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MINUTE PAPER

1959

3054/118/62

GANNET AIRCRAFT S/N^o XA 332

BOARD OF ENQUIRY

D/D TWP (ATR) Concern DAMR. Under 29/6.

Approval has been given on file 1313/251/185

To remove this aircraft from records.

2. Suggest P.A.

21/6/1965.

[Signature]
D.A.M.R.

PA. per.

[Circular Stamp]
D. J. Lambert
4WA
29/6/65

DEPARTMENT OF THE NAVY
MINUTE PAPER

DEPT. OF NAVY
3054/118/62.

C.441/45.

SUBJECT: CORONER'S REPORT - LIEUTENANT P.J. ARNOLD, R.A.N., DECEASED.

110/3
H. of 'N' Branch.

1959

It is requested that file No. 3054/118/62, subject above, which was marked "D.A.W.O.T. Carberra" on 4th February, 1959, be obtained and forwarded to D.N.A. (T.1).

DD Lambert
for Director of Navy Accounts.

4/3/59.

11 MAR 1959

Dna (T1)

FA
DL
2/11/63

HNB
16 MAR 1959

(McGee) Please refer to Dna for action regarding
his brother's claim for compensation

2. Dna (T1) *14/1*

3. HNB Please attached to 41257/1317 marked to you for delay

HNB
Dna 16/3/59

MINUTE PAPER

SUBJECT:

ACCIDENT TO GANNET XA 332.

AKS

~~DCNS~~

Comma 3. 448/5

CNS

app. ...

To sum up these papers :-

- a) the Board of Inquiry found that "the exact cause of the accident could not be determined", but went on to suggest that a circlip fatigue could have produced the chain of events which happened;
 - b) D.A.M.R., after very careful examination, has failed to agree with the circlip theory, but agrees with the Board of Inquiry that the exact cause cannot be determined;
 - c) in accordance with the Board's recommendations, the circlip fitting design has been improved, and all Gannets have been modified;
 - d) no definite connection has been found between this accident, and the subsequent discovery of tail fatigue on other Gannets.
2. No blame is attributable.
 3. No further action is proposed on this file.

7 May, 1959.

D.A.W.O.T.
D.A.W.O.T.

3054/118/62.

02116 13 MAR 59

Dear Sir,

On 30th January, 1959, a Gannet aircraft of the Royal Australian Navy crashed at Sylvania, near Bankstown, and burst into flames, resulting in the death of the pilot and the total loss of the aircraft.

Police with radio cars were very soon on the scene and quickly established a radio link with Naval Headquarters in Sydney.

The police assisted in obtaining information relating to the accident and in the recovery of vital parts of the crashed aircraft. The evidence thus obtained helped materially in the subsequent investigation into the cause of the crash.

The assistance given by the New South Wales police is much appreciated and the Naval Board desire to convey to you their thanks.

Yours faithfully,

Secretary.

The Commissioner of Police,
Police Headquarters,
Cnr. Phillip and Hunter Sts.,
SYDNEY. N.S.W.

DEPT. OF NAVY
3054.118.62
1



COMMONWEALTH OF AUSTRALIA

MINISTER FOR THE NAVY
Parliament House,
CANBERRA, A.C.T.

54/1

MEMORANDUM for:

The Secretary.

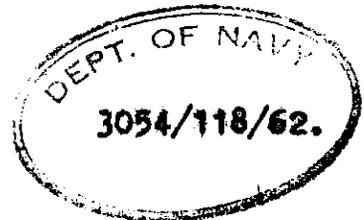
The file on the Gannet accident recommends that official acknowledgement be made of the magnificent assistance rendered by the New South Wales police. I concur. Will you please prepare the necessary letter of announcement.

for Minister
[Signature]

10th March, 1959.

Seq

RESTRICTED



26 February, 1959.

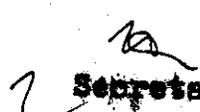
Dear Sir,

Inquest into Death of Lieutenant Peter Arnold, RAN.

With reference to your letter N.14160/3022 dated 16th February, 1959, attached as requested, is a copy of the findings of the Naval Board of Inquiry into the loss of Gannet Aircraft XA332 at Sylvania on 30th January, which resulted in the death of Lieutenant Peter Arnold, R.A.N. As requested the information is made available on the understanding that it is used by the Coroner for his personal and confidential information and is not to be made public.

2. The Flag Officer-in-Charge, East Australia Area, has been requested to have the City Coroner's Court contacted to arrange for the attendance of either Engineer Commander W.J. Lovell or Commander J.G.B. Campbell, D.F.C., at 2 p.m. on 4th or 6th March, 1959, as mutually agreed.

Yours faithfully,


Secretary.

The Deputy Commissioner of Police,
Police Department,
Box 45, G.P.O.
SYDNEY

DAWOT

RESTRICTED

DEPARTMENT OF THE NAVY
MINUTE PAPER

C.0582/52.

3054/118/62

SUBJECT: GANNET XA 332 - BOARD OF ENQUIRY

~~DCNS Comms.~~ 10

~~HofN~~ 10 1/2

(original of
minutes)

The main file has been sent to DAMR for remarks. The duplicate copy of the finding is attached.

2. There is considered to be no objection to making a copy available to the Coroner, for private perusal.

Radema

DAWOT 26 Feb 54.

By SO(2) The duplicate copy of the Boards findings is retained by DAWOT

FET
C 21
NAME: TIT'S

LOGGED
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15 2 // 3 1 59

DEPT. OF NAVY
3054/118/62.

FROM: ACNB.
TO: FOIC. EA.

AC. NO UNCLASSIFIED
REPLY OR REFERENCE.

D.T.G. 260704Z FEB 59. 30

RESTRICTED

ROUTINE

DEPUTY COMMISSIONER OF POLICE HAS REQUESTED ATTENDANCE AT CITY CORONER'S COURT OF ENGINEER COMMANDER W J LOVELL OR COMMANDER J G B CAMPBELL AT 1400K ON 4 OR 6 MAR. IN CONNECTION WITH CORONIAL INQUEST INTO DEATH OF LIEUTENANT P ARNOLD IN GANNET CRASH ON 30 JAN.

- 2. REQUEST YOU CONTACT CORONER'S COURT AND ARRANGE ATTENDANCE OF ONE OF THESE OFFICERS ON DATE MUTUALLY AGREED.
- 3. DEPUTY COMMISSIONER IS BEING SUPPLIED WITH COPY OF FINDINGS OF BOARD OF INQUIRY FOR CORONER'S PERSONAL AND CONFIDENTIAL INFORMATION ON UNDERSTANDING IT IS NOT TO BE MADE PUBLIC. COPY DESPATCHED FROM CANBERRA TODAY THURSDAY.

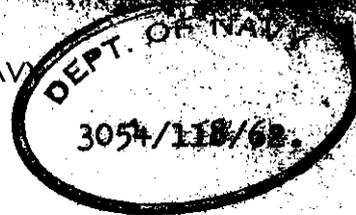
Handwritten initials/signature

1ST NM	2ND NM
HNB(O)	SEC
DCNS	DEP SEC
DNI	HFB
DAWOT	DGS
RECS	

Handwritten initials/signature

DEPARTMENT OF THE NAVY

MINUTE PAPER



SUBJECT: LOSS OF GANNET AIRCRAFT XA 332.

~~The Minister.~~

Attached, for your information, is a copy of the report on the loss of Gannet Aircraft XA 332.

2. The original of the report has been sent to the Naval Staff in Canberra for remarks.

17 February, 1959.


Secretary.


Minister

jh.177

TELEGRAPH: MEMESIS, SYDNEY.
TELEPHONE: B 030.



18
4 - 19

POLICE DEPARTMENT.

COMMISSIONER'S OFFICE.

BOX 45, G.P.O.

SYDNEY, NEW SOUTH WALES

16th February, 1959.

WHEN REPLYING, PLEASE QUOTE NO. N/4150/3022

The Secretary,
Department of the Navy,
CANBERRA. A.C.T.

Dear Sir,

The City Coroner, Mr. Letts, has requested Detective Sergeant 3rd Class A.E. Neal of Sutherland, in charge of Police inquiries, to obtain for his perusal prior to the 2nd proximo a copy of the finding of the Naval Board of Inquiry respecting the crash of the Royal Australian Navy Gannet aircraft at Sylvania on the 30th January, 1959, which resulted in the death of Lieutenant Peter Arnold. Mr. Letts will be presiding at the Coronial Inquest to be held at the City Coroner's Court, Sydney, on the 9th instant and has intimated that the result of the Inquiry is required for his personal and confidential information and will not be made public.

Mr. Letts has further requested that a conference be arranged at the City Coroner's Court, Sydney at 2 p.m. on either the 4th or 6th March, 1959, between himself, Mr. Emanuel of the Fairey Aviation Company of Australasia Pty. Ltd., and an Officer of the Royal Australian Navy, the Naval Officer being later required to attend the Coronial Inquest. In this connection, it is understood that Engineer Commander W.J. Lovell and Commander J.G.B. Campbell, D.F.C., are conversant with the inquiries concerning the crash of the aircraft.

In view of the foregoing, it would be appreciated if arrangements could be made, so far as your Department is concerned, to give effect to the Coroner's wishes.

Yours faithfully,

Geo. L. Smith.
Deputy Commissioner of Police.

Shady

Hof N Early reply or ackt pls. 24/19

Remains Handed
26 Feb.

DEPARTMENT OF THE NAVY

MINUTE PAPER

3054/118/62.

SUBJECT:

ACCIDENT TO GALEY K. 332.

(FCIG letter No. W 34/9/7 dated 12th February, 1959).

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Don't include subject.
Number as with
on L.T.M.R.

Exhibit, lower section
11/4.

Remarks attached 2/15

- (1) C.M.S. While appreciating the difficulties of finding out just what did happen, I find it very disappointing to accept that heavy metal was in commission between the fatigue fractures found in other aircraft and the crash. I only hope the modifications made will prevent any further occurrence till 20/4
- (2) C.M.S.
- (3) C.M.S.

Don't's remarks and recommendations are requested.

- 2. The duplicate copy of the findings and minutes of the Board of Inquiry has been retained at Navy Office Canberra.
- * 3. The portions of the crashed aircraft relevant to the enquiry will be forwarded to Melbourne.

February, 1959.


D.A.W.O.T.

DEPARTMENT OF THE NAVY.

MINUTE PAPER.

(This side only to be written on.)

3054/118/62.

3642.

NAEL:MS

SUBJECT: LOSS OF GANNET KA.332.

COPY ON 303-118/124

BY D. A. R. R.

The actual findings of the Board of Inquiry are summed up in the first phrase of the first sentence of paragraph 5 "Opinions of the Board":-

"The exact cause of this accident cannot be determined",

D.A.M.R. concurs in this remark.

2. It is considered that the above quoted sentence should have continued as follows:-

"..... but the final crash occurred following a break up of the tail unit probably caused by some severe and abnormal buffetting the primary reason for which is not known".

3. It is further considered that the Board's intention would have been clearly apparent, had subsequent remarks been prefaced by something on the following lines:-

"In the absence of any evidence to indicate otherwise, it is considered possible that buffetting may have been induced through the free movement of the rudder, owing to"

4. While the Gannet rudder is known to be exceptionally stable, some cases of control surface flutter on other aircraft types have been attributed to defective servo spring tab mechanisms when in neutral. This could be demonstrated (or proved), safely, only under wind tunnel (or simulated wind tunnel) conditions.

5. In the light of further investigations it is necessary to comment on two main items:-

(a) The Board's favoured theory concerning the possible loss of the top circlip from the bottom roller. (See para. 6 below).

(b) Defects subsequently found on Gannet Trainer Mk. T.2, KA.333 and to a lesser extent on some other aircraft. (See para. 7 below).

6. The Circlip

(a) The circlip is a fully approved fitting for this purpose and there is not a single known case of a defect of this nature.

(b) The evidence obtained by the Board is, in fact, generally against the theory that the circlip was missing prior to the actual crash.

(c) From an examination of the wreckage and proper evaluation of photographs, there can be no doubt that the spring bar (and rollers) was displaced in relation to the rudder torque tube (and levers) when the remaining lower section of the rudder finally struck a section of disused water (or gas?) pipe protruding from the ground.

(d) There can be no doubt that the damage to the top of the ~~roller~~ ^{TOP} roller pin and loss of its circlip is attributable to the circumstances at (c) above.

- (e) In view of the fixed relationship between rollers and levers and after certain demonstrations, D.A.M.R. has no remaining doubts that the top circlip of the bottom roller pin was similarly dislodged.
- (f) D.A.M.R. therefore concludes that the circlip has no connection with the cause of the accident.
- (g) D.A.M.R. however, decided upon immediate modification action having regard to:-
- (i) Doubts raised by the Board.
 - (ii) The strong recommendation made by the Board.
 - (iii) Obviate any possibility of careless fitting of the circlips.
(Mod. Gannet/RAN.47 refers).
 - (iv) The amount of publicity already afforded this tiny, and innocent, piece of equipment.
7. Gannet Defects Subsequently Found
- (a) Immediately following the crash of Gannet KA.332, the tail units of all Gannet aircraft in service were inspected and no defects were reported.
- (b) Approximately three weeks later serious defects in the region of the tail plane hinge fittings were discovered on Gannet Trainer Mk. 2, KA.333 after it had been held in a prolonged stalling condition for pilot demonstration purposes. The defects were of two distinct types:-
- (i) Fractures of entirely rapid shear type with no evidence of pre-existing defects.
 - (ii) Fatigue cracking which would have continued to extend in normal service and could eventually, if allowed, result in a major failure in the frame concerned.
- (c) All Gannet aircraft were again inspected and similar defects, in varying stages of development were found in a small number of aircraft. Strengthening and corrective modification action was taken before flying of Gannets was resumed. (Mods. Gannet 370, 389, RAN 46 and 48 refer) These modifications have been designed to overcome both types of failure. In addition, the attention of all concerned was drawn to S.F.I./RAN. 23 (issued early 1958) which emphasised the risk of serious structural failure as a result of "G" - stall flutter over 150 knots. The S.F.I. has since been amended to include 'G' - stall at any speed.
- (d) It is desired, here, to emphasise the two distinct types of failure:-
- (i) Rapid buckling and fracture due to some abnormal loading.
 - (ii) Failure following pre-existing fatigue cracking.
- (e) In view of the association in each case with the tail sections of the aircraft, D.A.M.R. instigated a further investigation by D.S.L. calling for a direct comparison between relevant parts of KA.333 and the crashed aircraft KA.332. (File 3054/118/67 refers). The following are extracts from D.S.L. Report No. S59-214 dated 19th March, 1959:-

(i) In Respect of XA.333 (Trainer).

"Fatigue cracks were present in the frame, upper section, in the region of the tail-plane hinges. Nevertheless, it is considered that the major failure which occurred in this component in flight was due to an unusual overload and that this failure, probably was not contributed to in any significant way by the pre-existing fatigue cracks".

(ii) In Respect of XA.332 (Crashed)

"Similar fatigue cracks were not present in the corresponding frame of the crashed aircraft. All the failures in this region of the airframe of the aircraft were due to rapid shear fracture and were indicative of severe overloading of the structure".

(I) Further examination of components ex XA.333 (Trainer) disclosed an additional fatigue crack in the region of the upper outboard bolt hole for the tail-plane port hinge fitting, detection of which would scarcely be possible unless the hinge were removed. The following extracts are taken from D. S. L. Supplementary Report No. S59-214A dated 24th March, 1959:-

(i) In Respect of XA.333 (Trainer)

"Using this crack as a basis for comparison, a careful ~~ex~~-examination has indicated that a similar, but somewhat more extensive, fatigue crack almost certainly had been present at the corresponding position on the starboard side, the main fracture having passed through the crack. The presence of this pre-existing fatigue crack would have had a considerable influence on the final failure, and the conclusion reached in Report No. S59-214 must now be modified to this extent.

(ii) In Respect of XA.332 (Crashed)

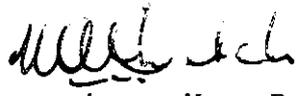
"The region of interest on the starboard side was already exposed because the starboard hinge had been torn off. A crack similar to those described above was present adjacent to the upper outboard hinge attachment hole. It is quite clear, however, that this crack played no part whatsoever in the failure of the tail unit. The hinge was removed to expose the suspect area at the port side, but corresponding cracks were not present here. The new information therefore in no way influences the original conclusion that the failures in the two aircraft are of entirely different natures. Indeed, it further supports the conclusion that they are unrelated".

8. D.A.M.R.'s conclusions are as follows:-

- (a) The defects found in Gannet Trainer Mk. T.2 XA.333 (and other aircraft to a lesser extent) were due to abnormal loading the effects of which were aggravated by pre-existing fatigue cracking.
- (b) The break-up in flight of Gannet A.S.Mk. 1 XA.332 is attributable to severe overloading the effects of which were not influenced in any way by any pre-existing fatigue cracking.

- (c) There is no evidence to indicate an association between the known cause of failure in KA.333 and the unknown cause of failure in respect of KA.332.
- (d) The circlip had nothing to do with the cause of the accident.
- (e) While many theories may be evolved to account for the severe overloading of the tail structure of KA.332, and hence the cause of the accident, it is most unlikely that the actual primary cause of the failure will ever be known. D.A.M.R. will, however, continue to follow up any theories or incidences which may throw some light on the problem.

14th April, 1959.


E. A. M. R.

3054/118/62

Victoria Barracks,
Melbourne.

12th February, 1959.

Mr. H. Greentree,
53 Princes Highway,
SYLVANIA, N.S.W.

Dear Mr. Greentree,

Thank you for your letter of 3rd February which unfortunately did not reach my office until 9th February.

May I compliment you on an exceedingly clear, detailed, and concise account of what you observed.

The letter has come too late for me to present it to the Board of Enquiry before they make their report, but I am forwarding it to the Naval Staff who will consider it in conjunction with the Report from the Board of Enquiry and who will, I am sure, find it extremely helpful.

Again thanking you,

Yours sincerely,

(Sgd) J. G. GORTON

(J.G. Gorton.)

f Kelly

Hof N
DAGOT
37/11

The Secretary.

Referred for necessary action please.

Private Secretary.
12/2/59.

[Handwritten signature]

3054.118.62

53 Princess Highway
Keflavik
3/2/57

The Minister for the Navy,
Senator J. Gorton
Dear Sir,

Having been an eye witness to the unfortunate tragedy here last week & reading the various accounts & conjectures as to what may have caused same, may I take the liberty of giving my version on same. On that particular morning I was proceeding south along Princess Highway when I heard the plane approaching on my right (I was then at the exact point of where Edward St. Keflavik, meets Princess Highway). As is natural when one hears a low flying plane, I glanced out of the drawing window & saw him coming out of the clouds, as at that time there was a light drizzle of rain. The plane was then definitely O.K. & on a straight course, but, suddenly,

284 112-62

on passing overhead I heard
a roaring noise & upon glancing
up saw a silvery object floating
eastwards, (that is the section that
landed in just Chandler's home in
Hyannis road.)

I jumped out of my vehicle
& saw the plane tip sharply
to the left & go into a sideways
roll then plunge eastwards followed
by a terrific explosion & huge
column of black smoke.

There was definitely no mid-air
explosion, the tail section simply
came away as though wrenched
off by some unseen force.
I trust that this communication may
be of some assistance in determining
the exact reason for the crash.

Yours faithfully
W. J. Greenlee

(Phone LT 7232)

15

TELEPHONE: FL 0444

(EXTENSION.....)

Reference ~~XXXX~~ N. 34/9/7

Office of the
Flag Officer-in-Charge,
East Australian Area,
Wylde Street, Potts Point.

[Handwritten signature]
OFFICE
SECRETARY

The Secretary,
DEPARTMENT OF THE NAVY.

LOSS OF GANNET AIRCRAFT XA 332.

Be pleased to lay before the Naval Board the attached Minutes and Findings of the Board of Inquiry which investigated the circumstances surrounding the loss of Gannet Aircraft XA 332 on 30th January, 1959.

2. I concur in the findings of the Board and with the remarks and recommendations contained in paragraphs 5 - 13 inclusive of their report.

[Handwritten notes:]
AN 17/2
AN 15
DAMR
Ernest
DAMS

[Handwritten signature:] M. Storm Bradford.
REAR ADMIRAL.

[Faint handwritten text]

Royal Australian Navy.

IN REPLY PLEASE QUOTE

No. _____

Naval Headquarters,
Potts Point, N.S.W.,
9th February, 1959.

THE FLAG OFFICER-IN-CHARGE,
EAST AUSTRALIAN AREA.

Sir,

We have the honour to report that we have carried out a full and careful investigation into the circumstances attending the loss of Gannet Aircraft KA332 on Friday, 30th January, 1959.

2. Remarks

(a) A fair proportion of the investigations held by the Board were carried out at the scene of the wreckage at the Fairey Aviation Company, Bankstown. At these investigations many discussions were held with various technical experts and Service Officers of the Accident Investigation Unit and were not recorded by the Shorthand Writer. However, all the relevant information obtained at these discussions has been brought out in the questioning of various witnesses at the Board of Inquiry.

(b) During one of the technical investigations at the Fairey Aviation Company the Board requested the removal of the starboard fin fairing of another Gannet Aircraft under repair which disclosed the starboard after fin attachment bolt had no nut fitted, although the washer was in place. The end of the thread of this bolt appeared to be burred over. The absence of this nut could have been due to many causes, but the Board do not consider that this is relevant to the accident and do not propose to remark further than the fact that this situation was brought to light.

3. Narrative

On Friday, 30th January, 1959, Gannet aircraft KA332 took off from Bankstown at 1046K piloted by Lieutenant (E) (A/E) (P) Peter Arnold, R.A.N. on a delivery flight to the Royal Australian Naval Air Station, Nowra, following the fitting of Modifications Nos. 22 and 99 ("Green Salad"). The aircraft was seen by the Test Pilot of the De Havilland Aviation Company, Flight Lieutenant E. Shaw, to carry out a very bumpy takeoff over the rough ground of the airfield. He particularly noted the excessive bumping up and down of the nose oleo during the take-off run. The aircraft climbed to approximately 800 feet during which climb the undercarriage was retracted. In comparison with the previous Gannet seen to take off by the same witness the undercarriage appeared to be retracted rather slowly. At a height of approximately 800 feet and half a mile from the Bankstown Airfield, Flight Lieutenant Shaw observed the aircraft to yaw fairly violently to port at the same time as the aircraft waffled both wings (as though hitting a bump). The aircraft then appeared to resume normal flight as though brought under control by the Pilot. The aircraft continued in a South Easterly direction at approximately 800 feet. Reasonably reliable witnesses confirm that approximately four to five miles from the airfield the Pilot lowered the undercarriage and retracted it again almost immediately. At the same time the aircraft was seen to be yawing and dipping and lifting its wings. At approximately 8 miles from the airfield and $1\frac{1}{2}$ miles short of the crash the aircraft was seen at a lower altitude, approximately 350-500 feet flying in a South Easterly direction. It was seen to be yawing and dipping and lifting its wings

as before. Shortly after this when nearing Prince's Highway, the tail unit of the aircraft commenced to break up. A total of 5 pieces were observed to fall from the aircraft in what appeared to be the following order:-

- (1) Top of the rudder.
- (2) Fin.
- (3) Central Rudder.
- (4) Elevator and Elevator Fins.
- (5) The rear fuselage fin fairing.

These pieces followed the general line of flight of the aircraft and covered a distance of approximately 700 yards. The direct distance from the first disintegration to impact is approximately 1,100 yards. Whilst the first 3 parts were seen to part from the aircraft it remained on a fairly even keel, but when the elevators were lost it climbed steeply, the engine note was heard to increase, the aircraft levelled out, banked to the right then to the left and started to lose height rapidly. It rolled over to the left nearing the ground and struck the ground in a nearly inverted position, by the Bellingarra Road to the West of Gawley Creek and North of Box Road at Sylvania. The aircraft exploded on impact and a raging fire ensued. Police with radio cars were quickly on the scene and set up a radio link with the Operations Room at Naval Headquarters within 15 minutes of the crash. The Air Sea Rescue organisation at Nowra was quickly set into motion. After the fire had been extinguished and the body of the late Lieutenant Arnold removed, an Accident Investigation Unit detailed by F.O.I.C.E.A., took over and commenced an "on the spot" investigation with the help of Police and Units from N.A.S. Nowra and Fairey Aviation Company and commenced salvage of the aircraft to Fairey Aviation at Bankstown.

4. Findings of the Board

We find that:-

- (a) The Pilot was fully qualified, authorised and medically fit to carry out the flight in question.
- (b) The Pilot had a current instrument flying category and had carried out his relevant safety practices in accordance with the regulations; these included wet winching practices and forced landing practices.
- (c) The Pilot completed his Gannet conversion course on 21st February, 1958, and had a total of 158 hours of Gannet flying, obtaining his wings on 13th February, 1957. His flying assessment was average.
- (d) The weather at the time of the flight was: Wind Direction 170°, Speed 8 knots, Visibility 17 miles with showers to the South, Cloud 4/8ths of Strato Cu. cloud at 2,500 feet, 7/8ths of Strato Cu. cumulus at 3,500 feet. The temperature was 21 degrees centigrade, dew point 17° C. and the Q.N.H. 1024 Hbs.

- (a) No calls were made by the aircraft during his departure call from ... to ... was given ...

- (f) The aircraft was under the custodianship of N.A.E.O. of D.A.M.R. Staff (Commander W. J. Lovell, R.A.N.).
- (g) The Pilot was correctly strapped in and carried out, as far as could be ascertained, correct procedures before take-off.
- (h) The aircraft was in all respects serviceable for flight as required by the regulations.
- (i) The Air Sea Rescue organisation was carried out correctly and promptly.
- (j) The Pilot was flying along his correct flight path (B.C.T.A.) as briefed for the flight.

5. Opinions of the Board

The exact cause of this accident cannot be determined, but we consider it most probable that the accident was caused by a break-up of the tail unit of the fuselage. This break-up occurred through the free movement of the rudder, owing to the failure or absence of the upper circlip of the bearing pin of bearing, roller reference No. 278/356 Hoffman J. 380 fitted to plug adjusting Part No. DQ74H/1061 (referred to as the Fork End Fitting throughout the report), allowing the bearing pin to drop out of the fork end of the adjusting plug, thus freeing the roller bearing and allowing the bottom torsion lever, Part No. as shown in Schedule of Spare Parts as CQ74H/1044 but stamped on the subject lever as 740P117, to move freely into the fork end of the adjusting plug. This free movement resulted in partial loss of control of the rudder which we consider initiated flutter of the ~~carriage~~ thus causing the break-up.
(References: AP4487 A Vol. I Sect. 3 Chap. 4 (A.L.40) Fig. 7 Rudder Controls.

Schedule of Spare Parts. AP4487 A & D Vol. 3 Part 1 Book 1 Page BJ2 and Plate BJ1 - Controls - Rudder).

6. Taking into account the technical evidence heard and seen substantiated by reliable eye-witness accounts as to the behaviour of the aircraft, from the time of take off to the accident, we believe that the above opinion represents the most probable cause of this accident and that the following was the sequence of events:-

It is possible that the circlip was displaced before the flight began, leaving the pin free to move in a downward direction but be retained by the pressure of the arm on the roller. This pressure was maintained throughout the take-off run over what is described by a test pilot as very rough ground. Owing to the jolting of the aircraft as it passed over this rough ground we consider that the pin commenced to move downwards, but had not fallen completely out owing to the loading of the spring bar. The aircraft climbed away where a combination of the load of the spring bar and the air load made the pressure on the pin intermittent, thus allowing it to fall further down until finally a jolt caused by the retraction of the undercarriage allowed the pin to fall away. As the pin fell away the roller was displaced allowing the torsion lever to move freely into the fork end of the adjusting plug. This allowed free movement of the rudder to such a degree as to cause the flutter observed by the test pilot at this stage. It would not be unusual for the Pilot to observe the carriage malfunction in flight; that such a malfunction would not be unusual for the Pilot to observe in flight and that his undercarriage a second time would not be unusual for the Pilot to observe in flight. It would not be unusual for the Pilot to observe the carriage malfunction in flight and that such a malfunction would not be unusual for the Pilot to observe in flight.

The exact cause of this accident cannot be determined, but we consider it most probable that the accident was caused by a break-up of the tail unit of the fuselage. This break-up occurred through the free movement of the rudder, owing to the failure or absence of the upper circlip of the bearing pin of bearing, roller reference No. 273/356 Hoffman J. 380 fitted to plug adjusting Part No. DQ74H/1061 (referred to as the Fork End Fitting throughout the report), allowing the bearing pin to drop out of the fork end of the adjusting plug, thus freeing the roller bearing and allowing the bottom torsion lever, Part No. as shown in Schedule of Spare Parts as CQ74H/1044 but stamped on the subject lever as 74OP115, to move freely into the fork end of the adjusting plug. This free movement resulted in partial loss of control of the rudder which we consider initiated flutter of the empennage thus causing the break-up.
(References: AP4487 A Vol. I Sect. 3 Chap. 4 (A.L.40) Fig. 7 Rudder Controls.

Schedule of Spare Parts. AP4487 A & D Vol. 3 Part 1 Book 1 Page BJ2 and Plate BJ1 - Controls - Rudder).

6. Taking into account the technical evidence heard and seen substantiated by reliable eye-witness accounts as to the behaviour of the aircraft, from the time of take off to the accident, we believe that the above opinion represents the most probable cause of this accident and that the following was the sequence of events:-

It is possible that the circlip was displaced before the flight began, leaving the pin free to move in a downward direction but be retained by the pressure of the arm on the roller. This pressure was maintained throughout the take-off run over what is described by a test pilot as very rough ground. Owing to the jolting of the aircraft as it passed over this rough ground we consider that the pin commenced to move downwards, but had not fallen completely out owing to the loading of the spring bar. The aircraft climbed away where a combination of the load of the spring bar and the air load made the pressure on the pin intermittent, thus allowing it to fall further down until finally a jolt caused by the retraction of the undercarriage allowed the pin to fall away. As the pin fell away the roller became displaced allowing the torsion lever to move freely into the fork end of the adjusting plug. This allowed free movement of the rudder to such a degree as to cause the violent yaw observed by the test pilot at this stage. We consider that it would not be unnatural for the Pilot to assume undercarriage malfunction at this stage, thus causing him to lower and retract his undercarriage a second time. However, it would appear that the aircraft became unstable at about this time causing the waffling movement confirmed by several witnesses.

*Do not agree
narration of pilot
... All would
... that he had lost
... control by free
... of rudder bar
... would certainly
... of pilot's
... in this cir*

7. It was shortly after the second retraction of the undercarriage and the pronounced waffling movement observed by several witnesses that the aircraft tail portion began to break up in exactly the sequence which was described in the Accident Investigation Unit report. This sequence of break-up was confirmed by visual technical study of the recovered tail portion of the aircraft and several individual eye-witness accounts most of which we consider to be reasonably reliable.

8. The Board noted that by technical officers' statements the primary failure commenced in the region of the after fin attachment, which is consistent with being caused by a violent yaw.

9. The Board is of the opinion that no blame can be attributed to any person for the failure of this component, but that the circlip would appear to be a poor method of securing this important assembly.

10. The Board is also of the opinion that in the circumstances prevailing at the time the Pilot had little or no chance of escape and was killed instantly on impact with the ground.

11. The Board is of the opinion that the smoke reported in the pilot's cockpit was false and that the vapour seen emitting from the stern of the aircraft was caused by fuel venting.

12. The Board notes that the aircraft was overdue for compass swing, but that this had no bearing on the accident.

13. Recommendations

The Board recommends that:-

(a) Urgent modification action be taken to provide a better method of securing the bearing roller, preferably by bolt, castellated nut and split pin, also that an immediate S.T.I. be promulgated for inspection. (FOICEA's message 060858z/February, 1959, refers).

(b) An official appreciation of the magnificent work of the Police Department in helping to obtain information and recovering vital parts of the crashed aircraft be forwarded to the New South Wales Commissioner of Police.

We have the honour to be,

Sir,

Your obedient servants,

J. J. Sturton
.....
COMMANDER, R.A.N.

[Signature]
.....
CAPTAIN, R.A.N.

Inclures:

(SEE OVER)

ENCLOSURES TO FINDINGS OF THE BOARD OF INQUIRY DATED
FEBRUARY, 1959, TO FOICEA:-

- (1) Minutes of Board of Inquiry.
- (2) Form S.1360 - Memorandum from FOICEA dated 3rd February, 1959.
- (3) Accident Investigation Report - Appendix 'A'.
- (4) Map showing route of Gannet XA332 - Appendix 'B'.
- (5) Form A.25 - Report on Aircraft Accident - Appendix 'C'.
- (6) Envelope containing 14 photographs of wreckage of Gannet XA332 taken by Police Photographer - Appendix 'D'.
- (7) Envelope containing 9 photographs of wreckage of Gannet XA332 taken by Naval Photographer - Appendix 'E'.

MINUTES OF BOARD OF INQUIRY HELD AT
NAVAL HEADQUARTERS, POTTS POINT, ON
THURSDAY 5TH FEBRUARY AND FRIDAY,
6TH FEBRUARY, 1959, TO INVESTIGATE
THE CIRCUMSTANCES ATTENDING THE
LOSS OF GANNET AIRCRAFT XA332 ON 30TH
JANUARY, 1959.

OFFICERS CONSTITUTING BOARD OF
INQUIRY

Captain F. Stovin-Bradford, D.S.C.^x, R.N.,
H.M.A.S. KUTTABUL.

Captain F. W. Purves, R.A.N.,
H.M.A.S. MELBOURNE.

Commander F. T. Sherborne, R.A.N.,
H.M.A.S. ALBATROSS.

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LIEUT. CMDR. D. C. JOHNS, R.A.N.

1. Are you Lieutenant Commander Digby Charles Johns, R.A.N.?

Yes sir.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

2. Are you the C.O. of 816 Squadron?

Yes Sir.

3. We are investigating the accident to Gannet XA332 on 30th January which resulted in the death of Lieutenant Arnold. Was he a Pilot in your Squadron?

Yes sir.

4. Did you know him?

Yes sir.

5. Would you like to tell us anything about him which you feel may help this Board of Inquiry?

Well sir I have only had the Squadron for a few weeks and I was not very familiar with his flying. His previous C.O. thought he was below standard and I had flown with him as my No. 2 and the only part of his flying I was familiar with was his formation flying which was very weak, but whether the rest of his flying was of a similar category I am not sure.

6. Can you tell me anything about his habits, whether he was temperate etc.?

I would say he was temperate and studious in regards to flying. He had a much more comprehensive knowledge of mechanics than the average Pilot mainly because he was an engineer.

7. Was he a good mixer?

Fair.

8. Do you know if he was likely to drink very much?

I would have thought not.

9. In other words he was a keen, interested, sober young gentleman?

Yes sir.

10. Did you authorise the flight in question on 20th January?

Yes sir.

11. Can you tell me what the nature of the flight was?

It was to ferry an aircraft from Bankstown to Nowra.

12. What had the aeroplane been at Bankstown for?

It had been fitted with Mods. 22 and 99.

13. Have you any other information concerning this incident or the Pilot or the aircraft which you consider would help the Board in its enquiries?

No sir.

14. Was there anything that had been reported on this aircraft previously?

It had never been flown while I was there.

LIEUT. CDR. D. C. JOHNS, R.A.N.

15. On whose charge was the aircraft?

Not on my charge, but it may have been on the charge of the custodian, Melbourne Air Group.

16. The aircraft was signed up as fully serviceable on 9th January and there was no other record until 30th January. Was there any reason for that?

The aircraft I presume would have been at Bankstown.

17. Why did it remain at Bankstown for 3 weeks after the modification was fitted?

I believe that to be incorrect.

Lieut. Cdr. Johns was invited to sit in on the Inquiry but declined to do so.

WITNESS WITHDREW.

REPORT. CDR. J. A. WISHART, R.A.N.

18. Are you Lieutenant Commander John Alec Wishart, R.A.N.?

Yes sir.

WITNESS CAUTIONED. CAUTION ~~ON RECORD~~.

19. Are you the Air Engineer Officer of the Melbourne Air Group?

Yes Sir.

20. We are investigating an accident to Gannet aircraft XA332 which I understand was an aircraft of the Melbourne Air Group belonging to 816 Squadron. Is that so?

Yes sir.

21. Can you tell me on whose charge this aircraft was on 30th January?

The Naval Air Engineer Officer. The aircraft was at Fairey Aviation Co., Bankstown, for modifications temporarily, and was on her way returning to the Melbourne Air Group when she would change over to my custodianship.

22. At the time of the accident then the custodian was actually N.A.E.O. at Randwick?

Yes Sir.

23. Can you remember the date the aircraft left the Melbourne Air Group to go for modifications?

No I can't sir.

24. According to the Change of Serviceability on 9/1/59 it was recorded that Mods. 22 and 99 were fitted and ground tested. The aircraft remained at Fairey Aviation until 30th January. Have you any idea why?

No sir. I was informed about the 27th or 28th January that the aircraft was at Fairey Aviation ready for collection, it may have been a little bit earlier but not more than a few days.

25. This aircraft had an E.C.U. change on the Melbourne Air Group. Were you the Air Group Engineer?

Yes sir.

26. Can you recall any details why the E.C.U. was changed?

I am afraid I can't. We have had a lot of E.C.U. changes and I cannot remember which one it was.

27. On the air frame can you recall any unserviceability of flying controls or any reports of undue slackness in flying surface fitting attachments of this aircraft?

I can't recall anything specific on this aircraft as far back as that.

28. From your knowledge was it full serviceable in all respects when it left Nowra?

So far as I knew.

29. From your knowledge of the aircraft and the Gannet aircraft would you say that this was a good aircraft or that was giving you trouble?

It was average.

LIEUT. CDR. J. A. WISHART, R.A.N.

30. Did you know Lieut. Arnold?

Yes sir.

31. Did you know him well?

Not very well, I met him first in early November.

32. Did Lieut. Arnold have any discussions with you concerning this aeroplane before he collected it?

No, he collected others from Bankstown after this modification and it was just another routine collection as far as he was concerned.

33. Was he considered the Maintenance Test Pilot of the Air Group?

No. Test flying is usually only done by the C.O. or Senior Pilot of the Squadron.

34. Was he a qualified Maintenance Test Pilot?

No.

35. Does the incorporation of Mods. 22 and 29 require the removal of any flying components such as elevators, tail plane, wing folding jack or hood from the aircraft?

To the best of my knowledge no.

36. I notice there are several propellor changes on this aircraft. Can you remember whether they were called up because of vibration?

I should think so. We had a considerable number of propellor changes for vibration so it was probably the cause, but I can't remember exactly.

37. Have you any other statement which you wish to make to the Board which may help us in our findings?

No sir, I can't think of any.

Lieut. Cdr. Wishart was invited to sit in on the Inquiry but declined to do so.

WITNESS WITHDREW.

MR. L. E. SAMUELS

38. Are you Mr. Leonard Ernest Samuels?

I am.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

39. Are you Principal Scientific Officer at the Defence Standards Laboratory?

Yes.

40. We are investigating the accident to Gannet aircraft XA332 on 30th January and I am given to understand that you were asked to carry out an investigation on certain parts of this aircraft. Can you please tell the Board what you found?

The examination of this aircraft was simply a visual examination of the fractured tail components as pointed out to me at Fairey Aviation. I examined all the fractures as carefully as I could and I am quite convinced that all these fractures were of a rapid nature and that there were no pre-existing fractures. There were no fatigue cracks, no inter-crystalline corrosion or stress corrosion cracking. These would be the defects one would mainly expect to find, so I believe that the failure of these components was due to overloading.

41. Can you remember who selected the specimens for you?

They were selected for me by Mr. Manuel of Fairey Aviation who showed me the remains of the aircraft and all the components that he knew were fractured and left me to look at them. Mr. McDonald of A.I.D. was present while I made this inspection.

42. Did you look at all the tail components?

Yes every component I was shown was the tail component.

43. Did that include the attachment bolts at the forward end of the fin which were pulled out, and the fin and rudder bolts?

Yes.

Witness shown A.P.4487A Vol. 1 Section 3 Chapter 3 Figures 2 on page F.S./2 and he pointed out the various sections and fittings he had examined.

44. In your opinion then there was definitely no sign of corrosion or fatigue?

No sir.

45. Did you notice in any part of the tail plane fin structure any sign of the damage being caused by a rapid explosion rather than by a comparatively steady overload?

To the best of my knowledge of what I would expect from an explosion I would say no. The damage was all caused by tearing.

WITNESS WITHDRAWN.

MR. C. G. ALINGTON

46. Are you Mr. Cyril Geoffrey Alington?

Yes.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

47. Are you the Chief Test Pilot of Fairey Aviation Co.?

Yes.

48. We are inquiring into the loss of Gannet XA332 on 30th January. Have you any information concerning this particular Gannet or any experience which you consider would help the Board in its findings?

On this particular aircraft I don't think I can help at all. Whatever it was that caused the accident happened very very quickly.

49. Were you a witness of its flying?

No. A Naval Pilot brought it in and took it away.

50. A part of the Investigating Officer's report states it was thought the aircraft was held on to the ground for a longer period than was necessary. Can you advance any reason why this was done?

No. I don't know whether he took off with his flaps or not. He took off in a hurry and did not even warm up his second engine.

51. What would be the warming up time for the second engine?

At least 5 minutes.

52. Are you very experienced with Gannets?

Yes.

53. Is it your normal practice to warm up your second engine for 5 minutes?

Yes.

54. Would you shorten the warm up time on a Gannet if it was a hot day?

Yes, if it was a hot day.

55. Did you hear about the Pilot's take off from Mr. Lowther?

Yes.

56. Have you had any experience of forms of violent vibration in a Gannet?

Not at level flying speed, but to stall it you can get buffeting at various degrees. If the elevators are not balanced you can induce elevator flutter or tab flutter and this starts elevator movement, but I have never had it self-inducing and if they are balanced correctly this won't occur at all.

57. Have you ever been able to induce vibration of a violent nature during the course of feathering one engine?

Not of a violent nature. Just prior to the engine stopping you get a little vibration.

58. What was the state of the bumpiness of the aircraft?

It is not excessively bumpy. It is not.

MR. C. G. ALINGTON

59. Have you any experience with putting the automatic pilot in?

Yes.

60. Has it ever, to your knowledge, clicked in by itself?

No never and if it is badly set up it will immediately come out.

WITNESS WITHDREW

DETECTIVE SGT. ALLAN E. NEAL

61. Are you Detective Sergeant Allan Edward Neal of Sutherland Police Station?

Yes.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

62. We are investigating an accident to Gannet MA332 on 30th January and are given to understand that you would be able to help us in coming to some conclusion and we would therefore appreciate it if you could tell the Board anything you know of this incident.

On 30th January I did not witness the accident but was called to the scene as Divisional Detective Sergeant to take over the inquiry. I made an inspection of the plane with other officers and they could say more than I could about it owing to their ability. The first portion of the plane they found was at 15 Tedman Avenue, Sylvania. We took a photograph of that part of the aircraft with the large 'M' on it. We then went to 13 Sylvania Road, Sylvania where a part of it had fallen into the back portion of a house near a clothesline and then we went to 96 Corea Street, Sylvania to where a large tail portion was in the yard plus a piece of the fuselage. I was present when a complete examination of the Pilot's and engine portion of the plane was made by your Officer.

(Accident Investigation Unit report handed to Det. Sgt. Neal)

I have read this report, but I would say that everything I see in there is correct.

63. Were you the Officer responsible for setting up the radio car service at the scene of the accident?

No, that is carried out by Police Headquarters. When an accident of that nature occurs all our cars are called into the Wireless Room and when they arrive on the scene they are on call all the time for assistance.

64. We would like to say how very helpful the Police were over the whole incident. I personally was in constant communication with the radio car on the spot and everyone has expressed their deep satisfaction of the Police in giving their able assistance.

If you desire you could write to the Commission of Police.

WITNESS WITHDREW

MR. I. J. FINN

65. Are you Mr. Ivan James Finn?

Yes.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

66. We are investigating an accident to Gannet aircraft XA332 on 30th January and I understand that you are the Fairey Aviation Company's cranedriver and were on leave at this time and saw some of the preceding journey of the aircraft prior to the crash. Would you please tell the Board what you actually saw? I have a map here if you would like to follow it through on that.

I was at Orient Road, Padstow and as the aircraft approached me I heard the roar of the motor and I looked up. It seemed to be very sluggish in flight and as he passed overhead he dropped his undercarriage and I remarked to my wife "it seems to be in trouble" and my wife said "he is taking his wheels up again". I then saw he started to drop his wheels again and the other 2 seemed to have stopped at an acute angle. He then passed out of my sight.

67. How high?

He was not more than 350 feet and seemed to be losing height.

68. Did you see both wheels come up together?

Actually I did not see them come up, my wife did. I saw them as he was letting them down again.

69. Was he flying straight and level?

Yes he was flying straight, but very slow.

70. Have you seen many Gannets?

Yes quite a few.

71. How long have you been with Fairey Aviation?

2½ years.

72. Is your job connected with moving Gannets around?

I more or less pull them apart and put them back together again.

73. You are officially down here as a Crane Driver.

Yes that is right.

74. Did you notice any smoke or vapour leaving the aircraft?

No.

75. Are you accustomed to seeing Gannets in the air?

Yes.

76. And you would notice smoke or vapour coming from the aircraft?

Yes.

77. Did the aircraft appear to be climbing?

No losing height.

MR. I. J. FINN

78. Were both engines going?
I could not say.
79. Did you see one propeller stop?
No. They were both going, but the motor did not have the high pitch the Gannet has, it was just a dull roar.
80. You say you did not see any vapour or smoke.
That is right.
81. Did you hear any form of explosion?
No.
82. Did he pass right overhead?
Yes right over the top of our house.
83. Have you had one pass directly over you before at Bankstown?
Yes, but not that low.
84. Have you noticed the planes from your place before?
Yes.
85. Was it raining when the plane passed over?
No it was quite a clear day.
86. What kind of roof have you?
A tile roof. I was about 15 yards away from the house.
87. You saw the aeroplane at approximately 350 feet flying straight and level, losing height if anything, engines were loud and roaring and the undercarriage was down and in the process of being raised and when you looked again it was being lowered a second time with the nose wheel right and the others stopped at an acute angle. About how many degrees?
About 45 degrees.
88. Did he look to be losing height coming towards you?
No just as he went away he appeared to come down.

WITNESS WITHDREW.

MR. J. F. WAKEHAM

89. Are you Mr. John Frederick Wakeham?

Yes.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

90. We are investigating an accident to Gannet aircraft XA332 on 30th January and we understand you were an eye witness of this aircraft at this time.

I saw a Gannet aircraft at about the time of the crash.

91. Was it the same as the model on this table?

Yes, I can identify it as a Gannet.

92. Would you show us on the map your approximate position?

Yes.

93. Could you please tell the Board exactly what you saw on 30th January when you observed this aircraft?

We were standing in Padstow Parade and I observed the Gannet flying in a Southerly direction. I saw the nose wheel was down and the other 2 were in the housed position. This struck me as being odd and caused me to continue to look at the aircraft and I observed the Pilot lower the main undercarriage and when the wheels came in the down position he retracted the whole three. I did not observe it any further after that. The time was approximately a quarter to 11 and when I read the report in the Press in the evening I thought this information may be of value so I rang Schofields.

94. Can you tell me very roughly the height of this aircraft?

About 1500 feet, and approximately 2000 feet when I ceased to look at it.

95. Was it climbing steadily?

Yes and everything seemed to be quite normal and when he got the wheels up.

96. Do you see many aircraft?

Yes we see a lot of Gannets about.

97. You say all the wheels went up together?

Yes.

98. Approximately how far are you from Bankstown aerodrome?

Approximately 2 miles.

99. What was the degree of elevation?

The angle of sight was approximately 80°.

100. When you first observed the plane was he fairly near?

Yes he was reasonably close.

101. Did you see any smoke or vapour?

No. The motor appeared to be quite normal.

WITNESS WAKEHAM

MR. C. TREVETHAN

102. Are you Mr. Clifford Trevethan?

Yes.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

103. The Board is inquiring into an accident to Gannet aircraft XA332 on 30th January and I understand you were a witness to the flight of the Gannet at the approximate time of this incident. We have therefore asked you to come in and help us with our findings. Would you recognise the Gannet as being similar to a model on this table?

Yes.

104. Do you know Gannets well?

No I don't know them well but it was an aircraft of that type and when I saw it the wheels were down and I saw it had a nose wheel and I did not know they had nose wheels. This one had 3 wheels down and was flying from Bankstown towards the water tower at Padstow.

105. Could you please tell the Board exactly what you saw?

He came along and was not making as much noise as a Gannet usually does. His motor seemed quiet for a Gannet. In flight he had a tendency to drop his starboard wing about 3 or 4 feet and level up again. He did this about 4 or 5 times and I thought he was having trouble with his landing gear as when he flew out of my sight approximately about a mile, the wheels were still down.

106. What was the height of this aircraft?

About 300 or 400 feet. I live on the Southern channel where the Melbourne aircraft all come over and I noticed their level of flying and noticed this one come by at roughly 3 to 400 feet. He was roughly 2 or 3 miles in a direct line from Bankstown. He had no flaps showing, but the undercarriage was down. The motor was not making the usual noise of the Gannet and he was more or less cruising and not at a great speed.

107. Were you standing in a garden with buildings around.

Yes in a garden about 20 feet from the road.

108. Did you see any smoke or vapour?

No.

109. Did you notice anything in connection with the undercarriage whilst it was down?

No.

110. Did you see any form of fairing attached to the aircraft?

Only on the undercarriage on the nose wheels.

WITNESS WITHDREW.

MR. T. J. R. MILLINGTON

111. Are you Mr. Thomas John Robert Millington?

Yes.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

112. We are investigating an accident which occurred to a Gannet aircraft XA332 on 10th January and understand you have made a statement on what you saw about the time of this particular incident. Have you anything you would like to add to this statement?

The aircraft yawed to port. In paragraph 2 "tail portion" should read "aircraft".

113. Were there any wheels down at this stage?

The undercarriage was up.

114. Have you seen Gannets very often?

Once at Mascot.

115. Are you of the opinion that it was definitely the type of aircraft you see here on this table?

Yes.

116. What was the colour of the fluid you saw?

It was not white, it was yellowish and seemed continuous. I thought he was jettisoning his fuel.

117. What was the weather like?

It was a slight drizzle.

118. Could you see this fluid in the sky after the aircraft had gone on?

It dissipated very quickly.

119. How far behind the aircraft?

About one length of the aircraft.

120. Was this vapour in the form of a puff or continuous?

A continuous stream.

121. You are sure of that?

Yes.

122. Can you say whether it came from above or below the elevators?

I thought it was coming from above the elevators.

123. About what angle would you be looking at the aircraft?

From 20 degrees on the starboard bow looking up at an angle of 10 degrees.

124. Can you show me on this map where you were?

Yes.

WITNESS WITHDREW.

MRS. A. I. KNIGHT

125. Are you Mrs. Ailsa Isobel Knight?

Yes.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

126. We are investigating an accident to Gannet aircraft XA332 on 30th January and we have before us here a statement made by you to Detective Sergeant Neal on 1st February. Before asking you to say anything about this statement could you please show us on this map the position where at the time.

(Indicated by witness).

127. Did the aircraft actually pass right over your house?

Yes, right over the house. He made a roaring noise and it seemed as if he was trying to lift the plane. He was making towards Gawley Bay. As he went over I looked up and I could not see anything wrong, then I noticed that the cockpit seemed dirty and brown as if it had smoke on it. I then saw the parts of the tail fall off and then I saw some misty sort of vapour coming from under the tail of the plane. The plane then weaved and finally fell to the left and crashed.

128. (Model plane held at angle). Is that the position at which you saw the aircraft going past?

Yes.

129. Do you now consider that you saw the rear cockpit and that is the cockpit from which you saw the smoke to which you refer in your statement?

Yes.

130. Could you remember where the sun was at that particular time?

No I am not sure.

131. Was it raining?

Yes, prior to him coming it was a light rain, but it had ceased when he came over.

132. Did you at any time whilst the aircraft was in your sight see any form of vapour or smoke coming from the aircraft?

Yes after the tail came off.

133. And what form did this vapour take?

It just was like a fine mist issuing from the back of the plane. His wings seemed to be tilted to the sky and the tail hanging down a bit. The vapour seemed to come from underneath the tail of the aircraft. It was like light misty stuff.

134. Did it dissipate shortly after it left the aircraft?

Yes. After the tail came off the engines seemed quiet as if they had stopped. After this mist he gave 2 back firing noises and then he heard the motors and he headed off the original course.

Is there anything you would like to correct in

No.

MR. N. B. KING

136. Are you Mr. Neville Bruce King?

Yes.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

137. We are investigating an accident to a Gannet aircraft XA332 on 30th January and I have been given your name as a witness to the flight of a Gannet aircraft at that time. Would you be good enough to tell the Board firstly where you were standing at the time of the incident - here is the map.

I was standing on the North Easterly side of Prince's Highway just off Oyster Bay, opposite Crystal Street.

138. Could you now tell the Board what you saw from that position?

The aircraft came over and dropped height from about 800 to 400 feet at that stage and when he was over McFarlane Parade the top half of his rudder appeared to break off then the tail plane came away and then he lurched to starboard and he seemed to roll straight over.

139. What made you look up at the aircraft in the first place?

Mainly just the fact that I was standing there and he was fairly low compared with aircraft that usually pass over.

140. Was there anything peculiar about the plane?

He was not giving it any extra acceleration. He appeared to be flying normally and level.

141. Can you tell me whether the undercarriage was up or down?

Up.

142. Could you show me from this model the angle at which it came towards you?

I could see his starboard beam at an angle of about 20 degrees.

143. Did you see any smoke or vapour of any description coming from the aircraft?

No.

144. Are you quite convinced at the order in which you saw the pieces fall away from the aircraft?

Yes, I would say there was a small section, either the top of his rudder or something, but there was only a matter of half a second between them.

145. When you say the whole tail plane do you mean the back fin or the elevators?

I would say the elevators.

146. What was the weather like at the time?

It had been raining a mist earlier, but it cleared by the time the plane came over.

MR. H. F. JOHNSTONE

147. Are you Mr. Roy Francis Johnstone?

Yes.

WITNESS CAUTIONED.. CAUTION UNDERSTOOD.

148. We are investigating an accident to Gannet aircraft XA332 on 30th January. Could you please show me on this map where you were at the time of this accident?

At Prince's Highway between Tedman Parade and Sylvania Road.

149. Would you like to tell the Board if you have anything which you would like to add to your statement?

When he came out of the clouds I thought for a second that he had lost his bearings and then the tail portion came off.

150. What would you say the sky was like at the time?

Misty with pretty light cloud.

151. Would you say the plane was swaying?

Yes.

152. Did you notice at any time any vapour or smoke coming from the aircraft at all?

Only when the big part of the tail came off.

153. In what vicinity did you see this smoke?

Top of the fin of the tail plane.

154. What colour was it?

Black.

155. Was that before he hit the ground?

Yes, I did not see him hit the ground.

WITNESS WITHDREW.

MR. M. CARBONE

156. Are you Mr. Michael Carbone?

Yes.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

157. Is this a statement made by you to Detective Sergeant Neal?

Yes.

158. Would you like to read it and tell the Board if you want to add anything further to it?

I have nothing I wish to add to this statement.

159. Could you please show the Board on this map the position you were at the time of this incident?

I was in Bellingara Road just short of the position of impact of the aircraft.

160. At what position were you relative to the aircraft?

20 degrees on the starboard ~~side~~ bow of the aircraft as it came towards me. The bits started to come off before and then a big bit of the tail and a big engine rev.

161. Was there any smoke or fire when the tail broke off?

No I did not see any.

162. Did you see any form of vapour or smoke of any description?

At no time during the approach of the aircraft.

163. What height would it be when you first saw it?

About 600 feet. :

WITNESS WITHDREW.

MR. G. S. LOWTHER

164. Are you Mr. George Smith Lowther?

Yes.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

165. This Board is investigating the accident to Gannet aircraft KA332 on 30th January, and I understand you are the Senior Foreman at Fairey Aviation.

Yes.

166. In the accident in question Lieut. Arnold was killed and I understand you may have been one of the last people to talk to him.

That is correct.

167. Did you in fact help him into the aircraft at all?

I did.

168. Did he appear normal in every way?

Quite normal and in very good spirits and quite sober.

169. Have you known him for long?

Yes, for quite a while.

170. As far as you were concerned you were quite happy he was in perfectly reasonable health to fly an aircraft?

Quite sure.

171. Can you tell me what happened from the time he came to collect the aircraft?

He arrived in the Gannet which brought him and he came into the office with me and signed for the aircraft, Form A11 and the Log Book entry. We talked for a short while and then walked out to the aircraft and I proceeded to assist him into the aircraft. My men were a little busy at the time so I did it myself. I assisted in strapping him in.

172. Did he strap in all straps?

Yes, leg parachute harness and leg straps and all straps. After he was strapped in he proceeded to start up and started the port engine first and did a windmill start of the starboard engine. Having got the starboard engine going he increased the starboard R.P.M. to the flight idling position to match the port and had them both running. He did not run the starboard engine fully prior to taxiing off. He gave us the 'chocks away' and proceeded to taxi out. From then I observed the take off, which in my opinion was perfectly normal. It may have been a little shallow, but it appeared to be a normal take off. The undercarriage retracted in a normal manner and was fully up before the plane went out of my observation.

173. Which direction was the take-off?

Just East of South.

174. Did you notice whether ~~was~~ he used flaps for ~~take-off~~?

MR. G. S. LOWTHER

Yes, he had flaps on.

175. Did he run up at the beginning of the runway?

I would say that he brought both engines up to probably full throttle position before releasing the brakes.

176. Was the take-off run longer than normal?

No I would say it was quite a normal length of run.

177. You say you saw the undercarriage retracted. Did that include the nosewheel complete?

Yes, the nosewheel and the closure of the doors.

178. Was it the normal Gannet retraction in time and sequence?

Yes quite normal in speed and sequence.

179. Can you remember the sequence?

The nosewheel started going first, then the main wheels started going full up and finally the doors closed on the nosewheel.

180. The primary inspection was dated 28th January? Was there any before-flight inspection carried out?

Yes the primary inspection of all trades were carried out by the Inspection Department, Electrics and Airframe, and I myself personally did the ground testing of the aircraft before flight on the 28th.

181. Did you do a run-up?

Yes I did.

182. Anything entered?

The aircraft was quite serviceable. I check everything as I usually do. The full ground test drill was made and it was quite serviceable in every shape or form.

183. Was there any pre-flight test carried out on the 30th?

Yes, the Pilot carried out his normal pre-flight inspection. He went right round the aircraft and did his usual pre-flight check.

184. When the aircraft was finished after Mods. 22 and 99 were completed, was the aircraft left in the hangar?

After the completion of Mods. the next stage is we take it out on the tarmac and function the equipment. Mods. 22 and 99 involve a little different procedure and radio functioning to standard which our Radio Inspector does and this is included in his primary inspection. Then having completed the radio and radar inspection the aircraft then has its electrical inspection. Having completed that it then has its airframe and engine inspection and finally ground tested by me.

Are the pre-flight inspections done by the Inspection Department?

Yes.

186. You are quite satisfied yourself that the aircraft when accepted by Lieut. Arnold was in every respect serviceable for the flight in question?

Yes I am quite satisfied on that point. I would just like to mention that this particular aircraft was the best of the bunch of modified aircraft we had out there.

187. In what way?

In general appearance and general functioning and performance. The figures I got from the test were the best anyone would want.

188. The aircraft was last fuelled on 8th January and until 31st January she was standing - do you know whether the drains were operated on the tanks?

I don't recollect any.

189. Would the Inspection Department do this?

They may have done it, but I did not.

WITNESS WITHDREW.

MR. GORDON SYDNEY BAYLISS

190. Are you Mr. Gordon Sydney Bayliss?

Yes.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

191. The Board is inquiring into an accident into a Gannet aircraft on 30th January which resulted in the death of Lieutenant Arnold and we notice from records that you have signed certain documents in the Flight Acceptance Log. Would these be your signatures? (A700 produced to witness).

Yes those are my signatures. I did the full inspection.

192. During the preflight inspection on 29th January for which you signed, I notice you did not record any fuel being added to the aircraft.

It should have been noted that 3000 lbs. was the total contents.

193. Did you add any to the aircraft, she was not filled up?

No. We usually record the total contents after taking a check.

194. According to this log there was no fuel put into the aircraft while she was at Fairey Aviation. When aircraft is received from Nowra don't you refill the tanks?

Not before work.

195. From 8th January to 29th January, which is 21 days, the aircraft did nothing. When you did a preflight check did you drain the tanks for water?

They were checked for water content. That is the regular thing to do.

196. During your preflight check and your primary inspection did you notice any undue slackness with any of the flying controls, particularly with the elevator rudder or fin tabs?

No, from experience I searched for anything irregular and anything that is likely to be a hazard and in my opinion I was sure the aircraft was quite safe for flight. I did all this personally - the airframe including engine ~~was~~ within the prescribed routine in the schedule. Invariably I feel we are inclined to overdo it. I felt that that aircraft was equally as good as any I had signed for on previous occasions.

197. Can you remember whether your control locks were on or out when you did your preflight inspection?

I always disengage them. There was nothing untoward, I was quite confident of the aircraft in every sense.

198. Did you see this aircraft take off?

Yes, I witnessed the actual taxiing to a point midway to the field. It went into the take-off position and began to become airborne in the normal distance and passed out of sight around the control tower. The undercarriage was retracted and appeared perfectly normal.

MR. G. S. BAYLISS

199. Was the undercarriage retracted after take-off?
Yes, to the stage where it was fully retracted.
200. The aircraft took off with 3000 lbs. of fuel. Don't you normally fill them up?
For a normal day's flight we insist on them being filled to capacity, but for delivery we consider 3000 lbs. ample for the normal requirements.
201. Have you had experience of Gannets for quite a while?
Yes, ever since we have had them.
202. Have you ever experienced very pronounced slackness in rudder or elevator hinges?
On aircraft received for servicing or modification we found a degree of slackness, but not on the main hinges, but there is a slight end float on the tabs. The end floats are a point I have noted.
203. Do you carry out elevator balancing at Fairey Aviation?
Yes, we balance them as necessary by ~~removal~~ from the aircraft. Practically every aircraft that has been through the place has had the ~~removal~~ of this component.
204. Do you think this aircraft was in a reasonably good condition having been at sea?
I could not say how long it had been at sea, but in my opinion the aircraft was in a remarkably good condition.
205. Any signs of corrosion?
Nothing specific. That aircraft was sound in every possible way.
206. Would you normally look for that in your primary inspection?
Yes. I do the cockpits first, then the wings and end up in the nosewheel bay.
207. Do you also check the safety harness?
Yes, for handling and locking.
208. So you did a pretty thorough examination of the aircraft and to your knowledge everything was satisfactory?
Yes.

WITNESS WITHDREW.

MR. G. A. McDONALD

209. Are you Mr. George Alexander McDonald?

Yes.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

210. We are investigating an accident to A Gannet aircraft ~~1433~~ on 30th January and I believe you have been responsible for a certain amount of inspection and investigation into this - is that right?
(Witness shown entry in A700 and explained the date stamp under his signature).

211. Did you see the aircraft take off?

I was over in the flight shed and talking to the Pilot before he went to the aircraft. I heard that it took off normally, but I did not see it.

212. Did you know the Pilot personally?

I only met him once or twice.

213. Did he appear quite normal?

Quite normal and seemed to be in perfect health and quite normal in all respects.

214. Did you actually proceed to the scene of the accident?

Yes.

215. Did you take part in the Accident Investigation Unit's investigation?

Yes I made a thorough check and when the inquiry was held at Faireys I was there also.

215. As a result of these investigations have you been able to throw any light on the cause of this accident or have you any information which you consider would be of use to this Board?

I don't think I could add anything more to what most of the witnesses have said, except that we have found a slight movement on the front attachment of the tail plane on other aircraft, but I don't think that has any bearing on the accident.

216. Having examined various parts of the wreckage were you able to ascertain from your own knowledge of aircraft what type of break-up if any occurred?

From the appearance of the parts examined after the crash, the appearance of the break would be an instant break. Most of the breaks were in shear.

217. Have you any other observations to make which you consider may help the Board?

No sir. One of my men said that aircraft seemed to be in better condition than other aircraft which had come up for the same modification.

WITNESS WITHDREW.

MR. F. A. FOX

218. Are you Mr. Fred Arthur Fox?

Yes.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

219. What appointment do you hold with Fairey Aviation Co.?

Chief Inspector of the Works Inspection Department.

220. We are investigating an accident to a Gannet aircraft KA332 on 30th January and I understand that you had quite a deal to do with this particular aircraft when it was at Fairey Aviation. Would you tell the Board all you know of the aircraft up to the time that it left Fairey Aviation on this delivery flight?

It was received in on the 9th January. We immediately put out the Works Instruction sheets to carry out Mods. 22 and 99 in accordance with our order.

221. Did the embodiment of Mods. 22 and 99 have any effect on the main structure of this particular aircraft?

No. We fitted the instruments in the front cockpit, ran the cable through to the rear cockpit and the amplifier unit in there and the controller and also looms were run through the wheel wells to the aerials on the centre wing.

222. Would the modification in the wheel wells in any way interfere with the functioning of the undercarriage?

It is all well clear of the folding structure of the undercarriage.

223. Did you see the wreckage after the aircraft had crashed?

Yes.

224. On the site?

Yes.

225. Did you assist in the removal of the wreckage?

No.

226. Were you engaged in examining the critical parts of the tail plane, elevator, fin and rudder structure in the last couple of days?

Yes.

227. Will you tell the Board any unusual wear or appearance of the fittings of these parts which were not apparently damaged during the accident?

There is an elevator outer hinge that would be the particular one. That was definitely loose on the attachment rivets to the rib in the elevator. There was a small amount of play in the torsionbar anchorage which is through into the starboard elevator. There was evidence of the elevators having swung beyond their normal limit in the up position, the hinge arms having fealed the cut away of the skin.

228. Were you present when the rudder trim control top bottom roller stop and pin were found missing?

I was.

MR. F. A. FOX

229. Can you tell the Board how it came about that this was discovered?

The rudder bottom fairing had a rattle in it which suggested a loose body. On removal of the bottom panel the torque rod bottom roller was found to be loose in the fairing, together with the attachment pin and one circlip. Further investigation of the top roller showed the roller and pin to be in situ, the contact lever was not bearing on the roller but was on the uppermost side of the roller fork end. Closer examination then revealed that the top of the pin and circlip had been sheared and the pin was removed with the bottom circlip from the fork end, with the result that the roller was free. Examination of the lever at this roller point showed slight signs of rubbing on its lower surface.

230. Do you think that the marks on the upper lever were caused when this lever moved downwards on contact with the ground?

Yes I do. All the top bearing structure was driven downwards thus releasing the bottom bearing housing from the torque rod causing same to float free at this point. This would cause misalignment between the respective rollers and their bearing levers as was found.

231. Do you think the marks on the side of the top lever which is still attached to the structure is consistent with shearing the top of the pin at the circlip groove?

It is highly probable I think that this would take place with the force indicated by the marks on the lever.

232. Referring to the bottom roller and pin assembly, do you think that the missing circlip was similarly removed by the bottom lever allowing the pin and roller to detach?

Yes, this would take place after impact with the ground when the top bearing assembly was driving down, thus allowing the lever to strike the top of the pin on which the circlip was fastened and springing the same circlip from its groove.

233. (Mr. Fox was handed the lower lever). I would like you to examine the marks on the lower lever observing your remarks as to the degree of damage to the upper lever to remove the circlip and strike the top of the pin with such force as to shear it. Do you not think it reasonable that similar damage could be expected to be found on the lower lever?

I would expect that to have taken place. There is no evidence of any damage on the working face of that lever.

234. Would you explain to the Board how you think the top pin could have been sheared by the lever with the bottom lever not even marked?

The top portion of the rudder section in question received severe impact on contact with the ground which caused the top bearing assembly of the torque rod to be driven in a downward position which in relationship to the arm carrying the roller became lower and allowed the said arm to come down the fork end and strike the top of the pin and shear same at the top. The top of the pin was well clear of the face of the lever.

MR. F. A. FOX

235. With the absence of the roller and pin in the lower end would you tell the Board what effect this would have on the rudder control?

The effect of the absence of the roller and pin gives approximately 1 foot of free movement at the trailing edge of the rudder with the rudder bar control locked.

236. From your remarks am I right in saying that there appears to exist a very strong possibility that this lower roller and pin assembly was not in position before the aircraft hit the ground?

It is my considered opinion that this control was perfectly satisfactory at take-off, but it is possible that this roller was in such a position on its pin that vibration or other agents had loosened it and it had come away in the absence of a broken circlip.

WITNESS WITHDREW.

MR. R. A. MANUEL

237. Are you Mr. Roderick Alfred Manuel?

Yes.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

238. The Board is inquiring into an accident to Gannet XA332 on 30th January and we believe that you will be able to help us. Firstly would you please tell us your position in Fairey Aviation Company?

Chief Engineer.

239. Have you taken part in an Accident Investigation into this accident at Fairey Aviation, Bankstown?

Yes sir, I attended the meeting on Monday, 2nd February.

240. Did you investigate the wreckage at the scene of the crash?

Yes I did, particularly the tail unit.

241. Did you also investigate the parts of the aircraft after they had been returned to the works at Fairey Aviation?

Yes.

242. Are you aware of the views expressed by Mr. Samuels, Senior Scientific Officer from the D.S.L.?

Yes.

243. Do you agree with his opinions?

Yes.

244. Would you tell the Board what in your opinion caused this accident?

I cannot determine that. I have really no idea, but I think there could be two possibilities for the breakup of the tail unit. (1) Severe vibration and (2) sudden yaw. Both of those in my opinion would account for the damage sustained.

245. When you say a "sudden yaw" I presume you mean a very violent alteration of the aircraft's direction?

Yes, in the sense that it is a whip.

246. Would you say that this situation could be brought about by a very sudden deflection of the rudder?

I think the yaw condition could be equivalent.

247. I presume you mean a sudden side loading on the fin?

Yes.

248. Do you think that this could be caused by control action by the Pilot?

I don't really know the answer to that.

249. Do you think this could be caused by the entire rudder moving freely, i.e. not under control?

I think it is possible to set up a vibration condition, and that condition would lead to vibration.

MR. H. A. MANUEL

250. In your opinion could severe vibration lead to complete destruction of the tail unit?

Yes.

251. In your opinion then the accident was caused by some form of vibration leading to the damage causing the tail section to leave the aircraft in flight?

That or the yaw condition.

252. Would you care to enlarge on your theory of vibration and give the Board any possible causes?

Yes, it is my opinion that the first failure took place on the fin rear spar starboard side just below the lower rib and that it failed in tension. This failure could have been caused by the vibration and inertia loading from the fin. It also, of course, could be caused by a yaw. The fin then moves over to port violently with sufficient force to cause the top portion of the rudder to be thrown off due to the action of the mass balance weight. The fin and centre portion of the rudder then vibrate for a short period and the fin tears out its front attachment and leaves the aircraft, followed very rapidly by the centre portion of the rudder. It should be noted that the trim tube had been torn completely out of the centre portion of the rudder. This may have helped to keep the centre portion of the rudder on the aircraft a little longer than the fin. When the fin rear spar broke I think the aircraft would yaw violently. This I think broke the tail plane starboard front attachment away by bumping off the nuts on the attachment, although the attachment may not be completely clear of the bolts. The rear end of the top fuselage will have been weakened by the fin thrashing and the terrific load applied by the tail plane when the aircraft yawed, and it is then only a matter of a short time before the tail plane tears out this portion of fuselage and leaves the aircraft complete with elevators.

253. Would you say that from the start of the serious vibration that the sequence of events that you have just described would only take a very short time?

Yes I would consider 5 to 10 seconds.

254. Would that be the maximum time?

I could not definitely state a time of this as it is only my opinion.

255. Would you tell the Board what in your opinion could have initiated this vibration?

Actually I have no real opinion on it. I think it is possible engine vibration could have caused it, but apart from that I cannot offer any explanation.

256. Do you think loose control surfaces or hinges could have started it?

I examined the hinges and the hinge attachments. On this aircraft these were not in my opinion bad. I have seen aircraft much worse than these and therefore I do not think that would necessarily be the cause. It is possible that slackness in the servo control could set up tail plane

MR. R. A. MANGEL

276. Have you considered any other possible theories as to what might have caused the yaw or vibration?

I have given this matter considerable thought, but I am unable to offer any reasonable explanation for the yawed condition. It is possible that severe engine vibration developed and set up a tail plane vibration.

277. Have you found any evidence to date that there was any engine vibration?

No, but from the state of the wreckage I consider that this would be very difficult to ascertain.

278. Do you know of any cases of engine vibration which have been severe enough to be felt?

Yes, two cases have been noted at Bankstown (1) in this case the Pilot did not consider the vibration excessive, but the Telegraphist could not read his instruments. (2) On test an aircraft at the stall was found to be vibrating severely at the rear end although engine vibration was not considered bad. This was rectified by renewal of tail plane bushes and tightening of the servo linkage.

279. To your personal knowledge and the history of the firm have Fairey's any previous record of a similar incident?

No.

280. Have you any other information at all concerning this incident which you consider would be of value to the Board?

Yes. I do not consider the tail plane vibration was set up due to its being struck by any part becoming detached from the aircraft in flight. There is positive evidence that all 3 hoods were with the aircraft at the time of impact and there is no damage to the tail unit that in my opinion is caused by a piece of the aircraft.

WITNESS WITHDREW.

266. Observing that both actuating levers are joined by a tube which was not damaged also that the actuating arm securing bolts were still in good condition, do you think it possible for the top actuating arm to strike the top roller pin with such force as to shear the pin off, and badly score this lever, yet the bottom actuating lever which you state may have released the circlip in a similar manner remains unmarked?

Yes I think it is possible.

267. Will you explain to the Board why?

I think that these two actions need not have taken place at the same time. The top one could have been sheared when damage took place on the crash and the bottom one could have taken place at any other time previous to impact.

268. Do you think it reasonable to assume that when the lower lever displaced the circlip with sufficient force to release it that some mark should be observed on the operating face of the lower actuating lever?

It is reasonable, but not necessarily a severe mark.

269. Do you think there is any mark on the operating face of that lever which could be attributed to striking the circlip and the pin?

Striking the circlip yes, striking the pin no.

270. Would you agree that if the roller and pin had come out of the fork assembly that the actuating lever could have moved down into the fork allowing the rudder some degree of free travel?

Yes

271. It would be reasonable to expect then that had this happened some marks, both in the fork and on the toe of the actuating arm would be apparent.

Yes, but these would be severe marks.

272. It is observed that the fork is made out of steel and the arm out of a light alloy. Would you agree that the marks on both sections could be caused by the arm entering the fork end?

Yes, the marks could be caused by this, but it is my opinion that these marks are of too minor a nature.

273. Could you tell the Board then what may have caused the marking visible in the fork end?

I think this mark may have been caused when the roller became displaced.

274. From your evidence it would appear that there is a reasonable possibility that this roller and pin were displaced before the damage commenced to take place on the aircraft?

Yes.

275. If this is so it would be equally reasonable to assume that this was responsible for the initiation of the vibration or yaw which caused the ultimate break-up of the tail section?

Yes.

MR. H. A. MANDEL

257. Referring to slackness in the servo control, do you mean servo control of the elevator or rudder?

I was referring there to the elevator. It is known at Hayes in Middlesex that tail plane flutter can be induced with slack servo controls and particularly incorrect mass balance of the servo tab.

258. In the course of your investigation did you find any parts of the aircraft missing or not in their usual position which could have contributed to a looseness or a free movement in relation to the rudder bar of the rudder?

Yes.

259. Would you please tell the Board how this was discovered?

During the examination of the rudder servo mechanism or what was left of it I was particularly interested in the condition of the torsionbar. Whilst handling the lower portion of the rudder a part was heard to be rattling inside the fairing below the spring torsionbar. This was shaken out and proved to be a roller and pin with one circlip attached from the lower anchorage for the rudder torsionbar.

260. Would you tell the Board of the subsequent damage that was found to the upper rollers and arm of the torsionbar?

It was noted that the torsionbar assembly had been displaced in the accident and it was noted that the top torsionbar actuating ~~ax~~ lever was badly scored. A check was made of the condition of the roller assembly and it was found that the top circlip, together with the top shoulder of the roller retaining pin had been sheared off. The pin and roller were still retained in the top fork.

261. Referring to the damage of the top lever which you described as badly scored, was this caused in your opinion by the lever shearing off the top of the pin?

Yes.

262. I take it then that considerable damage had occurred to the arm rather than a score, a small piece had been torn out. You stated earlier in your evidence that the lower pin, together with the roller and one circlip was found in the lower fairing of the rudder.

Yes, the pin had the circlip attached.

263. Would you tell the Board how in your opinion this pin and roller became released?

There are 2 possibilities (1) the circlip had never been inserted, (2) the circlip had been pushed out when the torsionbar assembly had suffered damage in the crash.

264. Would you agree that the torsionbar assembly had been forced in a downward direction?

Yes.

265. On impact?

Not necessarily on impact. It was noted as previously stated that the centre portion of the rudder had torn away and the trim gear at that stage have been

COMMANDER W. J. LOVELL, R.A.N.

281. Are you Commander William John Lovell, R.A.N.?

Yes sir.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

282. Are you the Staff Naval Engineer Officer?

Yes sir.

283. Were you detailed to form an Accident Investigation Unit to inquire into the accident to Gannet XA332 on 30th January?

That is correct sir.

283. Is this document in front of you a summary of a meeting held by the Accident Investigation Unit at the Fairey Aviation Company, Bankstown on Monday, 2nd February?

Largely. The report was intended as a guide to the Board of Inquiry and was compiled by Commander Campbell from notes taken by him at that meeting.

284. Will you tell the Board when you heard of this crash and what action you took immediately afterwards?

I heard of the crash at approximately 1100 on Friday 30th January from Mr. Walker of Fairway Aviation who rang me to say that he had heard a rumour that the Gannet had just departed from Bankstown and had blown up somewhere in the Sylvania area. I rang C.S.O. to F.O.I.C.E.A. to inform him also suggesting to him that as we did not exactly know where the crash was that I remain where I was.

285. At this time were you custodian of the aircraft?

Yes.

286. When did you first get to the scene of the crash?

About an hour after I first heard of the crash which would be approximately midday, as soon as I had established where the crash was. Captain Smith sent me a message via Richmond to say would I go out to the crash and I told him I was trying to establish where it was.

287. When you arrived at the scene of the crash were there any other Naval personnel there?

Yes, Commander Campbell and Lieut. Cdr. Caws.

288. Will you tell the Board of the action you took as regards questioning the witnesses?

I was first introduced to Detective Sgt. Neal who had already interviewed a number of personnel in the area, who had seen the accident, and he in turn introduced me to whom he considered the most reliable witnesses. To do this it was necessary to travel in a radius of 1 1/2 miles to meet the various individuals concerned which took the latter part of the rest of the day. At the same time I was also organising the salvage of the aircraft with the able co-operation of Mr. Johnstone.

289. Did you interview any of the witnesses listed on the report?

Yes, I interviewed Mr. King.

COMMANDER W. J. LOVELL, R.A.N.

290. Do you consider him a reliable witness?
Definitely yes.
291. Who was the next one?
A Mr. Millington.
292. Do you consider him a reliable witness?
Yes. I also interviewed a Mr. Carbone.
293. Do you consider him a reliable witness?
Yes. I also saw a number of other witnesses.
294. When was it first reported to you that the tail section had come off the aircraft?
I think I was told by C.S.O.
295. I presume then that you based some of your questioning in trying to establish that this was in fact what happened?
Largely, but I did not ignore the other features of the aircraft or any feature that could have contributed towards the tail coming off.
296. Did you see the layout of the wreckage in the line of flight?
Almost undoubtedly.
297. As far as your investigations allow you to say would you agree that all major components of the aircraft with the exception of the parts listed on the diagram were at the scene of the crash?
Yes as far as it was possible to ascertain.
298. Are you a qualified maintenance test pilot?
Yes sir.
299. Have you carried out any test work on Gannets?
Yes.
300. Have you flown Gannets?
Yes.
301. Roughly how many hours have you had solo on Gannets?
Between 20 and 30.
302. Have you ever experienced any unusual vibrations when you have been flying Gannets?
No sir other than the normal stall vibrations.
303. Would you tell the Board from your observations of the wreckage and subsequent investigation, of any theories you may have arrived at which may have caused this accident other than those listed in the report?
To elaborate theory No. 2 I have always thought that there is the P.C.U. failure. The engine itself might have started to vibrate for any reason possibly oil starvation which might in its turn have set up airframe vibration particularly as an engine is prone to set up more extreme vibrations in

COMMANDER W. J. LOVELL, R.A.N.

304. Were you at Nowra on 4th February when Mr. Manuel, Chief Engineer of Fairey Aviation stated that he had found a loose roller pin with one circlip attached in the roller rudder fairing of the crashed aircraft during examination at Bankstown?

Yes sir.

305. And you examined with other Engineer Officers and Mr. Manuel this fitting on a serviceable aircraft?

Yes sir.

306. Subsequent to this did you examine the torque tube stop attachments on the damaged components?

Yes sir.

307. When you saw the roller pin and circlip which were found in the roller fairing would you tell the Board what this indicated to you as regards being a possible cause of the accident?

At first sight it looked a very reasonable possibility of providing the trigger for the subsequent vibration and disintegration of the tail. Mr. Manuel, however, himself pointed out that there appeared to be a strong possibility of the bottom operating arm knocking the top circlip of the lower roller out of position at the same time of the impact. This seemed on the surface of it a little improbable until subsequent investigation showed that the top circlip of the top roller was also adrift. In fact the circlip groove had been smashed by the actuating lever. There therefore seemed a possibility of the bottom circlip being knocked clear by the bottom actuating lever.

308. Do you recall noticing the damage to the working face of the top actuating lever?

Yes sir.

309. Will you describe that damage?

A portion of the striking lever had been broken off apparently by force of impact on the top roller pin.

310. Did you notice also that the torque tube which connected the 2 actuating arms was undamaged other than a downward displacement?

It seemed so.

311. Also that both operating arms were still securely fastened by their positioning bolts to the tube?

I did not notice the top one, but the bottom one was securely attached.

312. For your information it has been established by previous witnesses that this condition was so. In view of this evidence and the damage that you noticed to the top actuating lever would you agree that it is possible for the lower actuating lever to similarly strike the lower roller pin displacing the circlip without showing any mark or damage.

It seems possible but unlikely.

313. Can you tell the Board what the effect of the control of the rudder would be if the pin and roller were displaced allowing the actuating arm to travel down into the or either side of the form?

COMMANDER W. J. LOVELL, R.A.N.

From the pilot's point of view he would lose control over his rudder over approximately one third of one half of his pedal travel. In other words if the pilot held his rudder bar central his rudder would be free to move to some considerable degree but not the full range. It could not reach the stops unless he had his rudder pedal full over to one side or the other.

314. Do you think the marks at the bottom of the fork section and the mark on the bearing or working surface of the actuating arm are consistent with being in engagement?

Yes.

315. If the roller had come free and the roller arm was undergoing rapid oscillation it could be expected that the tip would be more marked than it is at present when it engaged the bottom of the fork arm?

Yes.

316. Can you suggest any other means by which the mark on the bottom of the fork piece could have been brought about?

At the moment, no.

317. From the evidence you have given and your examination of the parts, would you think it reasonable to assume that this lower roller pin and circlip was displaced before the damage began to occur?

Yes sir I would.

318. Do you think this circlip could have been displaced by any other way?

I feel that if it had been weaker than normal it is possible it could have become displaced at the time of the impact and the roller and pin fell out during the salvage operations.

319. Have you any other information which you consider would be of assistance to the Board?

No sir.

WITNESS WITHDREW.

A/COMMANDER J. G. B. CAMPBELL, D.F.C., R.A.N.

320. Are you Acting Commander John Gillan Butler Campbell, D.F.C., R.A.N.?

Yes sir.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

321. Were you detailed to form an Accident Investigation Unit to investigate the circumstances of the accident to Gannet XA332 on 30th January?

Yes sir.

322. Is this report I show you a summary of a meeting held by this Unit at Fairey Aviation, Bankstown, on Monday, 2nd February?

Yes sir.

323. Have you any evidence in addition to this report which you consider the Board ought to know or that would/of any assistance to the Board?

No sir.

324. Was there anything you saw at the wreckage which made you consider any possibility for the accident?

There was one thing that came up this morning whilst discussing the safety harness. We realised on discussion that the lap straps of the Pilot's safety harness had broken. We thought he may have tried to undo the straps and the lap straps had broken. The shoulder box must have torn away from the lap strap. The right one was definitely broken. One other minor point in the discussion with the witnesses was that he apparently changed his mind about the colour of the smoke - he said it was whiteish grey and not yellow.

325. Would you say from your examination of the wreckage that the Pilot had attempted to abandon the aircraft?

No I do think at first he may have tried to, but in view of the state of the safety harness I would say no.

WITNESS WITHDREW.

LIEUT. CDR. W. A. CAWS, R.A.N.

326. Are you Lieutenant Commander William Alfred Caws, R.A.N.?

Yes sir.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

327. Were you a member of the Accident Investigation Unit into the cause of the accident to Gannet KA332 on 30th January?

Yes sir.

328. Have you anything to add to the Accident Investigation Report issued by Commander Campbell, which I believe you have seen?

I have nothing to add to it Sir.

329. Did you investigate the remains of the aircraft at the scene of the accident?

Yes sir.

330. Also at Fairey Aviation after the parts had been brought in?

Yes sir.

331. Are you aware of the views expressed by Mr. Samuels, Principal Scientific Officer of the Defence Standards Laboratory?

No sir.

332. Have you heard what his opinion is?

No.

333. Mr. Samuels informed the Board that in his opinion, from visual examination only, that all the failures were by shear. There was no evidence of inter-crystalline corrosion or cracking on any part of the structure which he examined, mainly the tail section which we have under review. From your observations at the scene of the wreckage and examination at Fairey Aviation, would you agree with those opinions?

I agree there was no inter-crystalline corrosion that I saw. I personally thought one of the fractures I saw was not a shear fracture, otherwise I agree.

334. Which part were you referring to as not agreeing with Mr. Samuels?

Port side rear fin attachment which I thought was a tension failure.

335. Would you tell the Board what, in your opinion, caused this accident?

Vibration.

336. I presume you mean severe vibration in the airframe?

Yes.

337. What in your opinion may have caused this vibration?

From the appearance of the parts which I saw, I found no cause whatsoever for the vibration.

LIEUT. CDR. W. A. CAWS, R.A.N.

to begin with. Since then I have looked at all the Gannet aircraft at Nowra personally and I found a number of items which, if they had been serious enough, would have been the cause of a vibration which may or may not have caused this accident.

338. Would you tell the Board just what parts you are referring to?

The first one I considered was to do with the rudder. I considered the possibility of the trim tab on the rudder being free to move under the normal control of the pilot. From my inspection of the rudder of XA332 I found no evidence of what I was looking for, that is the freeness of the trim tab. I did in fact find that the trim ~~tab~~ tab was no freer than in aircraft I inspected at Nowra. I next considered the possibility of the mass balance weight on the rudder being loosely attached. I found that on XA332 this was not so and I found no evidence on other aircraft at Nowra. I considered the possibility next of the fin having been loose. It is my experience that it is possible for the fin to vibrate considerably during start up of the second engine, either on the take-off or in the air. From my examination of XA332 and also the aircraft at Nowra I am convinced that the aircraft was in 100% condition there.

339. How would you tell?

I would expect to find the tail plane attachment bolts loose in the bushes and possibly the 2 bolts which attach the tail plane incidence jack through the trunnion block to the tail plane to be rather loose. This was not so. I next considered the possibility of the platform which is part of the rear primary structure of the fuselage having been loose on the aircraft, but an inspection of XA332 convinced me that the failure of this part was immediate and I saw no signs of a previous defect in its attachment to the main fuselage. I also looked at the rear frame of the step platform anticipating cracks in the frame at or around the tail plane attachment fittings. This was not so. I was therefore convinced the epennage was correctly attached to the aircraft at the time of take-off. So far I had found no cause for vibration to have occurred. I also inspected on XA332 and the Nowra aircraft the tail plane servo tab for similar defects to that I looked at on the rudder, finding none in any of those machines. I inspected the rudder attachments of all the Nowra machines looking for excessive side or vertical play of the rudder. With the exception of one machine I found none. It was not possible for me to determine on XA332 the state of the rudder in this respect. I inspected the tail plane mass balance attachments and the attachments of the tail plane tips to the tail plane and with the exception of one fitting which was cracked, I found no other defect. I do not consider that this failure was the cause of vibration, it being a known defect since 1957 to my knowledge. I have experienced many of these before and am quite convinced in this respect. I also inspected the rudder trim tab screw jack finding no greater movement on XA332 than I have been used to finding on other machines. On the Nowra machines I checked the rudder trim torque tube stop and adjuster on

LIEUT. CDR. W. A. CAWS, R. A. N.

the advice of Mr. Manuel, the Fairey Aviation Chief Engineer. I found no defects during this inspection but I have established to my satisfaction that a certain type of defect could cause the vibration which I consider was probably responsible for the failure of the ~~roller~~. This defect is as follows:- If the roller was not fitted in the bottom adjustable torsion bar attached to the spring bar or if the adjustable fork end of the bottom torsion lever had failed, it is possible for the rudder movement to be completely independent of rudder pedal movement.

340. Are you sure that it is possible for the rudder movement to be completely independent or partially independent?

Partially independent. Allowing this defect to occur would result in partially uncontrolled rudder movement causing the rudder to fail, possibly in or ~~somewhere~~ near the bottom of the rudder servo tab by contact with the elevators. As the pin which holds the roller in position is secured by two circlips, one at either end, I have made some inquiries relating to the failure of these circlips for the possibility of failure of these circlips, and consider that this may have occurred in XA332.

341. Why do you think there is a possibility that this might have occurred in XA332?

There are 2 or 3 ways in which these circlips could fail, one is the possibility of fatigue. In my opinion the circlip has a definite tendency to fatigue in one of 4 places, namely in the corners of the cutouts, in between the 3 tongues. Another possibility of failure would be a crack being produced in the spring clip during the heat treatment of the material. Another possibility would be an occlusion being formed in the sheet metal during manufacture prior to the actual manufacture of a clip from the material. I have discussed the question of vibration of these circlips with Mr. Fifer, Principal Scientific Officer, Garden Island, who was not willing to express an opinion without knowing the full nature of the build-up of the port structure in which this circlip is fitted, but who did convince me that it would be possible for the circlip to fail due to vibration ~~exceeding~~ should the correct frequency be experienced.

342. How did he convince you of this?

He quoted me a number of typical examples, giving the general picture of this type of failure and by nature of the shape of this circlip. The circlip can twist even in situ on the pin in its groove.

343. Looking at the remainder of the section would you agree that the torsionbar assembly had been forced in a downward direction?

Yes.

344. On impact?

Yes.

345. Observing that both actuating levers are joined by a tube which is not damaged and also that the actuating arm securing bolts are still in good condition, do you think it possible for the top actuating arm to shear the top roller with such force as to shear the

and badly score this lever, yet at the bottom actuating lever, which has been struck, may have released the circlip in a similar manner, remains unmarked?

Yes, I think that is possible.

346. Will you explain to the Board why?

Well I don't agree that the actuating lever is unmarked. There are signs on the edge which would make contact with the top of the circlip in the manner which is allowed by the appearance of the marks. There are signs of it having run over the top of some object and the top of the top fork where the circlip is missing also shows signs of having been run over by a piece of metal. I accept the possibility that the lever did force the spring clip inwards towards the torque tube, but think it improbable that it forced the circlip completely out of its groove.

347. Do you think it reasonable to assume that when the lower lever struck the circlip with sufficient force to release it that some mark should be observed on the operating face of the lower actuating lever?

I agree.

348. Do you think there is any mark on the operating face of that lever which could be attributed to striking the circlip and the pin?

No.

349. Would you agree that if the roller and pin had come out of the fork assembly that the actuating lever could have moved down into the fork allowing the rudder some degree of free travel?

Yes I do.

350. Would it be reasonable to expect then that had this happened some marks, both in the fork and on the actuating arm would be apparent?

Yes, I would think so.

351. It is observed that the fork is made out of steel and the arm out of light alloy. Would you agree that the marks on these sections could be caused by the arm entering the fork end?

Yes I agree.

352. From your evidence and from your examination of the assembly, do you think that there is a reasonable possibility that this roller and pin were displaced before the damage commenced to take place on the aircraft?

Yes.

353. If this is so, it would be equally reasonable to assume that this was responsible for the initiation of the vibration which caused the breakup of the tail section?

Yes.

LIEUT. CDR. W. A. CAWS, R.A.N.

354. In your examination of the wreckage did you examine the tail ~~pipe~~ from the engines as far as possible?

To some degree.

355. Did you find any marks which may be consistent with the parts of the engines such as rotor blades passing down the tail pipe?

I did not notice any.

356. As Inspection Officer at Nowra, has there been any instance of severe vibration in Gannet aircraft reported to you?

Yes.

357. Were the causes ascertained?

In one case, yes, and in the other, no.

358. Would you tell the Board what caused the vibration?

In the first aircraft the aircraft vibrated while running on the starboard engine or while both were running. It did not vibrate while the port engine was running alone. The E.C.U. was removed from the aircraft and a new one fitted and a successful ~~test~~ flight was carried out. Examination of the defective E.C.U., which was removed, revealed ~~no~~ defect in the E.C.U. In the second case it was reported to me that an aircraft which had just been received from Fairey Aviation was found on test flight to vibrate at the stall and the vibration continued until 105 knots was achieved. I flew in this aircraft in the centre cockpit and confirmed the vibration. The vibration appeared to come from the tail area, resulting in vibration of the wing tips to an amplitude of approximately 3 inches to 6 inches. The aircraft stalled clean and dirty at a ~~speed~~ ^{correct} speed, the vibration occurring at the point of stall, but the vibration would not leave the aircraft until the air speed had increased to 105 knots. I considered that subject to an inspection of the rear end of the fuselage there was insufficient elevator control to put the aircraft completely into the stall. I inspected the rear fuselage and found no defect whatsoever. In the light of recent happenings I have again thought of this matter further and consider that it is possible that the ~~setting~~ of the tail plane might be slightly incorrect and intend to follow this up. The cause of the vibration has not been determined in this aircraft.

359. When you examined the wreckage at Fairey Aviation did you examine the elevator hinge attachments of XA332?

Visually, yes.

360. Did you find any slackness in the elevator hinges?

I only did a visual examination.

361. Did you consider the automatic pilot at any stage?

Yes. I pulled the front part of the fuselage of XA332 to pieces, piece by piece, at the site prior to removal. I found the automatic pilot control box, the on/off switch, was at the stand-by position, but it came away in

LEUT. CDR. W. A. CASS, R.A.N.

I was not able to determine from the control to which the switch was originally attached, whether the automatic pilot had been on, off or at the stand-by position.

362. Would you consider that had this been in the 'On' position that it could have caused a break-up such as this?

Possibly. It would certainly cause vibration of any of the controls should there be air in the hydraulic system. I found no evidence to suggest that the automatic pilot had or had not been a serviceable piece of equipment at the start of the flight.

363. It has now been established from the wreckage that the rudder trim was in the neutral position and the elevator was in a fully back position with his nose up. In these circumstances would you consider that switching in of the automatic pilot might have had the effect of triggering off the vibration?

I would not like to express an opinion without going into the automatic pilot somewhat further.

364. From your investigation of the automatic control you have not been able to establish at all whether the automatic pilot was in any position have you?

That is correct.

365. It has been reported that fluid was seen leaving the aircraft during flight just prior to the break-up. Will you tell the Board what this fluid might have been?

I think it was fuel venting from the fuel vent valves.

366. Is it possible, in your opinion, for venting to take place with the aircraft loaded to capacity as shown in the Form A.S.700, and that is three-quarters full?

Yes.

WITNESS WITHDREW.

FLIGHT LIEUTENANT E. SHAW

367. Are you Flight Lieutenant Edwin Shaw?

Yes.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

368. Are you a Test Pilot with the De Haviland Co.?

Yes.

369. It is understood that you witnessed a Gannet taking off at about 1045 from Bankstown on Friday, 30th January.

Yes.

370. Would you tell the Board what you saw?

My impression was that the take-off run was longer than usual, but this could occur if he had not started his run from the maximum length available. I saw his nose wheel and front oleo bumping up and down on the take-off run. It bumped quite badly. At about 800 feet the aircraft waffled both wings and then yawed to the left about 15-20 degrees. It then straightened up and resumed the original course.

371. Did the undercarriage retract fully?

Yes, I saw it go fully up.

372. From your point of view, when the aircraft yawed, did it appear to kick to port and then recover as though the Pilot brought it back under control?

Yes, I would say the Pilot was in control. The yaw was more noticeable as I had watched another Gannet take off some 30 minutes previously.

373. Did you notice any vapour coming from the aircraft?

No, nothing of that nature.

374. What is the condition of Bankstown airfield?

The length is satisfactory, but the ground is very rough.

WITNESS WITHDREW.

MR. L. W. DIXON

375. Are you Mr. Leslie William Dixon, Chief Inspector, De Havilland Aircraft Co.?

Yes.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

376. Did you see this Gannet leaving the airfield?

Yes, I saw it from my office window for about a second or second and a half. This one was lower than normal and couldn't have cleared the hangar by very much. His climb seemed to be flat and the aircraft was straight.

377. What height would you say he was?

About 60-65 feet.

378. Was there anything unusual apart from the low take-off?

I don't think so. The undercarriage wasn't fully retracted when I saw it.

WITNESS WITHDREW.

J. N. KITCHING

379. Are you Mr. John Newton Kitching?

Yes.

WITNESS CAUTIONED. CAUTION UNDERSTOOD.

380. I understand you saw this particular Gannet take-off.

I saw two take-off that morning and I particularly looked at the undercarriages noting the different sequence between the two aircraft. On the second one the port and nose wheel went up and the starboard wheel followed very slowly.

381. Did you watch the complete retraction?

Yes, I saw all doors close.

382. Did you see the take-off run?

No, my office windows would not allow that.

383. Did you see vapour of any sort?

No, I saw nothing abnormal except for the starboard wheel of the second aircraft going up slowly.

WITNESS WITHDREW.

J. J. Sherborne
.....
COMMANDER, R.A.N.

M. James
.....
CAPTAIN, R.A.N.

J. Stambrook
.....
CAPTAIN, R.N.

Royal Australian Navy.

IN REPLY PLEASE QUOTE

No. _____

ACCIDENT INVESTIGATION REPORT.GANNET X.A.32.GENERAL DESCRIPTION OF FLIGHT.

The aircraft took off from Bankstown airfield at 1044K and climbed straight onto course. The take off was normal but the aircraft was held on the ground for a longer period than appeared necessary, thus subjecting the aircraft to additional shocks from the rough airfield surface.

The climb away appeared normal and at approximately 800 feet the aircraft yawed slightly to the left. The right oleo was slow in retracting.

Over Padstow the undercarriage was reportedly raised and lowered, remaining in the half up position.

The aircraft was next reported on at Oyster Bay and the witness stated that the engine was "revving up" and seemed to be labouring. The tail was swaying from side to side, but nothing was observed to fall from it. The aircraft was at a low altitude.

Quite a number of reports were received next from the Sylvania Heights area. They vary in detail, but are generally similar.

Near Princes Highway the tail unit of the aircraft ~~x~~ started to break up. A total of five pieces fell from the aircraft. The order of disintegration is thought to be:-
1. Top of rudder. 2. Fin. 3. Centre of rudder. 4. Elevators and elevator fins. 5. Rear fuselage fin fairing.

These pieces followed the general line of flight of the aircraft and covered a distance of approximately 700 yards. The direct distance from first disintegration to impact is approximately 1,100 yards.

While the first three parts were parting from the aircraft it remained on a fairly level keel, but when the

elevators were lost, it climbed steeply. The engine note was heard to increase and the aircraft levelled out, banked to the right, then the left and started to lose height rapidly. It rolled over to the left nearing the ground and struck the ground nearly inverted.

The following events as reported by witnesses immediately prior to the crash are worthy of note:-

1. The aircraft appeared to be "snaking" or "swaying" from side to side.
2. A yellow fluid was being emitted from the tail unit in a continuous spray.
3. Estimates of the aircraft's altitude vary from 300 feet to 1,500 feet.
4. An explosion was heard just prior to the first part of the tail unit falling away.
5. A second explosion with dark smoke occurred just prior to impact.
6. The aircraft banked to the right then left before rolling over near the ground.
7. The pilot's canopy appeared to be closed and had a brown appearance as though there was smoke in the cockpit.
8. The aircraft climbed sharply after the elevators came away. A large puff of black smoke was seen between the elevators parting and the sharp climb commencing.

The sharp climb after the elevators were lost could be expected, because of the normal up loading on this unit. The loss would also cause the flaps to be momentarily lowered.

The explosions and black smoke are not understood, but possible rough engine handling may have occurred at this time. Possibly the fire extinguishers may have been used.

The tail unit fractures were examined with a binocular microscope and all fractures appeared to be rapid and recent, consistent with the accident.

STRIPPING OF AIRCRAFT.

When the aircraft wreckage was inspected the following facts were noted:-

1. The nose undercarriage was selected. The selector was in the down position and the guard over the up position.
2. Port and starboard nose oleo down locks were unmade.
3. Both cartridges in the starboard wheel well fire extinguisher were fired.
4. The control column was in the hard right position in the control box.
5. The pilot's safety harness release box was in the fasten position. Both shoulder straps were locked in the box but both lap straps were out of the box.
6. Both throttles were at the flight idle gate.
7. The port H.P. cock was in ON position. The starboard H.P. cock was nearly OFF and beyond H.P. cock shut angle.
8. The auto pilot control box switches were not functioning.

WEATHER REPORT.

As obtained from Mascot, the weather conditions at 1050K were:-

Wind 170°/ 8 knots.

Visibility 17 miles - 5 miles to the south.

Showers to the south.

4/8 Cumulus and Strato-cumulus at 2,500 feet.

7/8 Strato-cumulus at 3,500 feet.

Q.N.H. 1024mbs.

Temperature 21° C.

Dewpoint 17°.

Visibility was restricted in the immediate locality of the accident by rain. The air was calm and no turbulence was experienced by the first Gannet.

POSSIBLE CAUSES OF ACCIDENT.

Theory No. 1.

That tail unit vibration started the disintegration of the tail unit.

It has been established that the aircraft had flown 530 hours without the tail plane bushes being changed.

Tail plane vibration occurs near the stall and is most noticeable. This continues till the aircraft has regained a speed of approximately 105 knots.

The tips of the elevators can move 3" each way during this vibration.

It was not possible to discover any cause for vibration from examination of the wreckage.

Propellor or engine vibration can be transmitted to the tail unit where the forces are magnified.

Theory No. 2.

A possible P.C.U. failure due to loss of oil may have set up a vibration which was transferred to the tail unit. The P.C.U. failure may have caused overspeeding of an engine, and may account for the yellow coloured fluid reported by one witness.

The aircraft had a new propellor fitted after an P.C.U. change and had flown only 45 minutes since.

Theory No. 3.

The aircraft was held on the ground during take off for a longer period time than was necessary. The rough airfield may have induced various loadings which set up a vibration in the tail unit.

Mr. E. Shaw, the De Havilland test pilot witnesses the take off and noticed that the oleos were working hard.

From examination of the wreckage, no possible reason could be found, to cause such a failure as did occur.

GANNET ACCIDENT CHECK SHEET.

MARK..A.S..1...ROLE.....SERIAL NO..X.A..332...UNIT.MELBOURNE.AIR.GROUP...
 AIRCRAFT DOCUMENTS HELD BY.....

COCKPIT CHECK.

<u>1.WING FOLD SELECTOR LEVER.</u>	Not found - all pins housed in spread.
<u>2.PARKING BRAKE.</u>	Not found.
<u>3.ELEVATOR TRIM.</u>	Unrecognisable for trim position.
<u>4.L.P. FUEL COCK.</u>	Not found.
<u>XX</u> OUT BOARD....N.F.....	INBOARD.....N.F.....
<u>5.RUDDER TRIM.</u>	Unrecognisable for trim operation.
<u>6.FLAPS CONTROL.</u>	Flaps free - lever not found - jacks not sight
<u>7.AILERON BIAS SWITCH.</u>	Not possible to determine.
<u>8.H.P. FUEL COCK.</u>	Port ON Starboard OFF
	OUTBOARD.....INBOARD.....
<u>9.JET PIPE TEMP. CONTROL ISOLATING SWITCH.</u>	Not found.
<u>10.INNITION W/L.</u>	Not found.
	OUTBOARD.....INBOARD.....
<u>11.THROTTLE LEVERS.</u>	Flight idle both.
	OUTBOARD.....INBOARD.....
<u>12.HYDRAULIC PRESSURE.</u>	Not Known.
<u>13.OIL COOLER SNUFFER SWITCHES.</u>	" "
	FORWARD.....AFT.....
<u>14.FUEL CONTENTS GAUGE.</u>	" "
	MAIN TANK.....TOTAL TANKS.....
<u>15.BRAKE PRESSURE GAUGE.</u>	" "
<u>16.R.A.T.O. MASTER SWITCH.</u>	" "
<u>17.U/C SAFETY COVER.</u>	Locked down.
	RED.....GREEN.....
<u>18.U/C WARNING LIGHT.</u>	Not known.
<u>19.U/C POSITION INDICATOR.</u>	" "
	RED.....GREEN.....
<u>20.AUTO PILOT DISENGAGED INDICATOR.</u>	Not known.
<u>21.EXHAUST GAS TEMP WARNING UNIT.</u>	" "
	PORT.....STARBOARD.....
<u>22.JET PIPE TEMP. WARNING LIGHT.</u>	Not known.
	PORT.....STARBOARD.....
<u>23.OIL TEMP. GAUGES.</u>	" "
<u>24. FLAP AND AILERON TRIM INDICATORS.</u>	" "
	TOP DIAL.....BOTTOM DIAL.....
<u>25.PRESSURE HEAD SWITCH.</u>	" "
<u>26.RADOME INDICATOR.</u>	" "
<u>27.EMERGENCY HYDRAULIC CONTROL.</u>	" "
<u>28.GEN. FAILURE LAMP.</u>	" "
	PORT.....STARBOARD.....
<u>29.HOOD JETTISON HANDLE.</u>	" "
<u>30.BATTERY ISOLATING SWITCH.</u>	" "
<u>31.OXYGEN REGULATOR.</u>	" "
<u>32.STARTING FUEL PUMP.</u>	" "
<u>33.CONTROL SURFACE LOCKING LEVER.</u>	" "
<u>34.AIRCRAFT LOAD.</u>	" "

EXTERNAL CHECKS.

<u>TANK.</u>	<u>CONTENTS.</u>	<u>CONDITION.</u>
<u>MAIN FUEL.</u>		
<u>BOMB BAY LONG RANGE.</u>		
<u>MAIN OIL.</u>		
<u>GEAR BOX OIL.</u>		
<u>HYDRAULIC OIL.</u>		

REMARKS.

Royal Australian Navy.

IN REPLY PLEASE QUOTE

No. _____

Edward Gordon Beattie states:-

I am a married man and reside at 59 Mulyan Street, Como. On the 30th January, 1959 I went fishing in the George's River at about 7 a.m. in the morning. I fished at Cranbrook as marked on the map. I was there at about 8 a.m. and fished on. At about 10 a.m. I saw a Gannet plane come across and go south, and about half an hour later that would be about 1030a.m. I saw another Gannet plane fly over me, at a low height, the engine was like as though it was revving up, there appeared to be something wrong with the plane at that stage, it seemed to be labouring, ~~XX~~ travelling in a straight line, but there appeared to be something wrong with the tail portion, as there was asway from side to side on the tail portion, the plane next climbed and went up over the gap in the mountain known as bottle glass head, or Cranbrook mountain, I saw nothing fall from the plane, but, a boy named Ray Goulthard of the Tivole Esplanade, Como, claims that he saw something fall in Kidds Gully, which is the continuation of Oyster Bay.

Witness. (SGDA.) NEAL.

. (SGD.) E. BEATTIE.

Detective Sergeant 3rd Class.

Sutherland. 2/2/59.

Royal Australian Navy.

IN REPLY PLEASE QUOTE

No.

Thomas Hohn Robert MILLINGTON states:-

I am a married man and I reside at 72 Sutherland Road, Jannali. I am a linesman by occupation and I am employed by the Sydney County Council.

At about 1045 on the 30th January, 1959, I was standing in Rockley Street, Sylvania Heights, when I saw a plane coming from the direction of Bankstown and heading towards Cronulla at about 1500 feet. It was about over the top of Oyster Bay when I first saw it, and I noticed a yellow coloured fluid coming from the tail portion of the plane and I formed the impression it was fuel and it was in a continuous spray and forming into fumes. The next instant the tail portion veered slightly to the left and when above the Princes Highway, I saw two small pieces from the top of the rudder come off, then immediately following the large part of the rudder come off. As it went over the hill I saw the tail piece fall off in one piece and then it disappeared over the hill. The next thing I saw was flame and smoke come up and then I heard an explosion.

Just before seeing the plane that got into difficulties I saw another similar plane coming from the direction of the coast and going towards Bankstown. That was at about 0900. Later I saw another plane circling after the crash. After the plane had crashed I went to Todman avenue, Sylvania Heights, and found the tail portion in No 15 in that street.

(SGD.) T.J.R. MILLINGTON.

WITNESS. (SGD.) A.E. NEAL.

DETECTIVE SERGEANT 3/C.

Royal Australian Navy.

IN REPLY PLEASE QUOTE

No. _____

SYLVANIA,

1st February, 1959.

Ailsa Isobel KNIGHT states:-

I am a married woman and I reside at 102 Corea Road, Sylvania. Shortly after 1030 on the 30th January, 1959, I was at my back steps in Corea Road when I first heard the roaring noise of a plane coming towards my house coming from the direction of Sylvania Heights. When I first saw the plane it was up about 300 or 400 feet, that is an estimate only. To me it was a single type of military plane. The engine was roaring very loudly and it appeared to be in control of the pilot but flying low. When it got about 200 feet past my place I saw a small piece of the plane about 1 foot from the the big tail portion coming from the plane. Just prior to seeing them I heard an explosion, similar to a large cracker going off. The big part of the tail fell the quicker and glided from side to side then came on its side and fell to the ground. The other part just floated down. After the parts left the plane, it continued on and commenced to wobble from side to side and went towards my pump house and when it was over the caravan park it gave a large explosive noise and then dark smoke came from it. Then the plane appeared to shoot towards the right and then it banked towards the left and appeared to be turning over and disappeared behind some trees and then I saw a mushroom of smoke and flame. I identified the part that was on the lorry as the large part I saw fall from the plane. When the plane passed over me the pilot's cover seemed to be closed and had a brown appearance as though smoke was in the cockpit.

(SGD.) A.I. KNIGHT.

WITNESS. (SGD.) A.E. NEAL.

DETECTIVE SERGEANT 3/C.

Royal Australian Navy.

IN REPLY PLEASE QUOTE

No. _____

SYLVANIA.

1st February, 1959.

Roy Francis JOHNSTONE states:-

I am a driver by occupation and I reside at Lot 13 Terrace Avenue, Sylvania. During the last war I was in the Army, and during those years I saw several planes crash.

At about 1045 on the 30th January, 1959, I was in Princes Highway, Sylvania Heights, in a truck and it was then that I saw a Gannet plane come out of clouds and it appeared to be in trouble and the engine was roaring. The plane was swaying from side to side whilst in motion and going away from Sylvania Heights towards Cronulla. The plane then seemed to right itself and then the tail fin with some small pieces, broke away and glided to earth. The plane then continued on a straight course at about 400 or 500 feet and then the large tail portion came away. After that came away there was a large puff of black smoke the the plane appeared to point upwards then veered to the right and banked to the left and turned over and fell to the earth nose first. I saw a lot of smoke and then flames.

(SGD.) R.F. JOHNSTONE.

WITNESS (SGD.) A.E. NEAL.

DETECTIVE SERGEANT 3/C.

Royal Australian Navy.

IN REPLY PLEASE QUOTE

No. _____

Michael CARBONE states:-

I am a market gardener by occupation and I reside at 96 Bellingara Road, Miranda.

At about 10.45 on the 30 th January, 1959, I was working in the market garden at the above address when I saw a Gannet plane in the sky over Sylvania Heights. It was flying in a straight route as if coming from Bankstown and going towards Sutherland Hospital. The engine was normal and then I saw portion of the plane in small pieces fall from it and then the tail upper portion fell off and straight after that the engine revved up and then a large portion of the tail flap fell off. Then I noticed the plane start to lift into the air and then it went into a dive turning towards the left and came down towards the earth at a sharp angle at the same time turning over on its back. On hitting the ground there was an explosion and then a lot of black smoke and flames shot into the air. I then raced over to where the plane crashed and there was a lot of people there. Shortly afterwards Police, Ambulance and Fire Brigade arrived.

(SGD.) MICHAEL CARBONE.

WITNESS. (SGD.) A.E. NEAL.

DETECTIVE SERGEANT 3/C.

Royal Australian Navy.

IN REPLY PLEASE QUOTE

No. _____

SERGEANT POPPLEWELL, NAVAL DOCKYARD POLICE.
44 Taren Point Road,

Taren Point.

Sergeant Popplewell did not actually see the crash of the aircraft in the air.

He heard the engine sounding unusually loud and different to its normal noise. The engine sounded as though it was overspeeding, rising from a steady noise to a high pitch noise.

The high pitched noise lasted for a maximum of 15 seconds or possibly less.

He states that he experienced a propellor being lost from a boat with consequent engine over-revving. The Gannet engine noise reminded him of this incident and he thought the aircraft may have lost a propellor.

To: Assistant Secretary,
Flag Officer in Charge, East Australian Area,
Naval Headquarters,
SYDNEY.

PROVISIONAL LIST OF WITNESSES FOR BOARD OF
INQUIRY INTO LOSS OF GANNET AIRCRAFT X.A.332.

FAIREY AVIATION COMPANY.

Mr. R.A. Manuel.
~~Mr. G. Alington.~~
~~Mr. F. Fox.~~
~~Mr. G. Lowther.~~
~~Mr. G. Bayliss.~~

Chief Engineer.
Chief Test Pilot F.A.C.
Chief Inspector F.A.C.
Senior Foreman, Flight She
Assistant Chief Inspector,
F.A.C.

② Mr. FINN - FA *Case Officer on Case.*

A.I.D.

~~Mr. G. Mc Donald.~~

Inspector in Charge,
A.I.D., F.A.C.

POLICE.

① Det. Sgt. Neal.
Sgt. Popplewell.

Sutherland Police Station.
Naval Dockyard Police.

D.S.L.

~~M. Samuels.~~

Defence Standards
Laboratory.

NOWRA.

L.Cdr. J. Wishart.
L.Cdr. W. Caws.
Lieut. K. Barnett.

Commanding Officer, 816 Sq
MAG., Air Engineer Officer.
Inspection Officer, Nowra.
C.O., 725 Squadron.

CIVILIANS.

③ Mr. J. Wakeham.
Mr. Trevethan.
Mrs. A.I. Knight.
Mr. M. Carbone.
Mr. R.F. Johnstone.

130 Gibson Avenue, Padstow.
123 Faraday Road, Padstow.
102 Corea Road, Sylvania.
96 Bellingara Road, Miranda
Lot 13, Terrace Avenue,
Jannali. (Linesman.)
339 Princes Highway,
Sylvania.
59 Mulyan Street, Como.
(Statement only.)

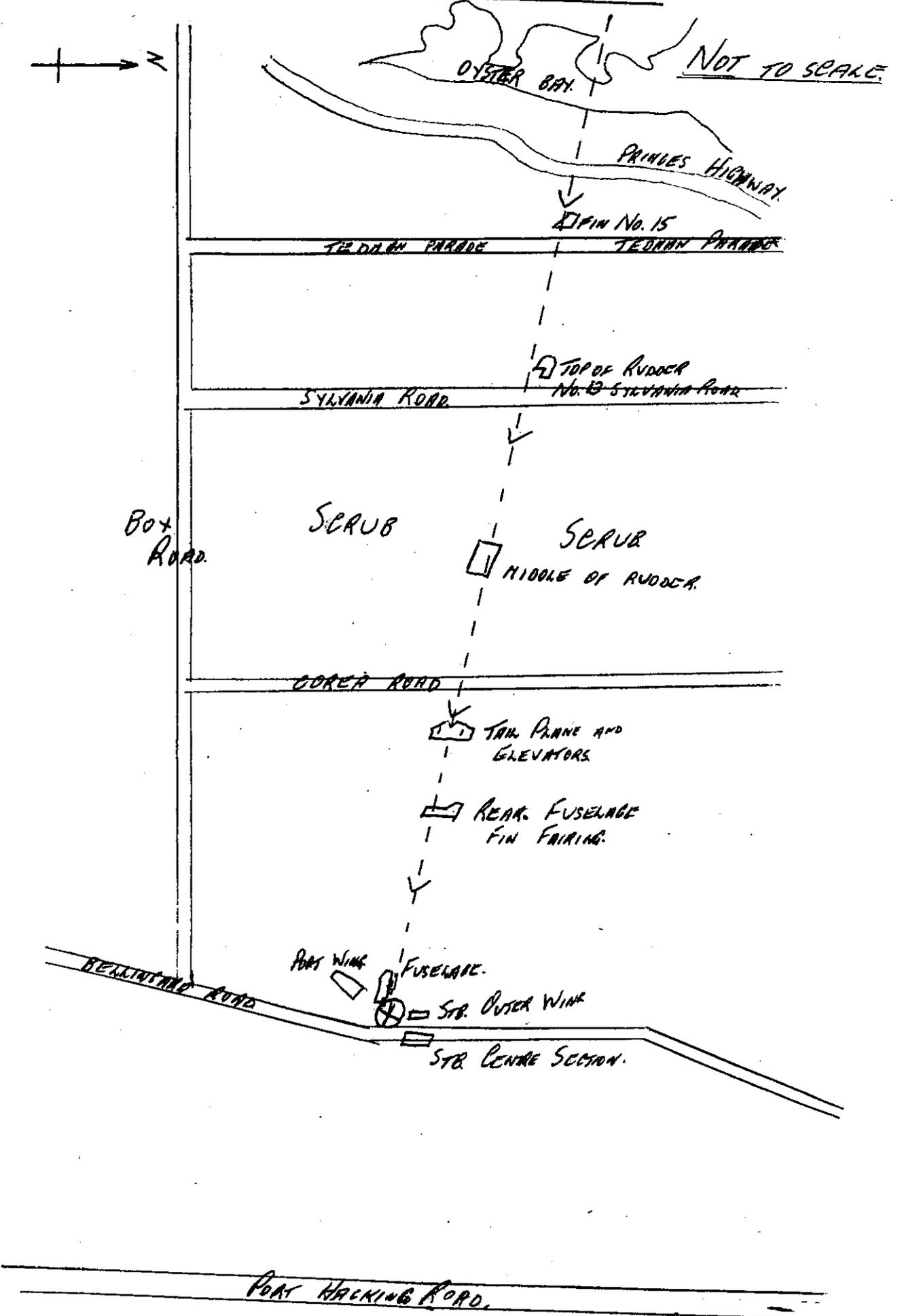
Mr. B. King.

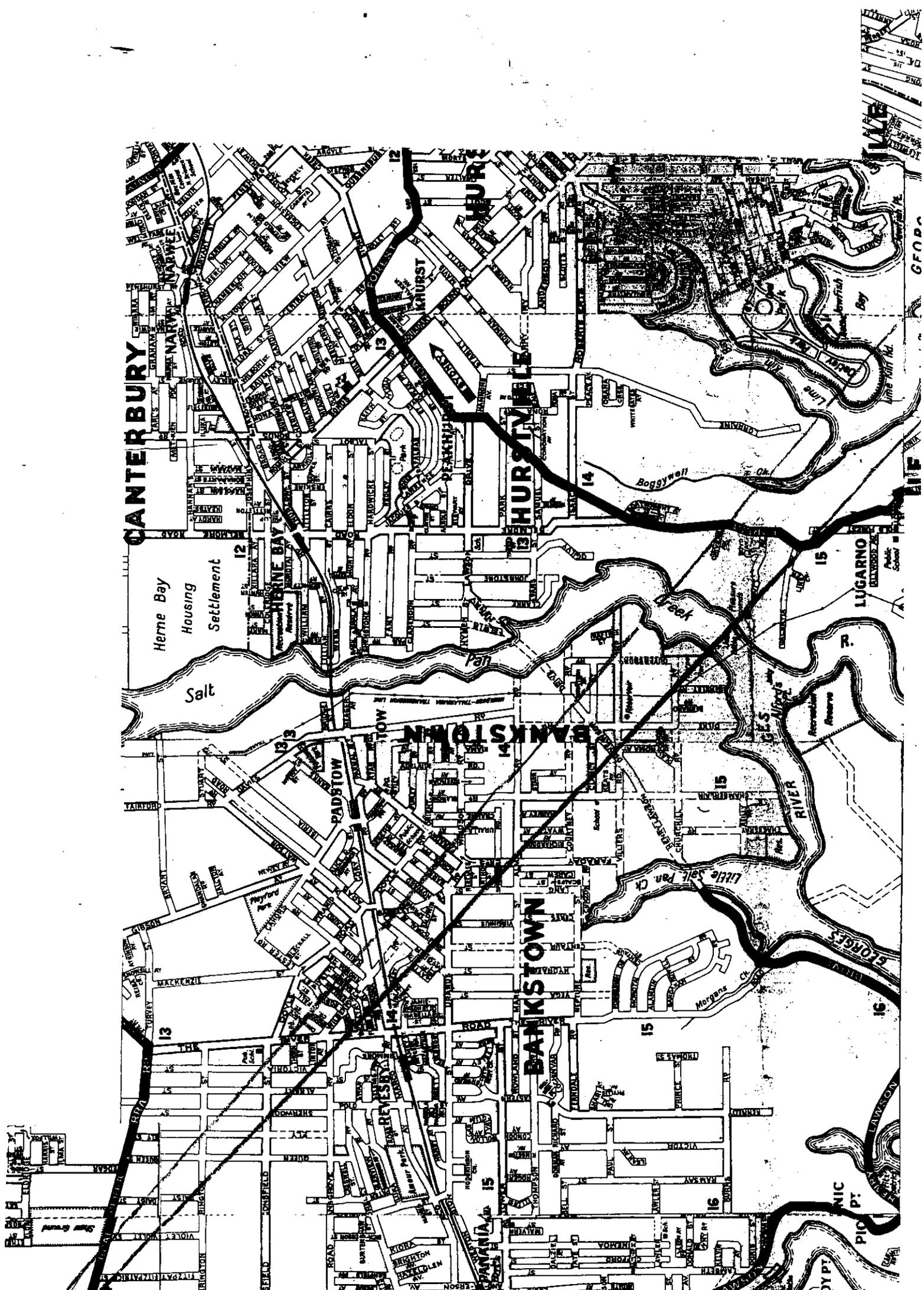
~~Mrs. E.G. Beattie.~~

SYDNEY AREA.

Mr. Millington - linesman
Cdr. J.G.B. Campbell, D.F.C. R.A.N. Base Aviation Officer
Eng.Cdr. W.J. Lovell, R.A.N. Base Air Engineer ~~OFFICER~~
Officer.

DIAGRAM OF TAIL UNIT PIECES.





CANTERBURY

Herne Bay
Housing
Settlement

Salt

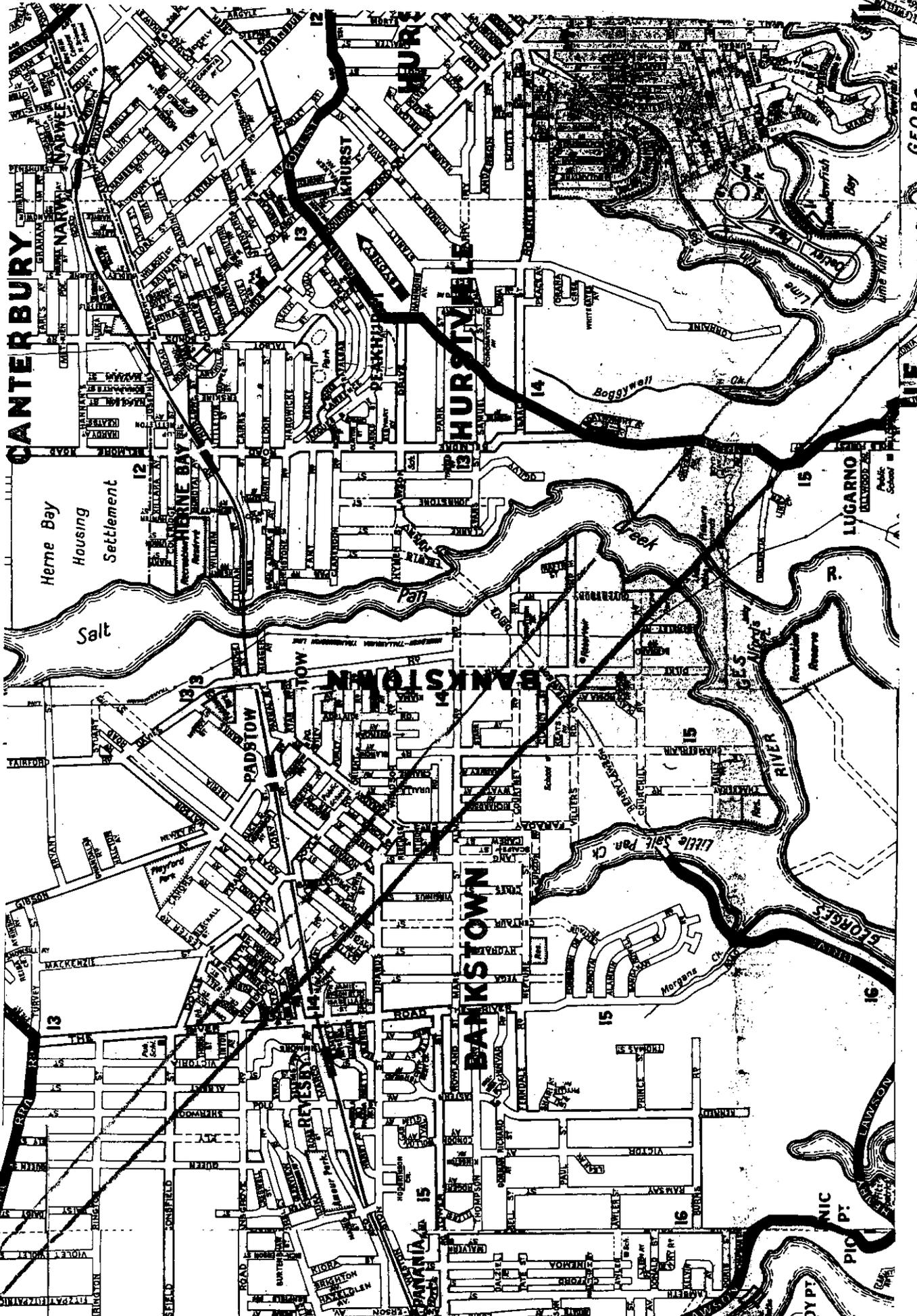
BANKSTOWN

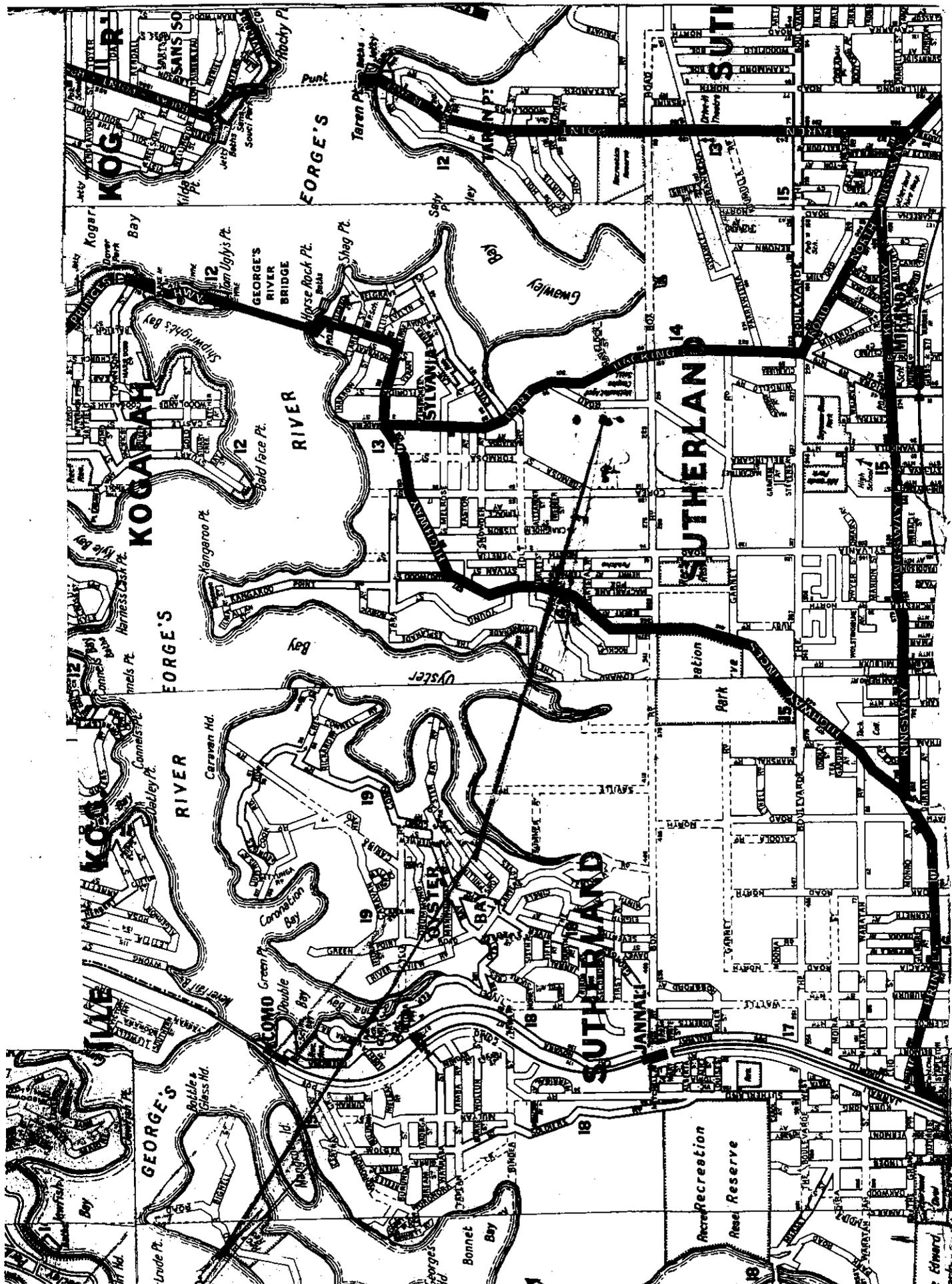
PADSTOW

BANKSTOWN

LUGARNO

PICNIC
PT.





REPORT ON AIRCRAFT ACCIDENT

DEPT. OF NAVY
3054/118/62
23/1/59
JAN.

A. 27 (Sheet 1).
(Reprinted 1953.)

TO **GANNET A.S.Mk.1 X.A.332**
(Aircraft Type and Number)

FROM: The Commanding Officer **H.M.A.S. ALBATROSS**

DATE: **5 - FEB 1959**

Ref. No. **3/59**

Former Signal Report (if any)

D.T.G. Month **300248Z JAN.**

TO: **The Secretary, Dept. of the Navy.** (2)

Originator **R.A.N.A.S. NOWRA.**

(Copies to: **F.O.I.C.E.A. (20)**)

Addressee **A.C.N.B.**

RECEIVED
C 9 FEB 1959
NAVY REGISTRY

816 Sqdn.

F.O.I.C.E.A.

F.O.C.A.F. MELBOURNE

- Aircraft Parent Unit
Squadron **816**
Air Group,
Ship or
Station **H.M.A.S. ALBATROSS**
- Date of Incident **30th January, 1959** Time **0045Z**
Site (a) Name of Ship or Air Station from which aircraft operated **BANKSTOWN**
(b) Place of accident, if not (a) **MIRANDA, SYDNEY**
(c) If ship, whether at sea or in harbour

3. Type of airframe and engine, and extent of damage

Details	Airframe	Engine		Brief Description of Damage
		Single or Port	Starboard	
Type and Mark	GANNET A.S. Mk. 1			ZZ
Serial Number				
Total Hours run or flown (as applicable)				
Date last installed in airframe				
Date of minor or recondition				
Category of Damage				

4. Air Engineer Officer's Report.

The cause of the accident has not yet been established but a board of enquiry has been convened. The aircraft documents have been held by the A.I.D. Fairey Aviation Cy. Bankstown.

Weight on landing.....
State whether airframe and engine log books and Form A 700 have been examined and result of examination **Not examined in full.**
Is Form A.21 being rendered? (Quote reference if known) **Nil.**
Is "Other Defect Reporting" action being taken?.....
Signature of A.E. Officer.....

5. Squadron Commander's Report.

Lieutenant Arnold was briefed by me to ferry Gannet XA332 from Bankstown to Nowra. Having carried out similar ferry flights in the past he was familiar with Bankstown aerodrome and the procedure in force regarding the transit of Naval aircraft to and from the aerodrome.

Lawet 9/2

Signature of Sqdn. Cdr. (Sgd.) **D.C. JOHNS**

Signature of Commander (Air).....

7. Remarks of Commanding Officer of Ship or Parent Station.

- (1) Cause of accident, including contributory factors.
- (2) What remedial action has been taken locally as result of this accident?
- (3) Recommendation to higher authority to prevent recurrence.
- (4) Any further remarks (including any disciplinary action taken).

- 1. A board of enquiry has been convened to establish the cause.
- 2. Gannet tail surfaces, holding bolts etc. have been examined for any unusual features or maladjustment.
- 3. Nil
- 4. Nil

Signature of Captain

V. A. T. Smith
CAPTAIN

Enclosures (*Delete those not included*)

A.25 (Sheet 2).

Medical Report.

~~Emergency Parachute Descent~~

~~Forced Alighting on Sea~~

~~Meteorological Report~~

~~Fire Report~~

Other Specialist Officer's Report

Witnesses Statements

Other Enclosures.....

Deferred Reports (*Delete those not being rendered*)

Board of Inquiry

A.I.O.'s Report

Further Technical Report (Not A.21)

Other Reports.....

A. 25 (Sheet 2). To be completed and stapled to Sheet 1 when reporting on a "Flying Accident." (See A.25 Instructions.) (Reprinted 1953.)

8. Weather Conditions at Site:
 at time of Incident:
 Weather Overcast, some light rain in area.
 Cloud Base and Amount 4/8 at 2500ft 7/8 at 3500 ft.
 Visibility 20 m.
 Wind-speed and direction 170° - 8kts.

9. Nature of flight:
 Operational or Non-operational Non-operational
 Day or Night Day
 Authorised by C.O. 816 Sqdn.
 Purpose of Flight Ferry, Bankstown to Now

10. Briefing Instructions for the flight (relevant to the incident)

Not applicable.

Signature of Briefing Officer. (Sgd.) D.C. JOHNS
Lieut. Cdr.

11. (a) Did Fire Occur? Put:—Total aircraft, airframe, engine fire only, suspected fire. No fire. Note:—If possible state source, e.g., engine, bomb bay, etc.	(b) When did Fire Occur? Put:—In air, after crash, starting up, etc.	(c) Was Graviner System Operated? (i) Put:—Yes by inertia switch. Yes by hand. No. Not fitted. Not known. (ii) Did extinguisher bottles Discharge? Note:—(c) (i) & (ii) to be filled in for all accidents whether fire occurred or not.
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12. Occupants of Aircraft:

Names to be entered in order of Duty: Pilot, Observer, Aircrewman, Passenger, etc.:	Duty	Name and Initials	Rank	Number	Degree of Injury
Degree of injury to be classified as: Missing, Killed, Injured (admitted to Sick Quarters or Hospital), Slightly injured (not admitted to Sick Quarters or Hospital), Uninjured. (Quote as M: K: I: I(S) or U as appropriate).	Pilot	ARNOLD P.J.	Lieut E (A/E) (P)	R.A.N.	K.

Parent Unit of Pilot (if not stated in Section I)

13. Flying experience of Pilot: Hours last 3 months (a) Total 44.25 (b) On-Type 40.20

Power Unit	Total Hours Solo				(c) Total Number of Deck-Landings (Note (iv))				(d) Total I.F. Hours (Note (v))		
	(a) Day and Night (Note (i))		(b) Night (Notes (i) & (ii))		This Type		All Types		Actual	Link	
	This Type	All Types	This Type	All Types	Day	Night	Day	Night			
Single		298.05								(e) Current Assessment	
M/E	157.35	157.35								Flying (Note iii)	I.F. (Notes ii, iii & v)
Jet		37.40							5	5	

NOTES:

- (i) Not to include the flight in question.
- (ii) To be quoted if incident occurred during night flying.
- (iii) To be quoted by Squadron Commander in accordance with current method used in Flying Log Books.
- (iv) To be quoted if accident occurred when taking off from or attempting to land on carrier.
- (v) To be quoted if loss of control may have been due in part to flying at night, or in bad visibility, or cloud by day.

OFFICERS' REPORT OF AN AIRCRAFT ACCIDENT

SECTION A

Christian Name Evter James	Rank or Rating Lieutenant (E) (P)	Age
Squadron Number 816 R.A.N.	Type and Mark of Aircraft Gannet A.S. Mk I.	
Purpose of Flight Approx 1030	Nature of Accident	
Perry Bankstown to Nowra	Operational	Non-Operational

Probable cause:
 was seen to strike the ground apparently out of control shortly before the impact, pieces of the airframe had been seen separately. These included the entire tail unit. The cause of failure is under investigation.

SECTION B

Observer	hrs.	Medical Category A1/57	Date of last Medical Examination 20.1.59.	
Ability Assessment		No. of hours flown 39 days pilot	Duration of flight 0.5 min.	Hours on Type 190
Instrument (where applicable) white card		05 pilot	Name of flying instructor W. G. ...	
Flying instructor for previous six months 25 hrs.		Name of flying instructor to whom reporting officer was debriefed W. G. ...		

Neuro-psychiatric defects (particularly of recent origin):
 Surgical histories of minor symptoms only, with no recent major surgery. Had been temporarily grounded for one week prior to accident. Was found fit to fly on the morning of the accident.

Record of previous accidents in Log Book.

SECTION C

PERSONNEL : Degree of Injury—

Name and Initials	Rank or Rating	Degree of Injury	Action taken: Admitted, S.S.Q., Hospital, First Aid in Aircraft, etc.
ARNOLD	Lt (E)	Minor	Admitted to hospital
(1) Estimate of amount of warning of crash: probably less than one minute. Given by airframe disintegration			
(2) Estimated speed of impact: Not known Given by			

Posture adopted before crash (sitting, standing, facing aft, forward)	Part of aircraft causing injury
- N.A. -	

Mark of the crash pad, if any, and whether it was in the "crash" or "stowed" position.

REPORT ON AIRCRAFT ACCIDENT

Appendix 'C'
23/1/81

A. 2 (Sheet 1).
(Reprinted 1953.)

TO **GANNET A.S. No. 4 K.A. 219**
(Aircraft Type and Number)

FROM: The Commanding Officer **H.N.A.S. ALMAYESS**

DATE: **FFB 1959** Ref. No. **3/59**

Former Signal Report (if any)

D.T.G. Month **000162 JAN.**

TO: **The Secretary, Dept. of the Navy.**

Originator **H.N.A.S. HOWRA.**

(Copies to: **F.O.L.C.B.A. (2)**
G.O. 816 Sqdn.)

Addressee **A.C.N.S.**

F.O.L.C.B.A.

F.O.C.A.P. MELBOURNE

1. Aircraft Parent Unit

Squadron **816**

Air Group,
Ship or
Station **H.N.A.S. ALMAYESS**

2. Date of Incident

10th January, 1959

Time **0045**

Site (a) Name of Ship or Air Station from which aircraft operated **BANKSTOWN**

(b) Place of accident, if not (a) **MERRIMA, SYDNEY**

(c) If ship, whether at sea or in harbour

3. Type of airframe and engine, and extent of damage

Details	Airframe	Engine		Brief Description of Damage
		Single or Port	Starboard	
Type and Mark	GANNET A.S. No. 4			SE
Serial Number				
Total Hours run or flown (as applicable)				
Date last installed in airframe				
Date of minor or recondition				
Category of Damage				

4. Air Engineer Officer's Report.

The cause of the accident has not yet been established but a board of enquiry has been convened. The aircraft documents have been held by the A.I.D. Fairy Aviation Co. Bankstown.

Weight on landing

State whether airframe and engine log books and Form A 700

have been examined and result of examination

Not examined in full.

Is Form A.21 being rendered? (Quote reference if known)

Nil.

Is "Other Defect Reporting" action being taken?

Signature of A.E. Officer

5. Squadron Commander's Report.

Lieutenant Arnold was invited by me to ferry Gannet XAJ19 from Bankstown to Sydney. During flight no similar ferry flights in the past he was familiar with Bankstown aerodrome and the procedure in ferrying the transport of Naval aircraft to and from the aerodrome.

Signature of Sqdn. Cdr.

(Sgt.) D.G. JOHNS

6. Commander (Air)'s Report.

Signature of Commander (Air) _____

7. Remarks of Commanding Officer of Ship or Parent Station.

- (1) Cause of accident, including contributory factors.
- (2) What remedial action has been taken locally as result of this accident?
- (3) Recommendation to higher authority to prevent recurrence.
- (4) Any further remarks (including any disciplinary action taken).

1. A board of enquiry has been convened to establish the cause.
2. Gunnet tail surfaces, landing bolts etc. have been examined for any unusual features or maladjustment.
3. Nil
4. Nil

Signature of Captain _____

Enclosures (*Delete those not included*)

A.25 (Sheet 2).

Medical Report.

~~Emergency Parachute Descent~~

~~Forced Alighting on Sea~~

~~Meteorological Report~~

~~Fire Report~~

Other Specialist Officer's Report

Witnesses Statements

Other Enclosures _____

Deferred Reports (*Delete those not being rendered*)

Board of Inquiry

A.I.O.'s Report

Further Technical Report (Not A.21)

Other Reports _____

A. 25 (Sheet 2). To be completed and stapled to Sheet 1 when reporting on a "Flying Accident." (See A.25 Instructions.) (Reprinted 1953.)

8. Weather Conditions at Site:
 at time of Incident: **Overcast, some light rain in area.**
 Weather **Overcast, some light rain in area.** Day or Night **Day**
 Cloud Base and Amount **4/8 at 2500; 7/8 at 3500** Authorised by **G.O. 816 Sqdn.**
 Visibility **20 m.** Purpose of Flight **Ferry, Freetown to Ho**
 Wind-speed and direction **170° - 8kts.**

9. Nature of flight:
 Operational or Non-operational **Non-operational**

10. Briefing Instructions for the flight (relevant to the incident)

Not applicable.

Signature of Briefing Officer **(Sgt.) D.C. JOHNS**
Lt. Col.

<p>11. (a) Did Fire Occur?</p> <p>Put:—Total aircraft, airframe, engine fire only, suspected fire. No fire.</p> <p>Note:—If possible state source, e.g., engine, bomb bay, etc.</p>	<p>(b) When did Fire Occur?</p> <p>Put:—In air, after crash, starting up, etc.</p>	<p>(c) Was Gravier System Operated?</p> <p>(i) Put:—Yes by inertia switch. Yes by hand. No. Not fitted. Not known.</p> <p>(ii) Did extinguisher bottles Discharge?</p> <p>Note:—(c) (i) & (ii) to be filled in for all accidents whether fire occurred or not.</p>
---	--	--

12. Occupants of Aircraft:

Names to be entered in order of Duty:	Duty	Name and Initials	Rank	Number	Degree of Injury
Pilot, Observer, Aircrewman, Passenger, etc.: Degree of injury to be classified as: Missing, Killed, Injured (admitted to Sick Quarters or Hospital), Slightly injured (not admitted to Sick Quarters or Hospital), Uninjured. (Quote as M: K: I: I(S) or U as appropriate).	Pilot	ARNOLD P.J.	Lt. Col. E (A/E) (P)	R.A.N.	K.

Parent Unit of Pilot (if not stated in Section I)

13. Flying experience of Pilot: Hours last 3 months (a) Total **44.25** (b) On Type **40.20**

Power Unit	Total Hours Solo				(c) Total Number of Deck-Landings (Note (iv))				(d) Total I.F. Hours (Note (v))			
	(a) Day and Night (Note (i))		(b) Night (Notes (i) & (ii))		This Type		All Types		Actual	Link		
	This Type	All Types	This Type	All Types	Day	Night	Day	Night				
Single		298.05									(e) Current Assessment	
M/E	157.35	157.35									Flying (Note iii)	I.F. (Notes ii, iii & v)
Jet		57.40							5	5		

NOTES:

- (i) Not to include the flight in question.
- (ii) To be quoted if incident occurred during night flying.
- (iii) To be quoted by Squadron Commander in accordance with current method used in Flying Log Books.
- (iv) To be quoted if accident occurred when taking off from or attempting to land on carrier.
- (v) To be quoted if loss of control may have been due in part to flying at night, or in bad visibility, or cloud by day.

MEDICAL OFFICER'S REPORT OF AN AIRCRAFT ACCIDENT

SECTION A

Surname of Pilot ANDERSON	Christian Names Robert James	Rank or Rating Lieutenant Pilot	Age
Ship RAF "Asterisk"	Squadron Number 816 S.F.S.	Type and Mark of Aircraft RAF "Asterisk"	
Date and Time of Accident 300 Jun 1959 approx 1050.	Purpose of Flight ferry test to base	Nature of Accident <input checked="" type="checkbox"/> Operational <input type="checkbox"/> Non-Operational	

Circumstances of accident and probable cause:

Aircraft was seen to strike the ground apparently out of control shortly after taking off. Shortly before the impact, pieces of the aircraft had been seen falling separately. These included the entire tail unit. The cause of the aircraft failure is under investigation.

SECTION B

Total flying time		Medical Category	Date of last Medical Examination	
Pilot 745 hrs.	Observer	1/59	30.1.59.	
Flying Ability Assessment		No. of hours flown	Duration of flight	Hours on Type
Clear Hood 5 day	Instrument (where applicable)	55 day of accident	0.5 min.	100
5 night	same as day	05 Pilot.	Nature of flying during past month	
Flying intensity		1st Lt. of 816 S.F.S. at base of operations in 1958		
Average hours per month for previous six months		25 hrs. Squadron.		

History of previous physical or neuro-psychiatric defects (particularly of recent origin):

Medical & surgical histories of minor symptoms only, with no recent abnormality. Had been temporarily grounded for one week prior to accident with General told. Was found fit to fly on the morning of the accident.

Number, nature and date of previous accidents:

None.

SECTION C

1. INJURIES TO PERSONNEL: Degree of Injury—

Crew Duty	Name and Initials	Rank or Rating	Degree of Injury	Action taken: Admitted, S.S.Q., Hospital, First Aid in Aircraft, etc.
Pilot.	R.J. Anderson	Lt (P)	K.	
	- was living alone -			

Degree of Injury specify as: U—Uninjured; M—Missing; I—Injured and admitted S.S.Q. or Hospital; D—Drowned; K—Killed; I(s)—Injured not admitted to S.S.Q.

2. INJURIES RELATIVE TO AIRCRAFT: (1) Estimate of amount of warning of crash:

Approx 1000 ft. one minute. Given by **RAF "Asterisk"**

(2) Estimated speed of impact:

100 mph. Given by **RAF "Asterisk"**

Evidence Given by	Precautions taken to prevent injury	Posture adopted before crash (sitting, standing, facing aft, for'd)	Part of aircraft causing injury
PILOT ...			
OBSERVER ...			
T.A.G. ...			
OTHERS ...			

NOTE: In the case of injuries caused by the Pilot striking a gunsight, the mark of the gunsight and type of crash pad, if fitted, is to be stated. If the pad is moveable, state whether it was in the "crash" or "stowed" position.

SECTION D
(For statistical purposes)

Site of Injury	Pilot	Observer	Aircrewman	Others
Cranium				
Face				
Neck				
Cervical Vertebrae				
Upper Arm R or L	}			
Forearm R or L				
Hand R or L				
Thorax				
Thoracic Vertebrae				
Abdomen				
Lumbar Vertebrae				
Pelvis and Sacrum				
Thigh R or L				
Leg R or L				
Foot R or L				
Joints				
Other sites				

2. State in detail and degree of injuries sustained, giving post-mortem findings where applicable: burning of soft tissues; complete charring of soft tissues above shoulders. severe burning of all limb muscles, upper limbs to stage of charring, lower limbs to scorching of muscle. only skin left on body was over back and buttocks, where it was comparatively unharmed, being protected by back of seat, parachute back rest, as well as overalls, and underwear - the latter being intact over the back and buttocks.

SECTION E

1. REMARKS ON SAFETY EQUIPMENT, including material factors, which contributed to or prevented injury in relation to:—

Cockpit Layout, Safety Harness, Seats, Mae West, Parachute and Dinghies, Goggles, Oxygen Mask and Equipment, Flying Clothing, and other safety devices.
Cockpit completely wrecked and burnt. Good control in "downspin" but hand found in wreckage. parachute and dinghy in situ. harness in "off" position. shoulder straps not connected, leg straps still connected. helmet found about 2 or 3 feet from skull, severely damaged anteriorly, chin strap not found. inner helmet & oxygen mask near chest, with straps intact.

2. OTHER FACTORS:

Visual factors (atmospheric conditions, windscreen, foreign bodies, hydraulic leaks, dark adaptation, cockpit lighting, glare by night or day), Oxygen, Noxious Gases, "G" factors, Fatigue, use made of First Aid Kit or Emergency Rations.
Weather conditions considered non-contributory.

3. Subsequent handling of the Case (e.g., Duty, C.A.M.B., Ophthalmic examination, etc.), General Conclusions and Recommendations:
Major impact completely destroying aircraft, followed by severe fire. Considered a "non-survivable" accident.

Date 2nd February, 1959.

Signature of Medical Officer [Signature]

Rank [Blank]

DEPT. OF N
3054/118

WM:CM.CNW 38/12.
TOR 120227Z.

FROM: FOIC EA.

TO: ACNB.

D. T. G. 120155Z FEB 59.

UNCLASSIFIED

ROUTINE

FINDINGS AND MINUTES OF BOARD OF ENQUIRY AIRCRAFT
ACCIDENT GANNET XA332 FORWARDED TODAY THURSDAY.

2. BOX NO TS40 CONTAINING AN AIRCRAFT COMPONENT FROM
WRECKAGE WILL ARRIVE CANBERRA TOMORROW FRIDAY 13 FEB PER
PASSENGER TRAIN EX SYDNEY.

R19

Dawot 17

1ST NM
HNB
DCNS
DNI
DAWOT
RECS

2ND NM
3RD NM
TH NM
SEC
DEP SEC
DAMR
AS X 31/12

UNCLASSIFIED MESSAGE

FM FOIC EA

TO NAS NOWRA

INFO FOCAF
ACNB
MELBOURNE

PRIORITY

060858Z

THERE IS A POSSIBILITY OF CIRCLIPS FITTED TO ROLLER
BEARING RETAINING PINS IN ADJUSTING PLUGS OF RUDDER
SPRING BAR ASSEMBLY BECOMING DISPLACED IN GANNET AIRCRAFT
2- ASSEMBLY SHOWN IN AP4487A VOL 1 SECT 3 CHAP 4 FIG 7 IS
TO BE INSPECTED FOR MISSING OR LOOSE CIRCLIPS AND REPORT
ACTION TAKEN

1/060858Z FEB 59

REL- CSO

DIST- 3 ADO CSO ADSEC BOO BAO A/BAO NAO (3) GIMSO

SS77 D-0903Z

6/2/59 MINUTER YOUNG

LJ

CHKD *Young*

WM:ED CNW111/06
TS 060933Z

NAVY OFFICE - COPY OF MESSAGE

FROM POIC EA
TO NAS NOWRA INFO: POCAF MELBOURNE ACNB.

METHOD OF
TRANSMISSION

D. T. G.

060858Z FEB 59.

UNCLASSIFIED

PRIORITY

THERE IS A POSSIBILITY OF CIRCLIPS FITTED TO ROLLER BEARING
RETAINING P1 NS IN ADJUSTING PLUGS OF HUDDER SPRING BAR ASSEMBLY
BECOMING DISPLACED IN GANNET AIRCRAFT.

2. ASSEMBLY SHOWN IN AP4487A VOL 1 SECT 3 CHAP 4 FIG 7 IS TO
BE INSPECTED FOR MISSING OR LOOSE CIRCLIPS AND REPORT ACTION TAKEN.

Reference to...

DISTRIBUTION

HNB
DAVOT ✓
RECS

DAMB
DNAS
AS X94/6

DEPT.
3054/118/

DE/MK CNW 2/03
TOR 030028Z

527

FROM : FOIC EA
TO : FOCAP NAS NOWRA INFO ACNB KUTTABUL

D.T.G. 022325Z FEB 59

PRIORITY

UNCLASSIFIED

QR AND AI CHAPTER 23.

A BOARD OF INQUIRY CONSISTING OF CAPTAIN F STOVIN-BRADFORD
DSC RN (NHQ SYDNEY) PRESIDENT CAPTAIN F W PURVES RAN
(STAFF OF FOCAP) COMMANDER F W SHERBORNE RAN (NAS NOWRA)
IS TO ASSEMBLE ON SHORE AT NAVAL HEADQUARTERS SYDNEY AT
0930 THU 5 FEB 59 TO INVESTIGATE THE CIRCUMSTANCES SURROUND-
ING THE LOSS OF GANNET AIRCRAFT KA 332 ON 30 JAN 59.

2. SHORTHAND WRITER WILL BE PROVIDED FROM MY OFFICE.
3. ALL RELEVANT REGULATIONS FORMS LOGS AND DOCUMENTS
ARE TO BE PROVIDED BY NAS NOWRA TOGETHER WITH AN OFFICER
TO ACT AS OFFICER OF THE COURT.
4. SQUADRON COMMANDER AND SQUADRON AEO WILL BE REQUIRED
AS WITNESSES.

awct 5/2

1ST NM
HNB
DCNS
DNI
DAWOT
RECS

2ND NM
3RD NM
SEC
HEB
DCNP
DGS
DAMR

AS X 8/3

9 COPIES *Handwritten*

ZL9/30 CNW 27/30
GM:GM:LW
TCR 300234Z

FROM: NAS NOWRA
TO: ACNB INFO: FOIC EA

AC NO UNCLASSIFIED NEEDY
OR REFERENCE

D.T.G. 300216Z JAN 59

RESTRICTED

PRIORITY

REGRET TO INFORM YOU THAT LT P J ARNOLD AE(P) HAS BEEN
KILLED IN AN AIRCRAFT ACCIDENT.

2...NOK MRS B ARNOLD HAWKE STREET RUSKISSON N S W BEING
INFORMED

1STNM
HNB
DCNS
DMI
DAWOT
RECS

2NDNM
3RDNM
SEC
DEP SEC
HPB
DAME
DNAS
MDG
DNA

TI

Handwritten signature
Bank wife -

*Accid Wife Barbara Joyce Arnold.
has per flight. C'webb Trading Bank, Unawa
WBAW 30/1/59.*

RECEIVED
C 2 FEB P.M.
NAVY ~~RECEIVED~~ ON 39/30.
FOR 300416Z.

E-28 118 62		
3054	118	62

Jan 7
5 12 59

FROM: NAS NOWRA. AC NO UNCLASSIFIED REPLY OR REFERENCE.
TO: ACNB INFO POIC EA POCAP.

RESTRICTED

D.T.G. 300218Z JAN 59.

ROUTINE

30

IFAA ARTICLE 602.

- (A) GANNET A S 1 AIRFRAME NO LA332 AIR FRAME HOURS NK LOG BOOKS WITH P A C
- (B) NK
- (C) HMAS ALBATROSS 816 SQUADRON
- (D) LIEUTENANT (E) (A/E) (P) PETER JAMES ARNOLD RAN DEAD. NEXT OF KIN MRS BARBARA JOYCE ARNOLD HAWKE ST HUSKISSON NSW NAS NOWRAS 300216Z
- (E) N A
- (F) N A
- (G) MIRANDA SYDNEY 300045Z
- (H) N A
- (I) A/C CRASHED IN TRANSIT BANKSTOWN NOWRA. BEING DELIVERED FOLLOWING INSTALLATION OF MODS 22 AND 99.
- (J) N A
- (K) N A
- (L) Z Z
- (M) YES
- (N) N K
- (O) YES
- (P) YES

Davit
CHABARRA

1ST NM
HNB
DCNS
DNI
DAVOT
SEAS

2ND NM
SEC
DEP SEC
HPB
DAMR
DELS
LTC
LTC































