- 37 The omission, from the Final Report, of details of the aircraft's maintenance history, except in the briefest of terms, is difficult to comprehend.
- 38 The total omission, from the Final Report, of details of the errors in EI-AOM's Maintenance Operating Plan is difficult to comprehend.
- 39 While the maintenance history and Maintenance Operating Plan errors of EI-AOM contain many matters for concern, there is no evidence that any of these items had a bearing on the cause of the accident.
- 40 The structure of the Aeronautical Section of the Department of Transport and Power, which led to the person responsible for the approval of the Certificate of Airworthiness being in charge of the investigation, posed a potential conflict of interest.
- 41 This also applied to Department of Transport and Power personnel responsible for the regulation the maintenance of the aircraft, who were involved in the investigation of the accident. However such structures were common in the international aviation community at the time.

RECOMMENDATIONS

This review recommends that all non-personal material be placed in the Public Domain through the National Archive and under the National Archive Act 1986, with the exception of the files relating to the post-mortem examinations. These excepted files should be retained by the Air Accident Investigation Unit.

The Air Accident Investigation Unit should remain available to review any new evidence, regarding this accident, that may come to light in the future.

ANNEX A



ANNEX B – Operations Order

RNG P70,
CCA,

Geata Na Páirce,
Baile Átha Cliath

27 Jun 68

00 No 7/1968

This order cancels 00 6/1968 dated 19/6/68.

Maps: OS IRELAND ½ in to 1 mile Sheet 23.

SIT

1. The wreck of the crashed VISCOUNT EI-AOM has been loc in posn 100°. 1.75 miles from TUSKAR ROCK in 250 ft depth. Ops to rec wreckage may resume 15 Jul 68.

2. Engaged in ops

- | | |
|--------------------------|---|
| a. CONS | (1) Acting on behalf Dept Tpt and Power in co-ord search and rec. |
| b. Naval Service | (1) <i>Naval co-ord.</i>
(2) <i>Search</i> |
| c. Royal Navy | (1) <i>Search</i>
(2) <i>Rec.</i>
(3) <i>Ldg or beaching wreckage.</i> |
| d. Dept of Tpt and Power | (1) <i>Policy on rec.</i>
(2) <i>Tech advice.</i> |
| e. Aer Lingus | (1) <i>Tech Advice</i>
(2) <i>Disposal of remains pers following clearance for burial by local authority/Coroner.</i>
(3) <i>Undertakers hired to remove remains by metal casket and refrigerator vans.</i> |
| f. Local Authority | (1) <i>Removal remains pers form AC Coroner</i>
(2) <i>Examination of remains and identification.</i>
(3) <i>Certification of death.</i>
(4) <i>Clearance for burial.</i> |
| g. Gárdaí | (1) <i>Crowd control</i> |

h. Dept P&T by arrangement with Dept Tpt and Power

(2) Tfc control
 (3) Control of entry to mortuary area.
 (1) Provision telecomns at Camp site T 125 125, Press Office and Ops HQ.

i. E.S.B. by arrangement with Dept Tpt and Power

(1) Provision of mains elec at Camp by arrangement with site T 125 125

j. C.D.

(1) Provision of watch tanker for topping up static water tsk.

k. Lt. Col Breen rep Gov Info Bureau

(1) Est press office loc Car Park HARBOUR VIEW HOTEL
 (2) Press relations.

3. Disposal of wreckage

Small wreckage is being landed at pier. Large wreckage may have to be beached. Any bodies which may be discovered in the wreckage may have to be removed at beach site, from where they will be moved to canvas morgue loc T 125 125 for examination, identification and clearance for burial.

MISSION

4. Óglaigh na hÉireann will assist in the op by recovering wreck from beach; by transporting wreckage to Casement air fd; by hosing down wreckage; by providing secure hangar accn and tech assistance at Casement air fd and by providing Marquee as a temporary morgue at ROSSLARE HARBOUR.

EXECUTION

5. Gen Outline

Wreckage landed at pier will be removed direct to Casement air fd unless otherwise determined by CONS. Beached wreckage will be rec by engrs and transported to Casement air fd after removal of remains by appropriate authority.

6. Ceann O will

- a. provide 2 trucks 1oc WEXFORD BKS at 1 hrs notice from 15 Jul 68 to transport small wreckage and further
2 trucks 1oc DUBLIN at 6 hrs notice from 15 Jul 68.
- b. provide 2 Matador trucks and 1 low loader loc DUBLIN at 6 hrs notice from 15 Jul 68.
- c. provide: 1 Marque as temporary morgue } Loc NORTH of rly line

1 x 8 Man tent for MP } T 125 from 15 Jul 68.

1 Caravan CP }

- d. provide 1 NCO and 3 MP at T125 125 to control camp site and protect mil property.
- e. provide 1 Offr, 1 NCO, 12 engrs in WEXFORD at 1 hrs notice from 15 Jul 68 to rec beached ac and hosing as necessary.
- f. provide decking and other engr rec eqpt as determined by Comdt Gill.
- g. provide static water containers for 1500 gals.
- h. provide fire appliances T125 125.
- i. provide 6 x 6 ft tables for temporary morgue.

7. *Air Corps will provide*

- a. *Half hangar (No 3) for accn of wreckage and security.*
- b. *1 x 5 ton Crane truck on stand-by in WEXFORD at 1 hrs notice from 15 Jul 68.*
- c. *for hosing wreckage at Casement air fd.*
- d. *Tech assistance by pers and use of wksp at Casement air fd.*

8. *Co-ord*

- a. *All instls and pers in posn from 15 Jul 68.*
- b. *CONS will alert P&O reps and WEXFORD BCKS as necessary when wreckage expected ashore which will involve tpt from WEXFORD or DUBLIN.*
- c. *Col Barratt or Lt. Col Adams will rep Rn P&O in gen co-ord of rec after wreckage is landed. They will be at 3 hrs notice from 15 Jul in DUBLIN.*
- d. *Comdt Gill will co-ord engr ops for rec.*
- e. *Trucks and low loader may use the pier by special arrangements and then between 1200 and 1700 hrs ONLY.*

ADM

9. Ceann O will provide offr for co-ord adm arrangements WEXFORD BKS.

COMNS

10. Telephone

Gárda Superintendent Lynam

WEXFORD 3

Air Lingus reps }

ROSSLARE HARBOUR

Capt Black	}	40
Mr Butler	}	
CONS	}	ROSSLARE HARBOUR
Lt. Deasy Naval Service	}	49 or 48
Harbour Master		ROSSLARE HARBOUR
ROSSLARE HARBOUR		14
(Mr. Con O'Brien)		
WEXFORD BKS		WEXFORD 133
(Condt FAHY IC)		
Temporary Morgue		ROSSLARE HARBOUR
Camp Site T125 125		53
Press Office		Infor Later.
Lt Col Breen		
Army HQ	}	
Rng P&O	}	DUBLIN 771881
Duty Offr	}	
Col Barrett RN P&O		DUBLIN 772314
Lt. Col Adams		DUBLIN 975625
Issued by order of the Chief of Staff		

ANNEX C

SECTION VI

THE SALVAGE PHASE (See Annexes A, B, C and D)

The Salvage Phase – 12th to 22nd June 1968

1. By the end of the end of the second phase of Operation TUSKAR on 6th June it was fairly certain that the bulk of the Viscount aircraft wreckage lay around the position 101 TUSKAR ROCK 1.75 miles in 252 feet of water.
2. The final area of search was therefore established, area OMEGA, and orientated as a square of 1½ miles side, around the critical position.
3. In order to concentrate the sonar search activity within this new area, further minehunter support was essential and HMS Ships BRONNINGTON and NURTON were allocated to the task
4. The planned intentions for this phase of the Operation were:-
 - a. RECLAIM AND UPLIFTER, each with a minehunter in support, to locate and identify all contacts of promise. UPLIFTER with Observation Chamber and RECLAIM with divers, underwater television and Observation Chamber according to tidal conditions.
 - b. Recover all sizeable pieces of wreckage.
 - c. Locate and plot small pieces of wreckage for subsequent recovery by the Irish trawlers.

Task Group Organisation

5. With the area of wreckage localised and the forces augmented by the additional minehunters the direction of Operation TUSKAR was re-organised as follows:-

Commander Task Group (CTG 315 1) – Commanding Officer,
HMS RECLAIM

Task Units – TU. 315 1 2 – (HMS NURTON WITH MCM 1 embarked)
(HMS BRONNINGTON)

TU. 315.1.3 - Salvage Vessel UPLIFTER
TU. 315.1.4 - HMS RECLAIM

TU. 315.1.5 - HMS SHOULTON

TU. 315.1.1 - Staff Officer Ashore – Rosslare

The Command Salvage Officer to the Commander-in-Chief, Plymouth was attached to CTG 315 1 on board HMS RECLAIM

6. IM Ships NURTON and BRONNINGTON arrived in the TUSKAR area at first light on Wednesday, 12th June and began their sonar search of area OMEGA. Only one possible contact was found, in position 098 TUSKAR ROCK 1 mile but the main wreckage in position 101 TUSKAR ROCK 1.75 miles had not been relocated by late that day.
7. On their arrival on the morning of 13th June, RECLAIM and SHOULTON concentrated their efforts in the main contact position 101 TUSKAR ROCK 1.75 miles. Tide precluded the use of divers but by using her Observation Chamber, HMS RECLAIM located a large mass of aircraft wreckage about 75 feet long, 12 feet wide and 5 feet above sea bed level.
8. Although a clearly defined aircraft shape could not be seen it was certain that the bulk of the Viscount lay here and that it appeared that the structure was badly smashed up.
9. Meanwhile the salvage vessel UPLIFTER had also returned to the task that morning and lay at anchor preparing her observation chamber and gear for the 6-point mooring system that would soon be required to secure RECLAIM over the wreckage.

Mooring System for HMS RECLAIM

10. On the morning of Friday, 14th June, UPLIFTER began to lay a 4-point mooring for RECLAIM assisted by HMS SHOULTON, who held herself over the main wreckage site and conned UPLIFTER into position to place the anchors 300 yards away from the wreckage. Each mooring consisted of a 4 ton stockless anchor supported by 15 fathoms of 2 inch chain cable, continued to the surface by 225 fathoms of 4 inch extra special flexible wire rope, the upper ends of which would be taken inboard on to RECLAIM's winches and capstans. The first four moorings laid in this way were the bow and quarter moorings for RECALIM and subsequently, when RECLAIM had secured to these, an additional head mooring and a stern mooring were run in to her. The mooring system was orientated 023 degrees – 203 degrees into the main run of the tide and by using all six wires in turn, HMS RECLAIM could haul herself over a wide area for diving surveys and for wreckage recovery.

Survey of Wreckage and Start of Salvage

11. Assisted by UPLIFTER's motor boat, RECLAIM entered her moorings on the morning of Saturday, 16th June and with conning assistance from SHOULTON lying nearby, hauled herself into position over the main wreckage using her observation chamber and underwater television. Later that day the divers began their survey of the wreckage and reported that the area beneath RECLAIM was like a scrap yard with a confused mass of wreckage lying all around the area. Landing wheels, fuselage panelling, engines and other parts of the aircraft were identified.
12. Tidal conditions were still severe and in order to prevent the submerged recompression chamber or observation chamber and television camera from swinging

off the contact in the tide, it was necessary to provide an improvised diving shot wire anchored at the bottom by a 4 ton anchor, which UPLIFTER laid, close alongside RECLAIM's diving position on her starboard side forward. The vertical shot wire from the anchor was hove up taut for each dive to allow the chamber to be lowered down the wire to within about 15 feet from the bottom.

13. Using all means available, the diving survey continued for the next 48 hours and it was possible to identify the remains of the starboard wing and its two engines, both of which had parted from their moorings on impact and now lay on the seabed, under the wing.
14. With the aircraft wreckage now finally located HM Ships NURTON and BRONNINGTON were withdrawn from the task on the 16th and 19th June respectively.
15. The divers reported that the remains of the fuselage consisted of a skeleton of transverse ribs, stripped of the skin plating from 5 feet above seabed level. These circular rib frames were angled forward towards the cockpit and had no doubt taken up this position by the shock of impact. It appeared that the aircraft was in fact lying the right way up on the seabed, resting on the edge of a deep sand hollow. The wings were sheared off the fuselage and like the rest of the tangle of wreckage constituting the fuselage proper, the cockpit was open at the top and badly wrecked internally.
16. Some bodies were seen within the tangled fuselage frames but the interior was in such confusion with loose wreckage piled here and there, that it was not possible to get a clearly defined aircraft shape from the wreckage.
17. Working beneath the cockpit position the divers passed a nylon lifting strop around what was believed to be the nose wheel bracing strut but on recovery by UPLIFTER this was found to be the oleo and shattered port wing with its main spar member broken off about a foot from where it would have entered the side of the fuselage.
18. As had been thought earlier the port wing had been torn off on impact and lay tucked under the fore end of the fuselage.
19. During these diving sessions the propeller blades and attached reduction gearbox of the front of one of the Dart engines were recovered.

Problem in the lifting of wreckage

20. Following her recovery of the remains of the port wing it was clear that UPLIFTER was unsuitable for raising wreckage safely to the surface. She had been converted from steam to diesel propulsion and due to insufficient ballasting after this conversion she was extremely lively and even calm sea conditions, the low ground swell lifted her horns up and down by as much as 12 feet at a time. Despite the use of nylon strops and inserts of nylon rope in the lifting wires, her movement introduced considerable snatch in the lifting system, especially at the instant of taking wreckage off the bottom. This effect would have torn clear the nylon strops or cut them through on the sharp edges of the wreckage.

21. On the other hand, HMS RECLAIM was a much heavier ship and extremely steady in her moorings and it was necessary to use her fore derrick and forecastle facilities to raise wreckage to the surface, transferring some of this later to UPLIFTER.

Further wreckage recovered _

22. The remains of the starboard wing to its outer joint together with the main spar were recovered by RECLAIM on Friday, 21st June. This also included a pair of the circular fuselage ribs where the main spar enters the fuselage.

End of first phase of salvage

23. The onset of the strong tides were accompanied by bad weather and further diving and wreckage recovery became impossible. RECLAIM slipped from her six moorings on the morning of Friday, 21st June and with the starboard wing of the aircraft lashed to her shrouds and the fuselage frames lying across her fore deck, she proceeded into Rosslare, followed by UPLIFTER with her load of wreckage.
24. The ends of the six mooring wires and the diving shot wire marking the wreckage, were all buoyed off for use in the next phase of the Operation.
25. On Saturday, 22nd June RECLAIM and SHOULTON sailed for Plymouth and, having checked the orientation of the mooring marker buoys, UPLIFTER returned to Pembroke Dock.

Salvage Phase – 15th to 24th July _

26. A formal request for the salvage force to resume operations on 15th July 1968 was received from the Irish Government on 27th June and arrangements were made to re-activate Task Group 315.1.
27. During the recess in the salvage operations, the Commanding Officer, HMS RECLAIM, Command Salvage Officer and six senior deep divers visited the British Aircraft Corporation works at Weybridge and BEA at London Airport to examine a Viscount aircraft under major structural overhaul.
28. This was a most valuable visit for it enabled the divers to familiarise themselves with the various parts of the aircraft and identify the strong points in the structure where lifting strops could be attached.
29. Following this visit a number of specially designed screw clamps were made up in Devonport Dockyard for attachment to the protruding frames of the aircraft wreckage and to receive the nylon lifting strops.
30. UPLIFTER returned to the TUSKAR area on Friday 12th July and carried out a thorough survey of the six-point mooring system and diving shot buoys.

31. SHOULTON arrived early on Sunday morning 14th July and RECLAIM arrived at the crash site on Monday afternoon, secured to her six moorings and recovered her diving shot wire leading to the wreckage.
32. In order to hold SHOULTON secure in the same position abeam of RECLAIM's starboard side, special head and stern clump moorings were laid by UPLIFTER. This prevented SHOULTON swinging when conning RECLAIM's diving chamber over the wreckage or when assisting RECLAIM to reposition her diving shot clump.
33. During Monday night, strong winds and a fierce North-going tide on RECLAIMS's starboard bow put an undue strain on the moorings and RECLAIM moved out of contact with the wreckage. SHOULTON too experienced difficulty and slipped from her moorings during the night.
34. However, the moorings were repositioned the next day at a longer scope and RECLAIM soon began to recover wreckage again. An 18 foot length of the fuselage roof decking with built-in public address speakers, port flap beams, port wing trailing edge and other items were recovered.

The continuing need for a minehunter _

35. In view of the need to move RECLAIM over the wreckage area, either to survey or to position her diving shot clump near the aircraft, the presence of a minehunter was essential. Although RECLAIM had the use of her observation chamber ran underwater television, these only cover a very small area of seabed and without a minehunter lying nearby with the image of the wreckage on her screen, there was no way of assessing whether the moves which RECALIM was making by hauling on her six wires, were towards or away from the wreckage site. Circular swims by the divers were limited to slack water periods and by the length of air pipe from the submerged recompression chamber.
36. It was clear, therefore, that, with SHOULTON due to be withdrawn on 18th July, a replacement minehunter would be required and HMS IVESTON, already working in Cardigan Bay, remained available there until required.

Further recovery of wreckage and problem of re-locating aircraft

37. Further wreckage was recovered on 18th July consisting of a complete starboard Dart engine, a port engine propeller and its reduction gearbox, power section of the other starboard engine, pieces of fuselage and other items.
38. Co-incident with the departure of SHOULTON on 18th July, defects developed in RECLAIM's underwater television and she failed to re-locate the wreckage which was lying nearby. As each diver was limited to one dive in 24 hours, the depth of water and few minutes allowed on the bottom made it a waste of valuable diving time to employ the divers on circular sweeps to find the wreckage again. RECLAIM was therefore forced to resort to the use of her observation chamber again to relocate the wreckage and with little more than six feet visibility, this involved over a hundred separate ship moves on the wires, to search the bottom.

39. This was a very tedious operation, not only for the diving team but also for the crew manning the winches. There were only four winch or capstan positions available and each move of 20 feet forwards, aft, or sideways, meant that wires were repeatedly being taken on or off the winches and capstans or being held on wire stoppers. As the observation chamber was moved over the area, the shot wire and 4 ton clump were hoisted up just clear of the bottom, ready at a short notice to be lowered quickly as soon as wreckage was seen.
40. To assist RECLAIM in regaining contact with the main wreckage, HMS IVESTON was sailed to the TUSKAR area and she arrived in the afternoon of Friday, 19th July. With her help and the use of the observation chamber, contact was regained with the main wreckage and IVESTON returned to Cardigan Bay the next day.
41. At this stage it appeared from the divers' reports that the shapeless mass of fuselage structure was in two separated sections, with a gap where the wings had been torn out.
42. As there were no recognisable strong points upon which to secure the lifting strops, the plan was to fit screwed clamps to the ribs where they entered the floor structure, selecting a rib every 3 or 4 feet along each side of the mass. Nylon strops would then be rove into these clamps and cross-connected over the heap of wreckage to corresponding clamps on the other side. These nylon cross strops would then be collected into the two main lifting wires leading to the surface.

The divers' problem

43. Visibility on the seabed varied at times from nil to about 10 to 15 feet and in the gloom, the only lighting came from the lights of the submerged recompression chamber hanging above bottom some feet away or from the divers' small portable torches.
44. The diver in these conditions is always mentally confused and becomes physically exhausted after only a few minutes on the bottom. What would have been relatively simple tasks under normal conditions, e.g. passing of strops or securing clamps, became tasks of great difficulty.
45. In addition, unless the diver started his task precisely where his colleague had left off – and he might well be some feet away from this position – it was not always possible to guarantee that the diver could continue the sequence of the work.
46. Although they were able to carry out diving surveys of the wreckage in slightly stronger tides, $\frac{3}{4}$ of a knot of tide on the bottom was the limit in which the diver could perform physical work or drag around the strops. Even the simple task of taking a 3 inch wire from the chamber a few feet to the wreckage rapidly exhausted the diver.
47. Tidal flow and movement of the diver on the bottom disturbed the bottom silt and visibility was severely affected. As the whole mass overlaid with twisted and loose structure with the skeleton of ribs curving up out of this indistinguishable heap, there were several instances of the divers' air pipes leading from the chamber becoming foul of the wreckage. There were occasions when the diver, on regaining the shelter of his chamber, found that his air pipes leading away to the wreckage were fouled and the pipes had to be cut away.

48. Had this sort of thing occurred with the use of the Plymouth Deep Divers working from a gemini craft and no submerged chamber in support, there would have been some nasty accidents.

Preparations for a heavier lift

49. From the television screen the Irish Air Inspector in attendance on RECLAIM recognised items from the after galley, wine bar and other parts of the aircraft in this area. It seemed clear at the time that the diving shot clump and chamber must therefore have been very close to the after section of the fuselage, from where the trailing edge of the wings were, to the junction of the tail section. The tail section was not seen at any time during the operation.
50. The intact weight of this portion of the fuselage was barely 4½ tons and to lift it, eight screw clamps were secured at intervals along the wreckage, five on one side and three on the other and connecting cross strops of nylon rope and the main lifting wires were attached.
51. During a test lift on the morning of Monday, 22nd July the wreckage barely moved off bottom when the lifting ropes pulled clear. On the next diving session, the divers reported that the mass had apparently separated into two pieces. What was believed to be one of these sections was again stropped by wrapping it in about 100 feet of nylon rope, together with a 3 inch wire shackled back to its own part.

Attempt to lift and failure

52. The plan for the lift was to take the weight evenly on both the 3 inch wire and 4 inch nylon rope, with UPLIFTER lying about 80 feet off RECLAIM's starboard bow ready to receive the wreckage on her derrick, when RECLAIM had brought it to the surface.
53. Late that night, with the tide already showing signs of turning to the South and the sea whipping up between the two ships, the lift was taken very slowly and carefully by RECLAIM.
54. It was soon clear that the load was far heavier than expected and possibly rather more than a section of the after fuselage. It was possible that, with the fuselage having lost all its longitudinal strength by the fracturing of its fore and aft member on impact, the tangled mass was no more than a loose bundle of wreckage held together by electric wires.
55. It was clear that, with the tide now away to the South, it would be unsafe to halt the lift at 60 feet below water for a diving survey and restropping. With so much loose wreckage dangling below water, and all wreckage lifted so far had been well strung out, it would have been dangerous in the extreme to employ divers anywhere near it.
56. When the top of the shapeless mass just broke surface, the lift was stopped and UPLIFTER's derrick wire was attached to the exposed nylon strops on the wreckage. When this had been done and the working boat cleared from between the two ships, the load was slowly eased off from RECLAIM and on to UPLIFTER's derrick. No sooner had the load come off RECLAIM when the whole mass disintegrated within itself and fell to the bottom. It was quite clear from looking at the small part of the

mass which broke surface, that despite the tremendous efforts of the divers in clamping, cross stropping and wrapping up this bundle of fuselage structure, it was only held together by miles of entangled electric wires which parted.

57. The nylon strops were intact and still attached to UPLIFTER derrick wire and loose parcel had merely slipped from within its wrapping.
58. Several items of wreckage were recovered during the next diving periods such as the twin nose wheels, parts of air conditioning system, toilet water system, underfloor fuselage frames and one more engine with its compressor, turbine and gearbox.
59. With the tides now too strong for diving on salvage, HMS RECLAIM slipped from her moorings on Tuesday, 23rd July and proceeded into Rosslare to unload wreckage, accompanied by UPLIFTER.
60. Both ships returned to the UK on 24th July, UPLIFTER servicing the mooring and diving shot marker buoys en route.
61. A total of about 3½ tons of wreckage had been recovered in the phase of this operation.

Final Salvage Phase – 12th to 21st August 1968 _

62. When the final phase of the salvage operation began on 12th August it was believed that most of the main mass of wreckage which had fallen away during the lift of 22nd July, now lay in readily accessible pieces on the bottom near the diving shot clump or down tide of the clump.
63. Apart from the tail unit which had never been seen at all, there were several critical items which the Irish Air Accident Inspectorate required for their investigations, viz:-
 - a. Cockpit instruments which had been seen but not stropped.
 - b. Passengers' watches or cockpit clocks to assess the time of the crash.
 - c. One remaining engine plus a missing propeller blade from an engine already recovered; and
 - d. In the absence of the tail unit itself, that part of the fuselage structure adjoining the tail unit.
64. UPLIFTER arrived at the crash area on Monday, 12th August and checked all the mooring and diving shot marker floats ready for the arrival of RECLAIM the next day, but bad weather prevented RECLAIM from mooring up on arrival and she could not position herself over the wreckage until Tuesday, 13th August. On completion of the first dive that day, the vertical diving shot wire parted and, in the absence of a minehunter to position RECLAIM over the wreckage to place her diving shot clump, it was necessary to use the underwater television in an attempt to resite the clump near the wreckage.


65. Strong winds and swell hampered UPLIFTER in her attempts to transfer the new diving clump alongside RECLAIM and to make matters worse the underwater television developed a fault and divers failed to relocate the wreckage.
66. Despite the insertion of a swivel in the diving shot wire to prevent the wire unlaying when the clump was hove off bottom, the wire again parted and it was necessary to dive again to attach a new wire.
67. With the television again functioning, an area of about 240 feet by 120 feet was thoroughly searched and this involved a considerable number of moves of RECLAIM on her six mooring wires.
68. Small pieces of wreckage were seen but not the main wreckage and small pieces only were recovered such as the missing propeller blade, an engine feathering pump, most of the remaining engine, together with a main fuselage circular frame and other small parts of the structure.
69. It was now certain that the main mass of wreckage lay down tide of RECLAIM and UPLIFTER relaid the bow mooring at a long scope to the southward.
70. Strong winds and swell seriously hampered diving operations at this time but from the television camera it was clear that the wreckage seen was now tilting over making it even more difficult to find. A small piece of inner wing skin, a DC generator and the twisted frame of a child's folding pram were recovered on the diving sessions of 20th August.
71. Further items were recovered later, comprising one engine compressor, part of inboard flap torque tube, rotor gearbox and a piece of a fuselage frame.
72. Tides were by now almost back to their spring rate, the weather having deteriorated again and there was a 12 to 14 foot swell running from the South West.
73. RECLAIM slipped her moorings on the morning of 21st August and entered Rosslare to unload wreckage. Both ships returned to the UK later that day.
74. Although the Royal Navy salvage force was available to return to the task on the next neap tide period, the Irish Government decided to continue the salvage using their own trawlers to recover the wreckage.
75. By this time about 30 of the Viscount had been recovered.
76. Technical details of the Viscount aircraft and drawings depicting the various parts of the aircraft are given in Annex E.

77. UPLIFTER returned to the TUSKAR area on 27th August and recovered the six point mooring system and diving shot clumps.

Comments

78. The restrictions caused by tide during the salvage phase were particularly frustrating, resulting in much repetition and unnecessary hard work. In addition, the continual procrastination and lack of decision from the Irish authorities ensured that all salvage attempts were piecemeal and carried out in a hurry.
79. The lack of logistic support for both SHOULTON and RECLAIM with all their complex equipment became very apparent during this phase. This is highlighted in Annex A. It was not possible to set up a forward operating base with the stores required, in many cases they were not even available in the UK. The operation undoubtedly suffered from the requirement for many and various pieces of stores and equipment to be found and transported to Rosslare. It is open to doubt whether the Stores Department have sufficient of the right type of stores to support this type of operation satisfactorily.

ANNEX D

	AER LINGUS-IRISI.	Memo
To	Chief Inspector c c A Prod M	
From	MSS PA 4	
Date	3 January 1968	
Your ref		
Our ref		
File		
Subject	BASIC CHECK ON EI AOM	

The Basic Check was carried out on EI AOM on the 18 December 1967 and it is regretted that all but one of the work cards for this check have been mislaid. Despite numerous searches to-date they have not been located and it is now proposed to retain staff on an overtime basis to conduct a systematic search of all the probable and improbable areas where these cards could be. The last known location was in the Planning Office, No 1 Hangar, on Friday 22 December.

It is regretted that this situation should have occurred and all possible steps are being taken to rectify the problem.

T. Mehigan
T Mehigan

Mr. Flynn
- 4 JAN 1968

John

HANDLE
DISMISS
C
NOTE
FILE

ANNEX E

M.S.S.
CPCE

CI
PA5

3 January 1968

CI.17

BASIC INSPECTION REF. 2.04. EI-ACM

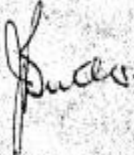
The above referenced inspection was carried out on EI-ACM on 17/18. 12.'67, and to date the complete work package, including the copy of the Maintenance Release, has not been received in Quality Control Records office.

From the numerous enquiries which have been made during the past week, it would appear that these documents have been presumably lost, as all efforts to trace them have been fruitless.

A similar instance occurred recently concerning an aircraft accident which was the subject of an investigation by the Dept. of Transport & Power and the ARB, where after frantic searches the missing sheet was found just in time.

There is no need to point out the seriousness of such occurrences, especially as we are obliged to retain all documentation concerning maintenance and operation of aircraft for the periods laid down in the Statutory Regulations.

In view of the foregoing, I should be pleased to know your procedure concerning the safe routing of these documents, together with your comments on how it is intended to avoid a recurrence of this nature.



J. Butler

ANNEX F




MEMORANDUM

TO	FROM	OUR REF.
		YOUR REF.
		FILE
SUBJECT: BASIC INSPECTION NO. 2-04 19 DECEMBER 1967 EI-AOM		DATE 2 April 1968

I wish to state that to the best of my recollection there were no carry forward defects associated with the following inspection items on the above inspection.

<u>ITEM NO.</u>	<u>ITEM NO.</u>	<u>SPECIAL INSPECTIONS</u>
1295	4035	46
2030	1259	47
2164	4036	52
2206	3540	56
2057	3545	65
2011	1012 No.1,2,3 & 4 Engine	66
4005	1013 No.1,2,3 & 4 Engine	74
4006	2165	101
1060 Port	2004	132
1061 Port	2229	271
1062 Port	R.469	273
4007	R.470	
4008	R.471	
1060 Stbd	R.472	
1061 Stbd	24-9	
1062 Stbd	24-11	
4029	28-29	
3561	28-39	
4030	30-1	
1256	32-28	
2050	34-31	
2007	61-2	
1126		

 85ACX.
 F Begley
 Licence No. 85ACX

ANNEX G

EI-AOM Inspection Paperwork.

Interviews with Mr. R.W. O'Sullivan

As instructed, John Hughes and myself visited Mr. R.W. O'Sullivan who is currently staying in Cairnhill Home, Cairnhill, off Westminster Road, Foxrock, Dublin 18. Phone 2896885. Mr. O'Sullivan is now 95 years old. He was in bed when we visited him in early afternoon, and it would appear he is largely confined to bed. He suffers from significant hearing difficulties. He also stated that his memory has largely faded. Occasionally he gets flashes regarding certain events but in recent times these are becoming rarer, and many events are lost to him.

When we started to discuss EI-AOM, he failed to recognise this registration, and was initially very slow to recall the accident. After a while he did start to recall the Tuskar accident. He focused on the missile theory and stated that he believed that the U.K ranges were probably open on the day of the accident. When asked about the maintenance paperwork of EI-AOM, he stated that he could not recall anything. When further asked about the possibility of missing paperwork relating to an inspection, he said he could not remember any such details.

The conversation carried on for near 1½ hours, discussing general aviation matters and coming back to EI-AOM. Nothing further of relevance was recalled by Mr. O'Sullivan.

Conclusion:

Mr. O'Sullivan is now a very frail gentleman. While he is still mentally agile, his memory is poor. I do not believe he can recall any details which would be useful to the review of the EI-AOM accident.

Graham Liddy
Inspector of Accidents
8 February 2000

ANNEX H

Interview with Capt. P.G. McCabe

The following is a report of an interview conducted by AAIU staff with Capt. P.G. McCabe, in Clare Street on 2 Feb 2000, to discuss his recall of the 1970 investigation.

The meeting started with a general discussion on the accident. Capt. McCabe stated that he was always puzzled by the discovery of the elevator spring tab so far from the main wreckage.

He said that a supersonic type bang was heard over a large area of South Wexford on the morning of the accident. He also commented as to what was seen over the Saltees at an altitude of 200 ft, and later what was seen floating on the sea in this area. He said that the U.K. authorities refused to search this area, reputedly because of dangers in this area, particularly the Half Tide Rocks.

He said that the tidal predictions, made by several authoritative sources, gave very different estimates of the wreckage location. These were based on the location and time when the floating wheel was found. He also said that the strength of the tidal streams was found to be much more than that indicated on the maritime charts.

He stated, when asked, that the Department was aware, before the accident, of the missing paperwork relating to the 2.04 inspection. He said that the Department did not consider the missing paperwork to be relevant to the accident. He also stated that some defect rectification cards, raised during the course of the 2.04 inspection, were found. He said that there was no way that the 2.04 inspection was not carried out.

Capt. McCabe said it was hard to escape the first impressions which impacted the Department's team, including himself, in the day following the accident. At that point, all they had was a number of floating bodies, some wreckage, and statements from near 50 witnesses of seeing or hearing another flying object which was not the Viscount.

Capt. McCabe stated that problems with Aer Lingus paper work and certification were very common about the time of the EI-AOM accident. He identified the employment of fitters from a non-aviation background as a particular difficulty, as such personnel were not trained, from the start of their careers, into the aviation practises of record keeping and work accountability.

Capt. McCabe was asked as to why so little of the research, conducted by the investigation team, into the maintenance history of EI-AOM, was included in the final report. He said he was under the impression that this information was included in the appendices to the Report, and was surprised when it was pointed out to him that there was nothing in the appendices pertaining to the maintenance history of the aircraft.

He also stated that there was a lot of information relating to other Viscount accidents which he wanted to include in the report, but ultimately little of this was included.

Capt. McCabe, in further written comments to this review, stated:-

“In preparation of the report of the accident all the appendices were submitted to the Minister for his consideration. However when it came to publishing the report the Government Publication Sales Office objected.

It was considered to put some of the appendices in but this was over-ruled and the appendices were made available in the office. What might have happened was that the maintenance history may have been forgotten. There was a lot of discussion as to what would go into the report and later what would be available in the office.

During a briefing on the evening of 21st of July Comdr. Messervy told us that he would lift at approx. 6 a.m. on 22nd July at the bottom of the tide. He would have nets out to bring under the lifting wreckage in case Archimedes took over. We were called at 2 a.m. stating that the lift was in progress. I questioned him about the nets and he stated there was no need, and he proceeded with the lift.

During several debriefing sessions with the divers they told they could not remember what they saw. They were diving outside their normal limits (220 feet) i.e. 220 feet. After decompression they said they would be in a stupor like drunkenness. Despite having blown up diagrams I never found a diver to recognise any part of the Viscount. They did not know what they were stopping. There was NEVER any mention of seeing any bodies. Once a diver had an hallucination of seeing the cockpit crew grinning at him. He cut his airline and had to be rescued by his safety man. At no time were the divers able to say what was down below, other than a heap of wreckage. It was not identifiable as an aircraft. The cameras attached to the diving bell only showed what was close i.e. baggage and a child's buggy.”

Captain McCabe added that the interview statement was made from memory after 32 years, without any documents or Aide Memoire to assist him.

Phone Call to Mr. McStay

The following is the report of a phone call between AAIU staff and Mr. Joe McStay, who was also with the Department at the time of the accident. He said that his main duty in relation to this accident related to examination of the wreckage at Baldonnell. He said he was fairly new in the Department at this time. He recalls that there was some talk of missing paperwork, but he can not recall the nature of the paperwork in question, or if it was known before the accident that the paperwork was missing.

ANNEX i

Inspection/Visit Chart No.2 issue 2of 10/3/1967

2-65

ENGINEERING MANUAL		VOLUME: 2	Viss.	PART: 2	DATE: 10.3.67	CHAPTER: 1	SECTION: 2	PAGE: 3														
<p>ISSUE No. 2 10.3.67.</p> <p>INSPECTION/VISIT CHART No. 2</p> <p>Each Inspection/Visit number shall include all groups indicated thereunder</p>																						
Insp/Visit No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Due at (hrs):-	350	700	1050	1400	1750	2100	2450	2800	3150	3500	3850	4200	4550	4900	5250	5600	5950	6300	6650	7000	7350	7700
Group	350 FLYING HOURS OR 80 DAYS BETWEEN VISITS																					
A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
B	BA	BB	BA	BB	BA	BB	BA	BB	BA	BB	BA	BB	BA	BB	BA	BB	BA	BB	BA	BB	BA	BB
C					CA			CA			CA			CA			CA			CA		
D	DA	DB	DC	DD	DA	DB	DC	DD	DA	DB	DC	DD	DA	DB	DC	DD	DA	DB	DC	DD	DA	DB
E	EA	EB	EC	ED	EE	EA	EB	EC	ED	EE	EA	EB	EC	ED	EE	EA	EB	EC	ED	EE	EA	EB

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ANNEX J

Operating Plan Page 1 of 2

2-05

ENGINEERING MANUAL	VOLUME: 2 Vice.	PART: 2	DATE: 10.3.67	CHAPTER: 1	SECTION: 2	PAGE: 1
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V. 808-803 INSPECTION - OPERATING PLAN. To Chart Issue 2
10.3.67.

Maintenance Visits or Numbered Inspections shall be carried out within a period of 350 Flying Hours and withinevery 350 flying hours thereafter; Inspections/Visits shall be numbered consecutively from No. 1 onwards indefinitely and need not revert to No.1 as a result of a Check 3 or M.B.C. Every Inspection/Visit shall include all items of the Basic Check - (B) Items - as a minimum requirement also each Inspection/Visit shall include Groups of other items which have inspection intervals less than Check 3 or M.B.C. - See Inspection chart on page 3 for details of all Groups included in each Inspection/Visit number.

The following items are the items considered to be the minimum requirement of maintenance and servicing necessary prior to the issue of a Maintenance Release.

Group 'A'

1000,	1001,	1002,	1003,	1004,	1005,	1006,	1007,	1008,	1009,	1014
1020,	1022,	1023,	1026,	1027,	1050,	1051,	1052,	1054,	1056,	1057,
1058,	1059,	1069,	1080,	1081,	1082,	1083,	1084,	1085,	1086,	1087,
1088,	1095,	1097,	1099,	1100,	1120,	1121,	1122,	1123,	1124,	1130,
1140,	1141,	1142,	1143,	1145,	1195,	1196,	1197,	1198,	1199,	1200,
1201,	1203,	1204,	1218,	1230,	1231,	1232,	1233,	1234,	1238,	1245,
1246,	1247,	1249,	1251,	1253,	1255,	1264,	1275,	1276,	1277,	1278
1279,	1280,	1282,	1283,	1284,	1305,	1306,	1307,	1308,	1309,	1310,
1311,	1312,	1313,	1314,	1315,	1317,	1318,	1327,	1335,	1336,	1337,
1338,	1339,	1340,	1341,	1343,	1344,	1350,	1351,	1352,	1353.	

2000,	2006,	2021,	2022	2023	2026	2031,	2046	2047	2048	2065
2073	2075	2080	2081	2083	2092	2094	2121	2122	2123	2124
2134	2137	2138	2148	2151	2152	2154	2163	2166	2168	2173
2175	2176	2177	2178	2179	2180	2181	2190	2191	2192	2193
2194	2195	2196	2197	2198	2199	2200	2201	2202	2222	2223
2224	2225	2226	2227	2228	2250	2251	2252	2253		

R402	R404	R435	R409	R410	R411	R414	R418	R426	R441	R442
R451	R473	R474	R475	R476	R478	R482	R484	R463	R455	R467
R499	R500	R501	R502.							

3500	3510	3511	3520	3535	3572.	1346	3523			
------	------	------	------	------	-------	------	------	--	--	--

4000(a) 4001(a)(b), 4002(a)(b) 4003(a) 4004(a) (g), 4005(a), 4006(a), 4007(a) (e), 4008(a) (f), 4009 (a), 4010(a), 4011(a)(c), 4012(a), 4013(a)(f), 4014(a)(c)(g) 4015(a) (e)(g) 4016(a)(e), 4017(a)(b), 4018 (a)(b), 4023(a), 4024(a), 4027(a) 4028(a), 4031(a), 4032(a), 4033(a), 4034(a), 4039(a).

In addition to the above mentioned minimum requirement each Inspection shall include some of the following groups of items - see Inspection/Visit Chart for details.

Group BA 1028 1220

Group BR 1295

Group CA 1281 4000(b)(e) 4038(a) 4039(b)(e) 4037(a), 3521 2025 2109

Group BA 1067 1152 2010 2174 2203 3512 3536 4003(b) 4004(b)
1214 1286 1296 1320

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2-05

ENGINEERING MANUAL	VOLUME: 2 Visc	PART: 2	DATE: 10.3.67	CHAPTER: 1	SECTION: 2	PAGE: 2					
						To Chart Issue No. 2 10.3.67					
<u>V.808-803 INSPECTION - OPERATING PLAN.</u>											
<u>Group DB</u>	1016	1125	2005	2009	2052	2171	4009(e)	4010(f)	4011(f)		
	4012(e)	4013(e)	4014(f)	4015(f)	4016(e)	4025(a)(b)(c)	4026(a)(b)(c)				
	4027	4028	3524								
<u>Group DC</u>	1248	1252		2001	2002	2003	2110	2144	3513	4033(b)	4034(b)
	R420	R421	R422	R423	R427	R428	R429	R430	R431	R432	R436
<u>Group DD</u>	1060	1061	1062	1256		2007	2011	2030	2050	2057	2164
	2206	3561	4005(b)(d)	4006(e)	4007(b)(d)	4008(e)	4029(b)	4030(b)			
<u>Group EA</u>	1010	1148	1153	1207	1285	3530	3550	3551	3552	3553	3554
	3555	3570	3571	R.406	R.407	R.408	1018	1019			
<u>Group EB</u>	1055		1221	1316	2027	2079	3501	4006(b)		4008(b)	
	4009(e)		4010(b)	4011(b)	4012(b)	4013(e)	4014(b)				
	4015(b)	4016(b)	R.477	R.479							
<u>Group EC</u>	1015	1017	1208	1258	1325	3573	4003(e)(d)		4006(b)		
	1345		4004(e)(d)	4008(b)	4023(b)(e)		4024(b)(e)				
<u>Group ED</u>	1012	1013	1126	1259	2165	2229	3540	3545	4035a		4036(a)
	R.469	R.470	R.471	R.472.	2004						
<u>Group EE</u>	1144	1151	1287	2149	2150	2169	2204	3560	3563	4019(a)(b)	
	4020(a)(b)	4021(a)(b)	4022(a)(b)	4029(a)	4031(b)						
	4030(a)	4032(b)	R.461	R.462	R.464.						
 NOTE:											
<u>ITEM No.</u>	1011	300 Hr. Item. (Transferred to VHI.132 to Record Results).									

ANNEX K

Analysis of Viscount Operating Plan Page 1 of 6

Operating Plan - Viscount Aircraft.

The 1st Inspection due on AOM i.e. No. 1 Inspection in accordance with the Operating Plan (Initial Issue) following the Check 4 at S.A.L. was carried out to Operating Plan (Initial Issue) dated 31/8/65. Inspections Nos. 2 and 3 were also carried out to this Operating Plan.

When Technical Planning received Amendment No. 3 to the Viscount Maintenance Schedule, a new Operating Plan to Issue 2 dated 10/3/67 was compiled and the Inspection sequence for AOM reverted to No. 1 Inspection on this new Plan instead of continuing to No. 4 Inspection. Inspection Numbers 1 to 5 inclusive were carried out on AOM per this new Issue 2 of the Operating Plan prior to the crash.

In accordance with the write-up on the Operating Plan all Inspection Numbers are consecutive from No. 1 onwards indefinitely and need not revert to No. 1 on completion of a Check 3 or M.B.C.

In the case of reverting to No. 1 Inspection on Operating Plan Issue 2, having completed Inspections Nos. 1 to 3 per the Initial Issue of the Operating Plan, the following has resulted.

(a) All those Group Item Numbers which are in the same Groups B, C, D and E on the first and second Operating Plans have been called up as follows:-

- Group B - called 700 hours over their compliance time.
- Group C - called up within the stated compliance time.
- Group D - called up within the stated compliance time.

Group E

- ED Items - due within 350 hrs. not called until 1400 hrs.
- EE Items - due within 700 hrs. not called until 1750 hrs.
- EA Items - due within 1050 hrs. but called within 350 hrs.
- EB Items - due within 1400 hrs. but called within 700 hrs.
- EC Items - due within 1750 hrs. but called within 1050 hrs.

The above quoted hours are calculated from the Operating Plan. They would in practice be somewhat lower since:-

- No. 1 Inspection was called at 276 hrs. and not 350 hrs.
- No. 2 Inspection was called at 260 hrs. and not 350 hrs.
- No. 3 Inspection was called at 307 hrs. and not 350 hrs.
- No. 4 Inspection was called at 250 hours and not 350 hrs.
- No. 5 Inspection was called at 273 hrs. and not 350 hrs.

i.e. Group EE Items while theoretically would not have been called until 1750 hrs., were actually called within 1366 hrs.

In view of the above findings, I contacted Mr. D. Brennan, Assist. Chief Inspector Aer Lingus, and outlined the findings to him and requested him to investigate the use of the Operating Plan for AOM and the remaining Viscounts to ascertain what Inspections were over their time, paying particular attention to any Inspection Requirements which were issued in Memo form within Aer Lingus from Engineering from the date Technical Planning received Amendment No. 3 for the Viscount Maintenance Schedule. I also requested an investigation into the use of the Operating Plans for the other Aer Lingus Aircraft.

I requested confirmation in writing on the findings of the above, to Capt. McCabe.

It is worth noting that in the case where an aircraft has reverted to No. 1 Inspection on Operating Plan (Issue 2) that the situation is not too bad re items being over their compliance time if an aircraft has had up to Inspection No. 5 carried out per Operating Plan Issue 2 as was the case for AOM.

Analysis of Viscount Operating Plan Page 2 of 6

Operating Plan - Check 2-05 EI-AOM

The Operating Plan (Issue 2) was checked in conjunction with Cards for Check 2-05 and the following was noted:

Item 1011

This was changed to V.S.I. No. 132. on 19/7/67 per SESS 401. It was due within 300 flying hours from 14/1/68 but was called up and carried out on 7/3/68 at 331.35 flying hours.

Item R442

Item was split into (a) at 350 hours to (b) at 2500 hours per SESS 116 of 7/2/68. Item No. R442 which was called on Inspection No. 2-05 as a basic 350 hour Item should have read Number R442(a). The Operating Plan was not amended to include this change but should have been amended.

Item R463A

Now Item per SESS 767 of 12/12/67. It was called on Insp. 2-05 but is not on the Operating Plan.

Item R463

The existing Item R463 in the Schedule was changed to read R463B under Amendment No. 4 but this change was not indicated by the Amendment Bar and the figure 4 opposite it.

Item 4010(c)

This is a 350 hour Item in the Schedule and was called as such on Insp. 2-05. It is not entered on the Operating Plan.

Items 4025(a)(b)(c), 4026(a)(b)(c), 1125 and 3521.

In Schedule to Amd. No. 3 at 1500 hrs. They were on Operating Plan (Issue 2) under Group DB at 1500 hours which was correct. Items 4025(a)(b)(c) and 4026(a)(b)(c) are panel Items related to Items 1125 and 3521. Item 3521 was downgraded to 1050 hrs. per SESS 737 of 30/11/67 and accordingly was deleted from Group DB and entered under Group CA at 1050 hrs, on the Operating Plan (Issue 2). This Item 3521 was called up on Insp. 2-05 on AOM. Engineering should have ensured that the panel items 4025(a)(b)(c) and 4026(a)(b)(c) were also called at 1050 hours for Item 3521 when Item 3521 was downgraded to 1050 hours. All the above Items have been entered in the recent Amd. No. 4 to the Schedule at 1050 hours.

Item 2004

It was carried out on the Check 4 at S.A.L. on 15/2/67. It was upgraded from 1500 hours to 1750 hours per SESS 449 of 11/8/67 and accordingly was changed from Group DD to Group ED on Operating Plan (Issue 2). Group DD is under Insp. No. 2-04 which is the Check that is missing. If this Item was carried out on Check 2-04 (the missing check) then it would have been at 1876 hours which is 126 hours over its time. If it was not carried out on Insp. 2-04 then it would have achieved 2220 hours since last accomplished on Check 4. Insp. 2-04 was certified on 19/12/67

Items 4019(a)(b), 4020(a)(b), 4021(a)(b) 4022(a)(b), 1144, 1148, and 3530

These Items should be under the same Group in the Operating Plan (Issue 2). They were all under Group EA at 1500 hours in Operating Plan No. 1. Although Items 4019(a)(b) 4020(a)(b), 4021(a)(b) and 4022(a)(b) were only up to 1500 hours in the Schedule on Amd. No. 3 these Items at 1500 hrs. did not relate to any Inspection or Lubrication Items at 1500 hours. Note Items 3530, 1144 and 1148 were then at 1750 hours. When Operating Plan Issue 2 was compiled the Items appeared on the Plan as follows:-

2.

1144	-	Group EE
1148	-	Group EA
3530	-	Group EA
4019(a)(b)	-	Group EE
4020(a)(b)	-	Group EE
4021(a)(b)	-	Group EE
4022(a)(b)	-	Group EE.

The Items have been split up on the Plan over two Groups EA & EE. Note that 4019, 4020, 4021 and 4022(a)(b)s, are under EE Group at 1750 hours but are called in the Schedule at 1500 hours prior to recent Amd. No. 4. Items 4019(a)(b) and 4021(a)(b) were upgraded on Amd. No. 4, but these Items are the Panel removal and Panel refitting to cover Items 1144 (Group EE) 1148 (Group EA) and 3530 (Group EA).

- (a) How would Items 1148 & 3530 have been carried out satisfactorily if the Schedule Panel opening was not specified.
- (b) What authority had Tech. Planning to upgrade Items 4019, 4020, 4021 and 4022(a)(b)s without written authority from Engineering.
- (c) Why were Items 4020(a)(b) and 4022(a)(b) not also upgraded to Amd. No. 4.

Items 4027(a)(b) and 4028(a)(b)

These were new Item Nos. introduced under SEBS 458 of 16/8/67 at 1500 hour periods. They were issued in error per the memo as they should have read 4025A(a)(b) and 4026A(a)(b) Items 4027(a)(b) and 4028(a)(b) were already Items Nos. in the Schedule. However, Item Nos. 4027 to 4028 at 1500 hours were entered in Operating Plan Issue 2 under Group DB at 1500 hours. They were called up on Inspt. No. 2-02 on AOM and certified on 8/9/67 under Item Nos.

4027(a) 4027
4028(a) 4028

The text called up on the Cards per these Items Nos. was correct as per SEBS 458 of 16/8/67 but the Item Nos. on the Operating Plan and Cards should have read 4025A(a)(b) and 4026A(a)(b). The Cards and Operating Plan need to be corrected to avoid confusion.

Item 3523.

This Item was called up and certified as having been carried out on Card No. 6 for Inspt. 2-05 AOM yet it is applicable per the Schedule to V808C aircraft only.

Item 4003(a)

Sub. Letter (a) as per the Schedule was not entered on Cards Nos. 9 and 10 for Check 2-05 AOM.

Item 4005(a)

Sub. letter (a) as per the Schedule was not entered on Card No. 10 for Check 2-05 AOM.

Item 3510

This is a 350 hour lubrication requirement and was called up on Inspt. 2-05 on AOM under Cards Nos. 12 and 19. On Cards Nos. 12 and 19 there are removal and refitting requirements added for Panel Nos. 145(G off) 150, 144, 143, and 154 to Chart No. 11C for lubrication access.

These panels are covered in the Schedule at 1500 hours under Items 4006(c) and 4008(c). These panels are on the Flaps. Since they are required off per cards nos. 12 and 19 at 350 hours for lubrication purposes they should be called off in the Schedule at 350 hours as well as 1500 hours and the Operating Plan should be amended accordingly.

Items 4027(a) and 4028(a)

Although these Items per the Schedule and Card are applicable to 808 only, they have been certified on Card Nos. 23 and 25 for AOM as having been carried out.

Items 4029(a) and 4030(a)

These are 1750 hour Items in Schedule and called under Group EE on Operating Plan Issue 2. For AOM they were called correctly on Card Nos. 5 and 7. However, another Panel No. 324 was added to the Panels under 4029(a) on Card No. 5. This Panel is due to be called not at 1750 hours but at 1500 hours. In addition this panel No. 324 was also entered on Card No. 7 under Item 4030(a) but appears to have been erased - although it is signed off on the card as having been accomplished. In the above cases it would appear that 324 was typed on the dye-line for both Card No. 5 and 7 in error and was removed but not completely and in the case of Card No. 5 the person on the floor thought it was on the card and entered it fully in ink. In the case of Card No. 7 it appears that the person on the floor, seeing the faint outline of the No. 324 on the card assumed it was to be carried out and certified to this effect and subsequently changed his mind and deleted his signature.

Items 4031(b) and 4032(b)

These are called up in Sch. to be removed and refitted per Chart No. 18A (Issue 5). For Inspt. 2-05 AOM Card No. 5 and 7 call the work up to Chart No. 18 (Issue 5). In addition Panel No. 333 under Item 4031(b) on Card No. 5 is certified as having been removed, but Panel No. 333 under Item 4032(b) which is the refitting Item for this Panel is certified as being N/A.

Item 4015(f)

This Item No. is quoted on Card No. 43 for Inspt. 2-05 AOM. In accordance with the Schedule it should read 4015(g). Operating Plan (Issue 2) correctly calls Item No. 4015(g).

Item 4015(c)

This Item no. is quoted in the Schedule at 350 hours. The text for this Item was called on Card No. 43 under Item No. 4011(c). Operating Plan (Issue 2) correctly calls Item No. 4015(c). Item No. 4011(c) on Card No. 43 should read 4015(c).

Item 1005

On Card No. 91 for Inspt. 2-05 AOM, the word "mechanism" should read "mechanisms".

Item 1320

On Card No. 9 for Inspt. 2-05 AOM the word "bracket" should read "Brackets".

Item 1353

Text on Card No. 7 for Inspt 2-05 AOM not the same as stated in the Schedule.

Item 2048

The word "satisfactory" as stated in the Schedule has been replaced by the word "External" on Card Nos. 77, 79, 81 and 83 on Inspt. 2-05 for AOM.

Item 2006

The words "where visible" have been inserted into the text for this Item on Card Nos. 78, 80, 82 and 84 for Check 2-05 AOM. These words are not in the text of this Item in the Schedule.

4.

Item 2065

The text of this Item was changed per SESS 554 of 28/9/67. Card No. 72 for Inspt. 2-05 AOM carried out on 7/3/68 still has the unamended text on the card. It should have been amended for inspections called up after 28/9/67.

Item 2225

Part of the text of this Item re-oxygen bottles is not in agreement with text of Item 24 in Check 'A'.

Item R426.

Text on card for above Item: should also have the following added as this Item deals with Nos. 1 and 2 Installations.
No. 1 Installation -----
No. 2 Installation -----

R. 503

This new 350 hour Item was introduced per SESS 132 of 13/2/68. It was issued for Inspt. 2-05 on AOM but was not entered on Operating Plan (Issue 2).

Item 2197

For Card No. 65 on Inspection 2-05 for AOM, the word "service" should read "services".

Item 2203

Text on Card No. 2 for Inspt. 2-05 AOM has been rearranged compared with text in Schedule.

Item 2200

Text on Card No. 68 for Inspt. 2-05 AOM incorrect as follows:
(a) Sub-Item 1 was deleted per SESS 554 of 28/9/67 but is still on Card.
(b) Sub-Item 8 has text which is not the same as in Schedule.

Item 1140

This is a 350 hour Item per the Schedule. It is entered on Operating Plan (Issue 2) as a 350 hour Item but was not called up on Inspt. 2-05 on AOM.

Items R443 and R444.

The above items (2500 hours) were deleted from the Schedule and the related component in System 23 of the component time lives schedule amended as per SESS 779 of 19/12/67. Amendment No. 4 to the Schedule was later cleared under Local Letters No. 60 and 62 of March 1968 and the Amendment No. 4 was circulated. However, the above items R443 to R444 are still in the Schedule.

Items 4005(d), 4007(d) and 1019.

Item 4005(d) opening panel was not entered at all on Operating Plan (Initial Issue). Item 1019 a 1500 hour Item was under ED on the Same Plan. Item 1019 was not allowed to be upgraded on Amd. No. 3 above 1500 hrs. However, Panel Items 4005(d) and 4007(d) which were upgraded in Amd. No. 3 to 1750 hours should also have been listed at 1500 hours for Item 1019 which remained at 1500 hours.

When Operating Plan (Issue 2) was compiled the Items appeared out of phase with each other as follows:

Item 4005(d)	- 1750 hrs. in Schedule but under Group DD
	in plan (issue 2)
Item 4007(d)	- 1750 hrs. in schedule but under Group DD
	in Plan (issue 2)
Item 1019	- 1500 hrs. in schedule but under Group DA
	in Plan (issue 2)

5.

Item 1019 was subsequently upgraded to 1750 hrs. per SESS 449 on 11/8/67 and inserted on Plan under Group RA and deleted from Group DA.

- (a) Items 4005(d) and 4007(d) while at 1750 hrs. in the Schedule were shown in Operating Plan Issue 2 at 1500 hrs. under Group DD.
- (b) Items 4005(d) and 4007(d) should have always been phases in the Schedule and on the Operating Plan with Item 1019, irrespective of other Items in the Schedule which are also related to these Panel Nos. 4005(d) and 4007(d).

Items 4031(a) and 4032(a)

Item 4031(a) panel Nos. 332, 336 and 337 removal on Card No. 24 for Inspt. 2-05 AOM certified as removed.
Item 4032(a) panel Nos. 332, 336 and 337 panel refitting on Card No. 26 shows Panel No. 332 certified as refitted and Panel Nos. 336 and 337 certified as N/A.

Items 1095 and 1203

These Items are certified on Card No. 91 for Inspt. 2-05 AOM but the bottom box on the Card has not been signed as cleared by an authorized Supervisor.

Item 2166

This Item has been certified as being carried out on Card No. 65 for Inspt. 2-05 AOM. This Item is applicable to 808 aircraft only according to the Schedule and Card.

Item 1341

This Item has been certified as being carried out on Card No. 28 for Inspt. 2-05 AOM. This Item is applicable to 808 aircraft only according to the Schedule and Card.

Item 1084

This Item has been certified as being carried out on Card No. 36 for Inspt. 2-05 AOM. This Item is applicable to 808 aircraft only according to the Schedule and Card.

Item 1284

The Sub Items on the Card and in the schedule for Item 1284 need to be identified 808 only or 803 only, and may need to be re-written for clarification purposes.

Bohoney

ANNEX M

C of A Renewal Certificate and Form Page 1 of 2

FORM Ae. S.F. 1.

AERONAUTICAL SECTION

NO. 694A NAME M. MAXWELL INDEX REFERENCE 218

DATE OF ISSUE _____ C.A. FILE REF. _____ DATE OF MINUTE _____
LETTER _____

INSTRUCTION by A Board Inspection E1-70M

Above aircraft inspected at Dublin airport on 5-2-67.

Total Hours elapsed . . . 18,615.

Total Landings - . . . 16,709.

This aircraft (ex KLM) had a main base listed at ~~London Heathrow~~, Perthwick, which was completed on 13-12-67 after which Form C of A was issued.

INVESTIGATION

It had had a major check since the last scheduled in for this 3-21-3-68. Generally it was considered healthy in view of closing and recently lateral section was formed of this.

A check on mandatory notices showed that all were displayed correctly.

Log Books were checked and found in order.

C of A. ~~renewed~~ issued.

[Signature]

[Signature]

The following is a recently produced typed version of the letter on the previous page, (C of A Renewal Certificate and Form Page 1 of 2). It is reproduced here solely to facilitate the reader

FORM Ae. S.F.1.

AERONAUTICAL SECTION

NO. 694A NAME M. MAXWELL INDEX REFERENCE 21B

DATE OF ISSUE _____ C.A. FILE REF. _____ DATE OF MINUTE _____

LETTER _____

INSTRUCTIONS C of A Renewal Inspection EI-AOM

Above aircraft inspection at Dublin airport on 5-2-'67

Total Hours archived 18,615

Total Landings 18,709

This aircraft (ex KLM) had a Main Base Check at Scottish Aviation, Preswick which was completed on 13-2-67 after which Irish C of A was issued. It hasn't had a major check since then but is scheduled in for check 3 on 21-3-'68.

Generally it was considered badly in need of cleaning and Quality Control Section was informed of this.

A check on mandatory notices showed that all were displayed correctly.

Log Books were checked and found in order.

C. of A. recommendation issued.

M. Maxwell

Aero Inspector

C of A Renewal Certificate and Form Page 2 of 2

Sutton 46 E1-1021

C.A. File No. _____

INSPECTION REPORT FOR CONTINUATION OF CERTIFICATE OF AIRWORTHINESS

Registration Marks E1-1707

Manufacturer Vickers Armstrong Ltd.

Type of Aircraft V303.

Aircraft Serial No. 178

The above aircraft was inspected at Dull Airport on 5-2-68
The overhaul was satisfactory and the aircraft was satisfactorily test flown.

I certify:-

- (a) that all recommendations made by the Inspecting Officers have been satisfactorily performed;
- (b) that all compulsory modifications or alterations applicable to this type of aircraft have been incorporated;
- (c) that this aircraft is on this day in good and airworthy condition and is recommended for CONTINUATION of Certificate of Airworthiness;
- (d) that the aircraft documents are in order.

Signature *[Signature]*
Aeronautical Inspector.

Date 6-2-68

GENERAL REMARKS:

Approved: *[Signature]*
Signature _____
Aeronautical Officer.

Date _____

ANNEX N

List of questions from the Relatives of the Victims Committee

1. Facts
 - a) Haulbowline received the co-ordinates of the crash site at 12:36 pm (source – Irish Government Report) less than 2 hours after the crash.
 - b) Witnesses saw the entry point of the plane.
- a) & b) were proven to be the same place exactly.

Why did it take so 10 weeks to locate the plane when a) and b) above are proven facts?

The answer previously given to the above i.e. that the particular area was thoroughly searched 3 times does not stand up to scrutiny. If the area was thoroughly searched as is alleged, then the wreckage would have been found, Billy Bates found it with trawling nets!

2. Who gave the order to divert the two lifeboats (Rosslare & Kilmore Quay) when they were proceeding to the crash site mentioned above?

This question relates to negligence in not searching the last known area of the aircraft.

3. Is Lt. Patrick A. Kavanagh's evidence being taken seriously?

We are taking his evidence very seriously. His report on Haulbowline is exactly what is reported on page 5 of Irish Government Report.

4. Request to British to re-evaluate John Giblet's testimony?

We will also be doing this.

5. When the witness accounts testify to a second airborne object – which was seen flying in the area in a disabled condition – why has there never been any effort to follow up on this evidence?

We request that this be done now. The witnesses are still alive and we are talking to them.

6. This question relates to the 3rd voice heard on the tape? Who is it?
7. Why have so many log books, papers relating to 24th March 1968 been “shredded”, “disappeared” or “gone missing”?
8. Who is responsible for their disappearance?
9. Why was the “Macha” delayed in Donegal for 12 hours?

The previous answer to this was that initial reports of the crash site were that it was off the coast of Wales. Untrue – by 1:30 pm British ships were surrounding the crash site (witness evidence). As the co-ordinates had been given by the British to the Irish at 12:36 pm (Page 5 – Irish Government Report) it was known exactly where the plane entered the sea.

10. Why was the fuselage lifted at night?

“Weather & Seas” answer NOT adequate.

11. Why was the fuselage lifted with ropes rather than a net?

12. Why did the British Commanding Officer ignore the protests of the Irish Government Investigation Officer and try to lift the wreckage?

13. Why was the Irish Investigator’s advice ignored on the correct way to lift the fuselage i.e. by day with a net in calm seas?

14. Why did 3 men – one British and two Irish, take Martin Connelly out of school on the Wednesday after the crash and tell him “he saw nothing”?

15. Why has the loud bang heard by 4 lighthouse keepers on the Tuskar never been investigated?

16. Who owned the two ships who were in contact with the Rosslare & Kilmore Quay lifeboats as they sailed to the crash sites?

17. Why did an Irish Navy Officer tell Billy Bates to throw back body parts into the sea when found?

Evidence given again on 14th Feb 1999 in Kilmore Quay by Billy Bates.

18. Why has no effort been made to trace the extra wheel found near crash site & brought to Baldonnel.

19. Why on the first page of the British report is the incorrect number of casualties given?

20. Why was Mr. Walcott (from USA, an Air Accident Investigator) not allowed to work with relatives in the early 70’s?

Three solicitors based in Cork arrived uninvited to a meeting he was attending with relatives and asked him to leave (two of these Solicitors are still alive).

21. What was Aer Lingus’ part in question 20?

22. As a result of a KLM crash in Shannon in the 50’s – had the same Mr. Walcott reason to have dealings with Aer Lingus?

23. As stated in the British Salvage Report, following the locating of the wreckage, the main priorities of the salvage phase was to:

- a) Locate & identify all contacts of promise.
- b) Recover all sizeable pieces of wreckage.
- c) Locate and plot small pieces of wreckage.

Why was there no priority given to the recovery of bodies?

- 24. Can you verify in writing for us that all restrictions have been lifted on all British Military & Naval personnel, with regard to the Official Secrets Act?
- 25. Why was the Lt. Cdr. Patrick Kavanagh not allowed retain the piece of twisted aluminium found near the crash site?

This was material evidence and the RN Officer was not within his rights to request same. The Captain of the Macha did not have the authority to tell Patrick Kavanagh to hand it over. All the wreckage was to be brought to Rosslare, as previously agreed.

- 26. What exactly is being covered up?
- 27. Why were the bodies left in the wreckage when divers eventually went down?
- 28. It is known that the area around the Tuskar Rock was used as a missile and low flying aeroplane testing and exercise area by NATO, the US for sure and others possibly. For the months prior to, as well as the date of the incident, what countries and/or companies were involved in land, sea or air exercises and were they then or could they now be asked for their intelligence records or any other comments or observations?

This question is triggered by the fact that the British always respond when asked “It was not one of ours”. This leads us to believe that in that case they may know whose it was.

- 29. British Radar stations in Northern Ireland should have records for that time and could be of assistance to us. Could these be provided?

These questions are the relatives preliminary submission to the review committees for their attention. These questions are also being examined by the legal team.

ANNEX L

Irish Authorities' response

The reference used are the 29 questions as numbered in your letter.

- 1(a) This position (51 57'N 06 10'W) is 16 miles from where the wreckage of EI-AOM was found. It is therefore totally incorrect to state that the location of the wreckage was known on the day of the accident
- 1(b) The initial search response was based on position reports passed by EI-AOM, ("By Bannow") and later, on the afternoon of the crash, on the ETA for Strumble, also passed by EI-AOM. Given the aircraft's navigation equipment, the Strumble estimate would be accepted as the more accurate (EI-AOM did not carry any area navigation system, but VOR/DME equipment, which could measure the distance from Strumble, was carried).

By Day 2, the search was re-focused in area east of Tuskar, because wreckage and bodies were found there.

Preferred search was by sonar, as this would not disrupt wreckage. Sonar search failed because wreckage was located in a trough in the sea bed. Also the stony sea bed and strong currents were not good for sonar search conditions. Also, as learned in subsequent searches, Sonar is not effective where wreckage is lying flat on the bottom.

Note 1:- It took 13 years to find the bulk of an Itavia DC9, off Sicily, which crashed in the clear, tideless waters of the Mediterranean, on 27 June 1980, when the wreckage was within 2 miles of where floating wreckage was found, and where the initial descent of the aircraft was tracked by radar.

Note 2:- Naval Sonar is designed to detect submarines, which are large ferrous objects, are usually clean hulled, presenting good acoustic return, even when resting on the sea bottom. In contrast, the crumpled remains of an aluminium aircraft, scattered on a stony bottom, and encrusted with marine growth, even after a short period, and located in a trough on the sea bottom, would present a very poor sonar target. Other detection systems, such as Magnetic Anomaly Detection, (MAD) would be ineffective, as very little ferrous metal was used in the construction of the Viscount.

Note 3:- There were many conflicting eyewitness reports. Only two proved finally to be correct. One was from a seaman on the Metric, and he thought initially that it was a bird which he saw plunging into the water. The second witness was a child of 13. Given that the spot which these two witnesses identified was so far North of the flight path reported by EI-AOM, and so far West of the position calculated using the Strumble estimate, and the nature of the evidence from the witnesses involved, it is easily understood why their evidence was initially given little credibility.

Trawling was not attempted until Sonar search was abandoned, as this would disrupt wreckage, and probably damage evidence required by the investigation.

2. The aircraft had passed to London FIR and therefore the search was a UK responsibility (by international agreement). On the afternoon of the crash, the search was being co-ordinated by MRCC Plymouth. It is probable that the instruction came from there.

Given the ETA of Strumble passed by EI-AOM, the aircraft would, on further analysis, have appeared to be closer to the Welsh coast. It therefore made good sense to direct the search eastwards.

The implied allegation of negligence in searching the last known position of the aircraft is therefore unfounded. Based on the Strumble ETA and the aircraft speed, the probable area of the crash would have been calculated as 5 minutes, or 20 miles west of Strumble, which is 20 miles East of Tuskar.

3. All evidence has been taken seriously. However his recollection of events may be contrary to the log of LE Macha.
4. I understand there is some difficulty in locating this witness. It is intended to try to locate him and evaluate his story.
5. Strenuous efforts were made to trace the possibility of a second airborne object, without success.

It should be noted that even if the presence of another flying object in the area were proven, there is still no evidence to show that it might have had any connection with the accident to EI-AOM

6. It is our understanding that the voice was not Capt. O'Beirne's. This was stated by one of his contemporaries. I have no record of who identified F/O Heffernan's voice. I intend to have the recording played in Farnborough in the presence of an Aer Lingus pilot who was both his school pal and contemporary in Aer Lingus.
7. This question should be addressed to UK. authorities.
8. Ditto.
9. Initially the accident was thought to be in the London FIR area, and therefore a UK responsibility. Also, given her distance from the scene and her slow transit speed, Macha was unlikely to be of any use in the SAR effort, by the time it would arrive in search area. Thus the Search Co-ordinator, Plymouth MRCC, presumably did not request her assistance initially, she was however brought to two hours notice at 1600 hours on the 24th by Haulbowline.
10. In lifting operation, natural light is not a significant requirement. It is dark under water all the time. The lifting vessel was well equipped with flood lights. In lifting operations, sea state, tidal streams and weather conditions are the prime considerations. Other factors, such as light, are minor considerations.
11. In the very dark conditions at a depth of 240 ft of water, the divers perceived that the fuselage wreckage was in one piece, and could be lifted as a complete unit. Subsequent events indicate that their perception was incorrect, and that the wreckage was not one cohesive unit, but rather a mass of wreckage held together by electrical wiring. Based on the hypothesis that the wreckage was one cohesive

unit, it was lifted by ropes. Subsequent events proved the error of this judgement call. However, it must be noted that, at that time, experience of retrieval of civilian aircraft from such depths was extremely limited, and there was little previous experience for which to judge recovery methods.

Furthermore, the operation was conducted at the then-extremes of diving operations. The placement of nets under the wreckage would have been a labour intensive and dangerous task. Therefore, it would have been avoided if it was deemed at all possible to do so.

Note 1: The endurance of divers at these depths was extremely limited in 1968.

Note 2: Military aircraft are generally of heavier construction, for many reasons. Previous lifting experience would have been based largely on such stronger airframes.

12. Presumably because he had experience of previous lifting operations, and that he considered the prevailing conditions of tide, sea state and weather to be the best available in the forecastable future. The investigators involved did not have previous experience of such operations
13. Answered above.
14. As explained at our meeting this was to fully verify his statements and the records show that the Royal Navy commented that he was very accurate. This information contributed in a large way to the discovery of the wreckage.
15. The evidence available to this Department is that there were only 3 lighthouse keepers on the Tuskar Light, and that they heard nothing.
16. This is not known; however, details may be available in the UK MRCC logs if these can be located.
17. The Navy officer in question disputes this statement, and it is now the subject of legal proceedings.
18. The extra wheel was investigated and identified, and shown to be unconnected to the accident to EI-AOM.
19. This is probably a typographical error. A written "7" can easily be mistaken for a "4". This error is not perceived as significant.
20. We will try to find out if there is any record of this man.
21. The Department has no knowledge of this matter.
22. This question should be referred to Aer Lingus.
23. After more than 12 weeks in the sea, the bodies would be largely decomposed, or ravaged by marine life. This is discussed further in Question 27.
24. Yes this is our understanding.

25. This presumably refers to the same matter as question 3, and was discussed thereunder.
26. This question is not understood. There is no evidence of any cover-up.
27. This matter may be somewhat upsetting, but the technicalities need to be understood. After even a month in salt water, bodies decompose to a great extent. After 12 weeks this effect becomes even more pronounced. Any attempt to move such bodies usually results in the disintegration of the bodies. This would particularly occur where it was necessary to detach bodies from tangled wreckage, portions of aircraft structure and wiring etc. Therefore, in the case of EI-AOM, such recovery efforts were very likely to fail, and the best prospect for recovering bodies would have been their recovering from the body of the aircraft, when this was lifted to the surface.
28. This Department has no evidence that the area within 25 miles of Tuskar Rock was used, by everybody, as a missile testing area. The reference to low flying aircraft is not understood, as EI-AOM was at 17,000 ft when the initial upset occurred. There are no reports of military aircraft being lost in the day in question. However, we will ask the UK authorities for further clarification.
29. Radar returns are nowadays recorded either on video tape or on adapted P.C. computers. Neither of these devices existed in 1968. The only method available then was recording on film, and this was rarely used, and never as a matter of routine. Therefore, other than personal memories, there are unlikely to be any useful records from the UKADGE system covering 24 March, 1968.

It can be seen therefore that most of the questions were concerned with the search, salvage and recovery of the St. Phelim.

ANNEX O

British Authorities Response

TUSKAR AIR CRASH: RELATIVES & CELTIC LEAGUE'S QUESTIONS

Note. MOD has no information on the cause of the crash. Having carefully examined all the suggestions and accusations of British military involvement, we have found nothing to support the theory that the aircraft was hit by a British missile, aircraft or drone. We are convinced that the MOD was in no way responsible for, or caused, the crash of the Viscount aircraft, St. Phelim.

DOYLE, O'DRISCOLL & ASSOCIATES' QUESTIONS FOR MOD ANSWER

DDA1(b) Note 2. Comment on Irish Govt draft statement.

Although the statement that "Naval sonar is designed to detect submarines, which are large ferrous objects...etc" is true as a broad generalisation, it is not valid in this context. Minehunters were fitted with a High Frequency Sonar (Type 193) which was designed specifically to locate small objects, in particular ground mines, on the sea bed. Naval sonar operators, however, were trained to identify mine like objects and required some practise before they acquired proficiency in identifying other material on the sea bed (especially in the difficult conditions that existed during the sea search for the Aer Lingus Viscount). Detailed comments on sonar operating conditions using Type 193 sonar are provided in Annex C (pages 45 to 47) of the OP Tuskar Report.

DDA4. Request for UK to re-evaluate John Giblets testimony.

Our records confirm that a Chief Petty Officer John E Giblett served on board HMS PENELOPE from 17 March 1967 to 8 December 1968. We have not however seen any signed testimony by Mr. Giblett on which to comment.

DDA7. Why are so many log-books related to 24th March 68 no longer available?

This is not the case. Only the logs of **two** of the **seven** white ensign (RN) vessels involved in Op Tuskar cannot be located today (31 years after the event) for the period covering 24th March 1968, namely those of HMS HARDY and HMS CLARBESTON. The others are open to inspection in the Public Record Office at Kew (or will be shortly under the 30 years rule).

After supporting the humanitarian search for the crashed Aer Lingus Viscount, HMS HARDY went into a long refit period in Gibraltar in May 1968 (which completed in June 1969). During her refit the ship's company was reduced to a small long refit party and, as in accordance with normal practise, no log was maintained. HMS CLARBESTON went out of service in December 1968. The logs of both ships should have been dispatched for archiving during the refit and on paying off respectively. It seems that the correct procedure was not followed in these cases resulting in the loss of both logs. Another possibility is that the logs were used for enquiries into the SAR and salvage operations at the time and not subsequently returned to their ships. This is unfortunate but not unprecedented, and in these instances almost certainly the result of administrative error.

The unavailability of these logs is more than compensated for by the availability of official reports of proceedings produced for the Commander in Chief, Plymouth, by the Capts of the RN vessels which led the search and salvage operations at various times during OP Tuskar. This includes a report from the Captain of HMS HARDY which, together with the reports submitted by HMS PENELOPE and HMS NURTON, give a very clear account of the activities of both RN and other UK ships (attached for your information).

We would also like to clear up the apparent misunderstanding over the status of UPLIFTER and INVERMORISTON, the two other UK ships involved in Op Tuskar, the unavailability of whose logs has been interpreted wrongly by conspiracy theorists as evidence of a deliberate UK cover-up. UPLIFTER and INVERMORISTON were civilian manned blue ensign auxiliaries, not commissioned RN Ships. Logs of auxiliary vessels are not normally retained for more than four years as there is no legal requirement to do so. It is logical to assume that the logs of these vessels, covering the period of March 1968 were destroyed in the early 1970's in accordance with the policy of the time.

DDA8. Who is responsible for their disappearance?

Answered above.

DDA16. Who owned the two ships that were in contact with the Rosslare & Kilmore Quay lifeboats as they sailed to the crash site on 24th March?

In short, we do not know. Our records do not confirm any contact between MRCC Plymouth or any of the RN vessels trying to locate the aircraft and Irish lifeboats on the afternoon of 24th March. First mention of Irish lifeboat involvement on our records occurs in a situation report signal from HMS PENELOPE to Commander in Chief, Plymouth, on the morning of 25th March. This is consistent with Section 1, paragraph 13, of the Op Tuskar Report. While radio contact between RN and Irish vessels on the first day's search cannot be completely discounted it would have been normal practise for such an occurrence to have notified to the RN chain of command. We have found no surviving detailed records of MRCC Plymouth's role in the search and rescue co-ordination for the crashed Viscount that might shed light on this point. _

RELATIVES & CELTIC LEAGUE QUESTIONS FOR MOD ANSWER

List A

A2. With whom were the Irish representatives dealing with in England?

Insofar as naval operations were concerned (ie the search for, and salvage of, the Aer Lingus Viscount), the principal point of contact was the Staff Officer Operations to the Commander in Chief Plymouth.

A4. Who, on behalf of Aer Lingus was present in Brawdy at the meeting on the afternoon of the accident?

The log of the Air Officer of the Day at Royal Navy Air Station Brawdy makes no reference to such a meeting (see the attached log details). We have no other information to confirm that this meeting took place.

A11. Confirm whether INVERMORISTON delivered two bodies into Rosslare Harbour on 25th March?

INVERMORISTON did not deliver bodies to Rosslare the day after the crash. On the afternoon of 25th March HMS PENELOPE was directed by the Commander in Chief, Plymouth to concentrate all the wreckage and the six bodies recovered up to that point by UK ships into one vessel for immediate landing at Rosslare. HMS HARDY was chosen for the task and duly dispatched, arriving at Rosslare the same evening. INVERMORISTON had been earmarked to take any further bodies or wreckage recovered during the period of HARDY's absence to Rosslare that night before going off task and returning to Pembroke Dock. However, the RN Search Commander eventually decided against this action and instead requested the Kilmore Quay lifeboat (which already had two bodies on board) to collect all items held by the other ships before returning to harbour at sunset. This excluded one body which the Rosslare lifeboat had already collected from MISS TRUDEL on her own initiative. A transfer of this body to the Kilmore Quay lifeboat was unnecessary as the Rosslare lifeboat was heading to the same destination that night.

List B

B1. What were the initial instructions to UK ships reference to landing wreckage?

Point addressed in the answer to question 11 (List A). While we have found no documents explaining the decision to use Rosslare as a landing site for bodies and wreckage recovered from the aircraft, the presence of an Irish coroner, a representative from Aer Lingus and the Receiver of wrecks at the harbour to receive HMS HARDY on her arrival there at 18:19 on 25th March suggests that its use for this purpose had been approved by the Irish Government.

B2. Why were HARDY and PENELOPE in the vicinity?

HMS PENELOPE was used for trials and evaluations of anti-submarine equipment in 1968. The two main exercise areas for anti-submarine warfare training at the time were the Clyde and Londonderry areas because they had deep water and easy access to the open waters of the North Atlantic. Between 13 and 21st March 1968, PENELOPE was exercising in the Clyde area before visiting Belfast from 22 to 24th March. She was on passage to Portland, and off the western coast of the Isle of Man at 13:38 when she was ordered to proceed with dispatch to the last reported position of the crashed Viscount.

HMS HARDY was based at Portland and employed principally in anti-submarine warfare training. She had also been in the Clyde area and was on passage to Portland (reaching the Bristol Channel to the north of Cape Cornwall) when she heard of the crash and immediately altered course to provide assistance.

Both ships arrived in the initial search area at approximately 17:30. There were no RN exercises in the area immediately prior to the crash.

B3. What was the role of ASRV Invermoriston?

The Air Search and Rescue Vessel INVERMORISTON was a civilian manned blue ensign vessel. She was tasked to sail from Pembroke Dock to support the search and rescue on the afternoon of 24th March arriving in the search area at 17:40 where she searched the NW quadrant. The next day, after wreckage was sighted by the RAF north-east of Tuskar Rock, she continued the search there before being released on the evening of 25 March. INVERMORISTON took no further part in the search for the wreck or its salvage.

B4. How was the focus of the search determined before MACHA took command of the SAR?

All searches, both sea and air, have to be based on an initial datum position established by projecting the course and speed of the missing object from its last known position. In this case that position was “by Bannow” and heading for Strumble. Pages 8 and 9 of the Op Tuskar Report cover this in detail (attached). The resulting search area was then divided into quadrants and allocated by the Search Commander to those vessels available to him to undertake the task. The sighting of possible wreckage by a RAF aircraft north-east of Tuskar Rock on the morning of 25th March, and the subsequent recovery of the first body there by HMS HARDY some 30 minutes later led to all the vessels concentrating further search activity at the new co-ordinates.

B5. Why did RN officers on HMS RECLAIM defy Irish officials by lifting the main Viscount wreckage at night in heavy seas?

Not attempting a lift on the 22nd July would have led to the postponement of further salvage activity until the next period of neap tides, as the tidal streams at the end of the current period were increasing to a rate that precluded further salvage or diving operations. There was no indication from the Irish Government at the time that it would sanction (and pay for) another salvage attempt and there was therefore a need to complete the operation as quickly as possible.

The RN has been criticised (allegedly by an Irish Air Accident Investigator) for using lifting wires instead of nets to raise the fuselage. This criticism shows a lack of understanding of the difficulties faced by the divers attempting to salvage the aircraft body. Positioning nets under the wreckage on the sea bed would have involved unacceptable hazards to the divers who were already operating in difficult conditions of strong tidal streams, poor underwater visibility and at the dept limits of diving on compressed air. It would also have probably been impossible had the water and depth conditions been more favourable. Netting the wreckage once it was clear of the seabed presented similar difficulties and safety hazards to the divers who would have had to work underneath the wreckage (which was held together only by its internal cabling) as it was being lifted. Current MOD salvage experts have confirmed that the correct procedures were followed given the circumstances prevailing in 1968.

Focussing criticism on one failed lift presents an unbalanced and inaccurate and impression of the salvage task and ignores the pertinent fact that overall the operations to recover the Aer Lingus wreckage achieved considerable success in very difficult

circumstances – a point acknowledged by the Irish Government at the time (see attached signal dated 6th September 1968).

B6. Do UK records show any loss of, or damage to, our aircraft or drones on 24th March?

None of our planes, target drones or missiles were lost or damaged on 24th March 1968. No target drones or missiles were launched on that day.

B7. Do our records show whether any wreckage recovered by British ships was not handed in at Rosslare?

Our records indicate that, as instructed by Commander in Chief Plymouth, all wreckage found by, or transferred to, a RN ship was handed over to the Irish authorities. At the Irish authorities' request some wreckage was taken by ferry to Fishguard on 6th April so that Aberporth officials could identify it in the presence of Irish officials. This took place aboard the Fishguard/Rosslare ferry. The wreckage was then returned to Rosslare without it having left the ferry (see attached records). The only uncertainty we have is what became of some flotsam recovered from the MV Rubicorn by a RAF Whirlwind helicopter on the afternoon of 24th March. As the flotsam is not identified in any of our records it can be assumed with a high degree of confidence that it was not connected to the investigation into the air-crash.

B8. Did a RN ship rendezvous with a British trawler to take found wreckage from the latter? It is claimed that an Irish Navy ship witnessed this event!

Our records indicate a number of possible incidents of this nature. HMS HARDY, after handing over Search Command to MACHA on the afternoon of 26th March, rendezvoused with the Rosslare lifeboat (3 miles south of Blackwater Light Vessel) to transfer one body and some wreckage recovered by HARDY to her. Additional pieces of wreckage and a further body were found by three British trawlers, the Disketta (5th April), Lord Suffolk (12th April) and Dawn Waters (1st May).

The Disketta transferred her wreckage to HMS CLARBESTON on 5th April and the Irish authorities requested Aberporth to compare it with pilotless target aircraft used on the Cardigan Bay Range (this is the incident referred to on 6th April in the answer given to Question 7).

The Lord Suffolk recovered the 13th body in a position seven and a half miles north of Tuskar Rock on 12th April. It is not clear from our records whether the body was then transferred to a UK or Irish navy vessel (or lifeboat) but the recovery of the body features in both the RN Op Tuskar Report and the Irish Air Accident Investigation Report.

The Dawn Waters trawled up a piece of aluminium plating (painted green) while fishing 16 miles south-west of Tuskar Rock on 2nd May. It was transferred to the Irish corvette CLIONA.

B9. Do our records mention the chartering of the boat "Rospeco" from Rosslare? If so was this chartered on behalf of British Intelligence?

We have no record of this boat being chartered. We know the Irish Navy hired the Irish Trawlers GLENDALOUGH and CUN NA MARA to conduct sea bottom net sweeps of the area in which the 13th body was found, and that two further Irish trawlers (the “Miss Trudel” and “Miss Celia”) together with the Kilmore Quay and Rosslare lifeboats joined the search and rescue on the afternoon of the 25 March.

**B.10. Why was British Intelligence monitoring events at Rosslare and Tuskar?
What conclusions did they reach?**

British involvement in this aircraft was initially to search for survivors – natural humanitarian response in such events. Subsequently, the Royal Navy was requested by the Irish Authorities to locate and salvage the wreckage for examination as part of the air crash investigation. There was no wider British involvement or interest involved.

ADDITIONAL CELTIC LEAGUE QUESTIONS

CI+1. Have UK Authorities located the logs of HMS HARDY, UPLIFTER and INVERMORISTON?

Answered above.

CL+2. Have the British Authorities been able to ascertain the location of the Aberporth missile range safety vessel at the time of the crash?

The Range Safety Vessel and crew were provided under contract from a commercial firm in Poole, Dorset (which we understand no longer exists). In March 1968 the Range Safety Vessel was the Hector Gull. The vessel was not required for Range work on the weekend of the Aer Lingus crash as Aberporth was closed from the early hours of Saturday morning until Monday 25th March – the Friday night trial which went into Saturday morning involved a single manned aircraft undertaking a navigation exercise: ie as this did not involve a firing of any kind the Range Safety Vessel was not required. Consequently, she would have been released on Friday afternoon 23rd March. It was normal practise for the vessel then to return to its local “home port” (in this case Fishguard) and reappear again at Aberporth on Monday morning. Aberporth had no requirement to keep track of the Range Safety Vessel’s movements over the weekend in question.

CL+3. Do the British Authorities accept that the loss of so many ships logs, all involved in one incident is unprecedented?

Answered above.

CL+4. What was the purpose of the communications flight from Llanbedr to Belfast and back on the day after the crash?

The flight transported the Llanbedr Project Officer for the development of the Stiletto supersonic target to one of his regular meetings with the Shorts of Belfast who had been contracted to modify the US AQM-37 target (from which Stiletto was derived) for UK use within the Cardigan Bay Test Firing Range. The first test firing of a live Stiletto on the Range took place on 2nd August 1968.

CL+5. The Celtic League claim there is some confusion over Aberporth logs around the period of the crash and request a review of files to determine the disposition of the facility on 24th March.

MOD does not understand the basis for their confusion. The disposition of the facility was given on the daily trials summary sheets. However, to help clarify the situation we have produced a document explaining the Aberporth logs (daily trial sheets) in greater detail.

Celtic League request that the UK authorities review the feasibility of heavy metal debris being carried to the crash site by natural forces?

It is a matter of fact that pieces of debris from missiles and drones, destroyed over the Aberporth Danger area, have subsequently been found around the South-East Coast of Ireland. Although it is unlikely that seabed debris would migrate westward across the southern part of the Irish Sea as a result of water movement, we are advised by experts that floating debris could well be driven westward by strong and prolonged easterly winds. Another explanation could be the action of fishermen trawling up debris in their nets and subsequently deposition it in other (more westward) locations.

CL+7. Does an inventory of recovered missile and drone items exist and can it be made public?

In the context of the debris found in the Tuskar Rock area and examined by the UK, at the Irish Government's request, in support of the official Irish investigation into the Aer Lingus Viscount crash the answer is yes (a summary is attached). A full inventory of other bits and pieces recovered from Cardigan Bay and elsewhere over the last 60 years is not available but, in any case, is not relevant in the context of shedding light on the cause of the Aer Lingus crash.

CL+8. Will UK authorities review the problems with missile testing at Aberporth? Especially those that may have been reviewed by UK DTEO in May 95?

We do not understand what problems are referred to here. Can the Celtic League or others be more specific. We can however clear up the apparent confusion over the purpose of the DTEO review of Aberporth. The Aberporth/Llanbedr Ranges joined DTEO in 1995 and as part of this reorganisation a capacity and capability review of all range sites was undertaken as a matter of course. Many options to downsize and rationalise the range estates were considered (including moving the #Hebrides rapier inservice firing to Aberporth). The process attracted the interest of both the press and the Defence Select Committee who visited Aberporth in 1995. The outcome of the review was that the Cardigan Bay Range based at Aberporth was still required.

CL+9. Will the UK Authorities review and publish details as to why the Aberporth missile range danger area was dramatically extended after 1968?

The Aberporth missile range area did not dramatically extend after 1968. However, a change of terminology took place and a paper exercise of renaming and combining overlapping danger areas was undertaken in 1972. (See attached papers). A comparison of the current Range Danger Area with that in 1968 shows that the Aberporth missile range area has not significantly altered.

SUPPLEMENTARY QUESTIONS

S+1. Apparent contradiction between Kew Garden records and UK statements regarding the range capabilities of missiles. Kew Garden records indicate several test firings at distances far exceeding the limits of the ranges.

Questions 1 and 2 (below) are very vague and it has not proved possible, even with the assistance of Public Record Office resident experts, to examine all the records at Kew and locate the papers which may have formed the basis of these statements. That said, it is accepted that over the last 60 years a very small number of missiles have impacted outside the Aberporth Range Danger Area. We would however dispute that "several test firings were carried out at distances far exceeding the limits of the ranges". In terms of distance beyond the range boundary, the worst rogue was a Seaslug which came down in Abergynolwyn some 12 to 15 miles outside the eastern edge of the Danger Area.

Note. The copy of the Public Record Office file documents provided by the Irish Government covers extracts from monthly reports from "RAF" Aberporth on (primarily) the results of Bloodhound 2 missile evaluation trials at the Weapons Research Establishment Woomera, Australia (not Aberporth –see attached note).

S+2. Kew records apparently contradict assurances given that control of missiles, drones and targets operating in the range area was never lost.

Again, we have found no evidence that such a sweeping statement was ever made. In 1974, the Superintendent of Ranges made a statement that "no Jindivik has ever been lost track of, all have been tracked to splash position". We continue to stand by this statement. But to say that it was possible to keep control of every weapon firing or to monitor on radar every missile tested on the Range (no matter how small) would be unrealistic. Some could be remotely controlled and terminated by a command signal others could not. However, only missiles that had a known range capability that could be contained within the boundaries of the Aberporth Range Danger Area were fired there. As pointed out in answer to Question 1, a small number of missiles went out of control on occasion and landed beyond the range boundary but we have records of where they went.

S+3. Could a missile or drone have been launched from a source other than Aberporth, Ty Croess and Manor Bier? Could this missile reach the Tuskar Rock crash site?

Yes to the first part of the question. Llanbedr provided the only source of targets (drones and manned aircraft) for test firing establishments on the Welsh coast but was closed for operations between approximately 16.15 on Friday 22nd March until at least 08.00 on Monday 25th March.

Other ranges to Aberporth, Ty Croes and Manorbier existed along the west coast of mainland GB of course but none tested weapons capable of reaching the Tuskar Rock, either because of range limitations or the direction of the range firings in relation to the crash site. For example, in 1968, the tank gunnery range at Castlemartin (on the south Pembrokeshire coast) was being used to train Centurion tank crews and Navy Wessex helicopters (the latter in air-to-ground assault). Of the weapons used there none had a range in excess of 10 kms. In any case, the range fired away from southern Ireland. Similarly, Pendine, a Proof and Experimental Establishment on Carmarthen Bay trial fired

weapons into this expanse of sea (some 90 miles from Tuskar Rock but again) away from southern Ireland.

There were no RN or RAF exercises in the Irish Sea on 24th March. The RN ships that were nearest to the crash site on the day did not carry surface-to-air missiles. Our records show that there were no RAF flights that day (which comes as no surprise since it was not peacetime practise to fly sorties on a Sunday). We have no information that other nations (eg NATO) naval vessels or aircraft were operating in the Irish Sea on 24th March.

S+4. Can it be stated that the capability to record radar data was not available to the UK AD Ground Environment at the time of the crash?

This would appear to be the case from the records available to us.

S+5. What military exercises were conducted in the seas around Ireland immediately prior to the accident (23/24 March 1968).

Answered above.

QUESTIONS ARISING FROM 24 MAY MEETING OF IRISH/UK EXPERTS

Review of airmiss records for 24th March 1968

A review of UK airmiss records held by the Joint Airprox Section (Civil Aviation Authority), which cover incidents involving both civil and military aircraft, shows no reported air incidents on 24th March 1968. The only airmiss that occurred around this time was between a Meteor and a Vulcan near Binbrook in Lincolnshire on 25th March.

Shorts examination of Stiletto piece held by Irish authorities

The piece of wreckage was confirmed as the wing of a model 1095 AQM-37 A air launched expendable target. The serial number (KP16B) confirmed that the wing was purchased as part of a batch received by Shorts on 16th January 1976, and utilised by the Royal Navy over the period 1 st September 1976 to 8th February 1983. Further details attached. Jane's reference to UK Stiletto The reference in Jane's Unmanned Aerial Vehicles and Targets on Stiletto being based on AQM-37C and produced in the UK by Shorts since 1963 for RAF and RN use is wrong for a number of reasons. Shorts never produced the Stiletto in the sense of manufacturing, they only modified the US AQM-37 for UK use (the modified version taking the name Stiletto). Stiletto was based on the AQM-37 A variant not the AQM-37C (the latter variant did not exist in either 1963 or 1968). UK records show that the first appearance of Stiletto on

the Aberporth Range was on 28th June 1968 (with the first test firing approximately a month later) not 1963. Stiletto is an airdropped target: the Canberra modified by Shorts to launch it was only dispatched from Belfast to Lanbedr on 31 May 1968. Finally, given that the USA only produced the first AQM-37 A in September 1963 it is difficult to believe that the UK could have defined its requirement for a modified version of the supersonic target so quickly, or that the Americans would make it available to an allied country so soon, after first production to tie in with the date referred to in Jane's. A realistic explanation for the disparity in the year quoted in Jane's and UK records could be a simple mistake during the former's editing or publication phase where the year 1968 was changed accidentally to 1963. Additional comments on the Jane's editions are attached.

Short Brothers' documents/records

Copies of Shorts records on Stiletto for the 1968 are enclosed for Irish Government's information together with UK comments on them.