

CLOSED
VOLUME



VOLUME
COMPLET

DATED FROM À CONTER DU	<i>July 1965</i>	TO JUSQU' AU	<i>March 20 1968</i>
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AFFIX TO TOP OF FILE — À METTRE SUR LE DOSSIER

DO NOT ADD ANY MORE PAPERS — NE PAS AJOUTER DE DOCUMENTS

FOR SUBSEQUENT CORRESPONDENCE SEE — POUR CORRESPONDANCE ULTÉRIEURE VOIR

FILE NO. — DOSSIER N°	<i>V1010</i>	<i>12143</i>	VOLUME	1 <i>2</i>
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**THE ENCLOSED
PROCEEDINGS/REPORTS OF AN
AIRCRAFT ACCIDENT/INCIDENT
HAVE BEEN PREPARED UNDER
AUTHORITY OF QR&O 21.56
AND CFP 135.**

**THEY SHALL BE USED SOLELY
FOR PURPOSES OF ACCIDENT
PREVENTION, AND ARE TO BE
SEEN ONLY BY THOSE WITH A
NEED-TO-KNOW.**

This page must remain as top sheet

V 1010-1543 (VCDS/DFS)

Canadian Forces Headquarters
Ottawa 4, Ontario
20 March, 1968

Canadian Pension Commission
Veterans Affairs Bldg
Wellington & Lyon Streets
Ottawa, Ontario


AIRCRAFT ACCIDENT
CS2F-1 1543 2 FEB 68

1. At 2130 hrs local on 2 February, 1968 CS2F-1 1543 crashed near Downsview airport in Toronto during the approach to the duty runway. The four crew members listed below were killed in the crash.


S/Lt H.C. McRadu	602-708-232
S/Lt P. Kaersvang	429-591-472
S/Lt W.J. Bowles	407-421-049
AB H. Schofield	401-921-309.

2. A Board of Inquiry has been held and the following findings have been established:

- a. all four crewmembers were on duty at the time of the accident;
- b. the death of all four crewmembers was attributable to military service;
- c. the accident was not the result of improper conduct.


R.D. Schultz
Colonel
for Chief of the Defence Staff

c.c. DFI
DPLS


J.R. Burns, LCDR, 2-1979/gs

Bow

PA

PC. DFS.

CONFIDENTIAL

→ V 1010-1543
S 1010-1 (DSECDS2)

16 February, 1968

The Minister

CRASH OF TRACKER AIRCRAFT

Attached for your information is the interim report of the board of inquiry convened to investigate the crash of the CS2F-1 Tracker aircraft near Downsview on 2 February, 1968. The target date for the completed board of inquiry is 1 March, 1968.

ORIGINAL SIGNED BY
J.V. ALLARD

J.V. Allard
General
Chief of the Defence Staff



Attach.

[Handwritten signature]

A.D. Taylor, LCdr/mc
2-7943

CONFIDENTIAL

000005

Burns

MAR 6 03 03 '68

O.P.I. DFS

NNNNVV PCB1 03MR 0888 UU

RR RCCWC

DE RCCPMR 613 05/2114Z

R 052045Z MAR 68

CANMATCOM

TO RCCSCX/1106TSD MONTREAL

INFO RCCWC/CANFORCEHED

BT

UNCLAS SOEVA1981

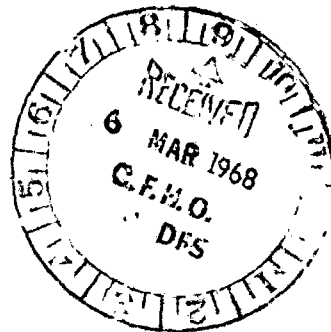
FOR: DC, CFHQ/DFS LCDR BURNS

SUBJECT: TRACKER 1543, STBD ENGINE SERNO 10240.

REFERENCE: TELECON BLOTNIUK MATCOM AND LUSHER 1106TSD 05MMAR 68.

1. REQUEST PROPELLER SHAFT FROM SUBJECT ENGINE BE SHIPPED TO
QUALITY ASSURANCE LAB AS SOON AS POSSIBLE

BT



Burns

NNVV PCA281VV MRA217 UU

RR RCCWC

DE RCCPMR 132 29/1620Z

FEB 29 18 51 '68

R 291430Z FEB 68

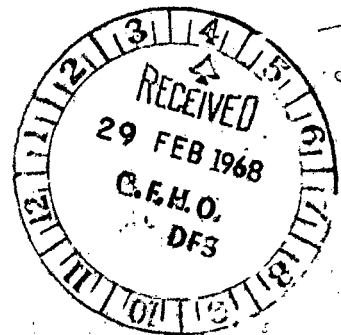
FM CANMATCOM

O.P.I.

TO CCSCX/1111TSD MONTREAL

INFO RCCPOG/DDP OTTAWA

RCCWC/CANFORCEHED



BT

UNCLAS LRO7743

CFHQ FOR DFS. DDP FOR 3 DIV A/S BRANCH. FURTHER MY LRO

7752 261430Z FEB 68 ONE OF EACH NSN 2915-00-504-9986

AND NSN 2915-00-203-6129 FUEL PUMPS TO BE INCLUDED IN

SPECIAL INVESTIGATION. CDW679700 MY SOEVA 1961

161530Z REFERS

BT

DEPARTMENT OF NATIONAL DEFENCE

MINUTE SHEET

SECURITY CLASSIFICATION

FILE NUMBER

TD

REFERENCE

DATED


REFERRED TO

REMARKS

(To be signed in full showing Appointment, Telephone Number and Date)

Fracture pieces - @ $\frac{1}{2}$ melting point
aluminium

① Fracture mat = turned white
shrank to $\frac{1}{2}$ size

∴ Arrived in situ after casting 

② Transparent = burned.

③ Greenish - turned black.

④ Sledge - with lead.

Partly like
with oil binder

at
Spruce.

633
~~633~~

00008

DEPARTMENT OF NATIONAL DEFENCE

SECURITY CLASSIFICATION

MINUTE SHEET

FILE NUMBER

TD

REFERENCE

DATED

REFERRED TO

REMARKS

(To be signed in full showing Appointment, Telephone Number and Date)

Extensim - tensile checks.

(1) U.T.S. lower than good heat
both within spec.

25000 PSI

26000.

(2) elongation very low. $> 1\%$ on
test bar. Found .2%

(3)

000009

Burns

MMNINVV PC0212 VV MR0417 UU

FEB 25 00 25 '68

RR RCCWC

O.P.I.

DE RCCPMR620 27/2122Z

R 271905Z FEB 68

FM CANMATCOM



DFS

RCCSFJ/1105TSD LONGUEUIL

INFO RCCWC/CANFORCEHED

BT

UNCLAS SOEVA1976

FOR: DC, CFHQ /DFS LCDR BURNS.

SUBJECT: TRACKER 1543 CONSTANT SPEED UNITS, SERNO WH 92082 AND WH 81164,

REFERENCE: YOUR T30 221930Z.

1. SUBJECT CSUS TO REMAIN IN QUARANTINE UNTIL FURTHER ADVISED.

BT

ms

NNVV PCL37MRA393 UU

Buns

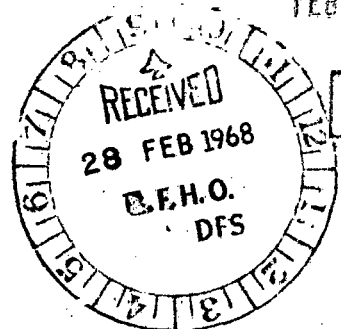
RR RCCWC

DE RCCPMR 621 27/2122Z

R 272010Z FEB 68

FM CANMATCOM

FEB 28 01 11 '68



O.P.I.

DFS

TO RCCPGJ/CANFORBASE TORONTO

INFO RCCWC/CANFORCEHED

BT

UNCLAS EVA1438

FOR : BTSO CANFORCEHED FOR DFS

SUBJECT: AIRCRAFT ACCIDENT CS2F 1543

REF: DFS296 261942Z FEB

FURTHER TO REFERENCED MESSAGE WRECKAGE MAY BE STACKED INSIDE

HANGER AND MARKED QUARANTINE PENDING INSTRUCTIONS FOR DISPOSAL

BT

JWS

Burns

V 1010-1543 (VCDS/DFS)

Canadian Forces Headquarters
Ottawa 4, Ontario

FEB 26 1968

Base Commander
Canadian Forces Base Toronto
Downsview, Ontario

AIRCRAFT ACCIDENT
CS2F-1 1543

1. I would like to express my thanks for the cooperation and assistance provided by you and your personnel subsequent to the recent CS2F accident at Downsview.

2. The spectacular nature of the accident raised special problems, during the weekend particularly, and your duty and headquarters staff who were very much involved deserve special mention for the way in which they reacted. I particularly wish to thank Major Bremend and Captain Andrews who provided a most effective screen between the radio, TV and press media and the investigation team. The team could have been severely handicapped in the initial stages without the assistance of these officers.

3. I am informed that the duty crash and firefighting crews reacted very promptly following the crash alarm and their performance on this occasion is worthy of note. The requirement to maintain security guards and firemen at the crash site until the wreckage could be removed to your base placed an extra workload on the few personnel you have available and who had to perform these extra duties. The investigating team also received prompt and ready assistance from base maintenance and motor transport personnel during the salvage operation and subsequent wreckage analysis.

4. Please convey my sincere appreciation for the help rendered and the spirit of willing cooperation displayed by all of those personnel who were involved.

ORIGINAL SIGNED BY

E. R. SHARP

LGEN
VCDS

ORIGINAL DESPATCHED
BY VCDS OFFICE

F.R. Sharp

Lieutenant General
for Chief of the Defence Staff

[Signature]
c.c. Commander, ATC

J.R. Burns, LCDR, 2-1979/gs

Buss

MEMORANDUM

V1010-1543 (DAE)

21 February, 1968

DFS/AIB 2-2

CS2F ELEVATOR EFFECTIVENESS

- Reference: A. US Naval Air Test Center Technical Report FT-76R-66 dated 15 August, 1966.
 B. US Naval Air Test Center BIS Report 21153 dated 25 February, 1955.

1. In response to your queries on the possibility of increasing the CS2F elevator effectiveness the following information was found.
2. Reference A, an investigation of pitch-up tendencies in S2A airplanes, recommended that the USN S2A elevator control system be modified to allow an additional 3° of trailing edge down movement. CDLS(W) was queried (by phone) if this recommendation was adopted by USN. Apparently there was some question concerning the adaptability of this modification to all aircraft and upon checking 6 aircraft structural interference was found to exist. USN is satisfied to live with the problem and rely on NATOPS training plus close supervision of weight and balance to eliminate further occurrences.
3. Another proposal has been to install the vortex generators similar to those on the S2E. Last fall Grumman was queried on this and they recommended against it. Their present thinking is that on such a slow aircraft the vortex generators are of questionable value.
4. While investigating the above, an answer to a previous DFS query was located. Reference B states that inflation of the wing de-icer boots increases the stall speed by 5 to 7 knots.

[Signature]
 D.E. Feckham
 Lieutenant Commander
 DAE 2-4
 2-9608

c.c. DASE 4-3

D.E. Feckham/LCDR/2-9608/J.McD.
 local
 orig
 circ
 file ✓

JMS

Burns

FEB 26 20 21 '68

NNNNVVVVVV PCA126MRB161 UU

PP RCCWC

O.P.I.

DE RCCPMR 370 26/1936Z

DFS.

P R 261530Z FEB 68

FM CANMATCOM

TO ~~RCCSFJ~~/1105TSD LONGUEUIL

INFO RCCWC/CANFORCEHED



BT

UNCLAS SOEVA1973

FOR: DC. CFHQ/DFS LCDR BURNS

SUBJECT: TRACKER 1543, PROPELLER ASSYS, SERNOS 204734 AND 206985.

REFERENCE: SOEVA 1962 161600Z.

1. SUBJECT PROPELLER ASSYS PRESENTLY BEING HELD IN QUARANTINE YOUR UNIT, ARE TO BE SHIPPED TO QUALITY ASSURANCE LABORATORY FOR FURTHER INVESTIGATION.

2. PRIORITY SHIPPING ACTION REQUESTED

Handwritten mark

BT

Burn

FEB 26 19 54 '68

NNNNVV PCB154 MRB132 UU

O.P.I.

DFS

V1010-1543

RR RCCWC
DE RCCPMR 185 26/165Z
FEB 68

FM CANMATCOM

TO RCCSCX/1111TSD MONTREAL

INFO RCCPOG/DDP OTTAWA

RCCWC/CANFORCED

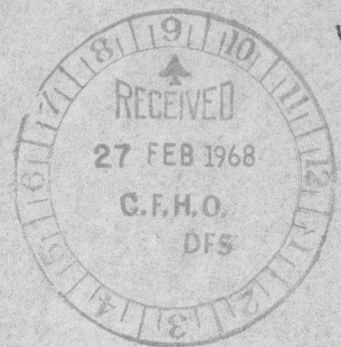
BT

UNCLAS LR07732

CFHQ FOR DFS. DDP FOR 3 DIV A/S BRANCH. 1111TSD REFER TELECON MAJOR VANNIER MATCOM-HOWEARD DUNPHY AEL. ARRANGE CONTRACTOR CARRY OUT SPECIAL INVESTIGATION ON TWO OF EACH NSN 2925-00-294-2596 P/N 10-56900-4 MAGNETO, NSN 1560-21-730-0057 P/N 33E02-1 VACUUM PUMP AND NSN 1650-21-843-4639 P/N 66DWB300 HYDRAULIC PUMP. ALL ITEMS REMOVED FROM TRACKER A/C 1543 AND FORWARDED TO AEL ON AUTHORITY CFHQ/DFS FOR TEST. REPORT REQUIRED IN FIVE COPIES. ON COMPLETION ITEMS TO BE HELD PENDING DISPOSAL INSTRUCTIONS. COST CHARGEABLE CDW679700

BT

sm



Document disclosed under the Access to Information Act
Document divulgué en vertu de la Loi sur l'accès à l'information

MESSAGE FORM

1018-1543
FILE (VCDS/DFS)

FOR COMM/CEN/SIGNALS USE

NUMBER

PRECEDENCE - ACTION ROUTINE	PRECEDENCE - INFO DEFERRED	DATE - TIME GROUP 26/942 Z FEB 68	MESSAGE INSTRUCTIONS
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<p>FROM CANFORCEHED</p> <p>TO CANMATCOM</p> <p>INFO CANMARCOM CANFORBASE SHEARWATER CANFORBASE TORONTO</p>	<p>PREFIX GR</p> <p>SECURITY CLASSIFICATION UNCLAS</p> <p>ORIGINATOR'S NUMBER DFS 296</p>
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SUBJECT: AIRCRAFT ACCIDENT CS2F 1543.

REF: CANFORBASE TORONTO OPS 15 231900Z.

CANMATCOM FOR SOEVA-3.

1. REQUIRE WRECKAGE TO BE KEPT IN QUARANTINE UNTIL INVESTIGATION IS COMPLETED.
2. TO RELEASE HANGAR SPACE WRECKAGE MAY BE REMOVED TO OUTSIDE STORAGE

PAGE	OF PAGES	REFERS TO MESSAGE OPS15 231900Z	DRAFTER'S NAME LCDR J.R. BURNS	OFFICE 270 CARLING AVE	TEL. 2-1979						
		CLASSIFIED YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>									
FOR OPR'S USE	R	DATE	TIME	SYSTEM	OPERATOR	D	DATE	TIME	SYSTEM	OPERATOR	RELEASING OFFICER'S SIGNATURE H.E. BJORNSTAD, LCOL DFS

Bur

VV PCB259 GJA087

PRIORITY
UU

FEB 23 20 21 '68

PP RCCWC

DE RCCPGJ 67 23/1905Z

P R 231900Z FEB 68

FM CANFORBASE TORONTO

TO RCCWC/CANFORCEHD ✓

RCEOC/CANMARCOM

INFO RCEOA/CANFORBASE SHEARWATER

RCEOC/COMYARDLANT

BT

UNCLAS OPS15

CFHQ FOR DFS

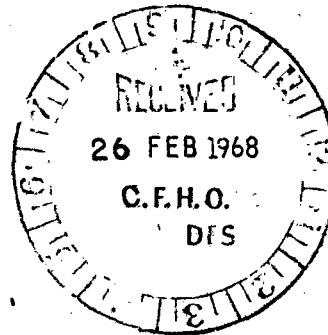
B.O.I. ACCIDENT TO CS2F-1543 REGRET FURTHER DELAY IN SUBMITTING
REPORT. WILL SUBMIT REPORT 27 FEB

2. FOR DSF. WRECKAGE IS RELEASED FOR DISPOSAL

BT

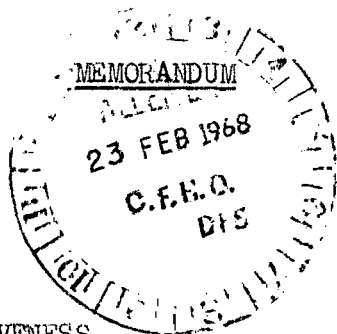
O.P.I.

DFS



*Hold on guarantee but
may be moved outside
if required space.*

MS



VI010-1543 (DAE)

21 February, 1968

DFS/AIB 2-2

CS2F ELEVATOR EFFECTIVENESS

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- B. US Naval Air Test Center BIS Report 21153 dated 25 February, 1955.

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3. Another proposal has been to install the vortex generators similar to those on the S2E. Last fall Grumman was queried on this and they recommended against it. Their present thinking is that on such a slow aircraft the vortex generators are of questionable value. ✓

4. While investigating the above, an answer to a previous DFS query was located. Reference B states that inflation of the wing de-icer boots increases the stall speed by 5 to 7 knots.

to be in A012.

D.E. Peckham
Lieutenant Commander
DAE 2-4
2-9608

c.c. DASE 4-3

sub.

PCB295 MRB355 UU

PP RCCWC

DE RCCPMR 483 22/2049Z

P R 221940Z FEB 68

FM CANMATCOM

TO RCCSCX/1111TSD MONTREAL

INFO RCCSTE/11TSU MONTREAL

RCCWC/CANFORCEHED

BT

UNCLAS SOEVA1970

CFHQ FOR CFS

FOR: DETACHMENT COMMANDER, CFHQ/DFS LCDR BURNS

SUBJECT: A. VACUUM PUMPS P/N 33E02-1A EA 2 SE NOS U/K

B. HYDRAULIC ED PUMPS P/N 66DWB300 EA 2 SER NOS U/K

C. MAGNETOS P/N U/K EA 4 SER NOS U/K

1. REQUEST COMPREHENSIVE TESTS BE CARRIED OUT ON SUBJECT ITEMS
REMOVED FROM TRACKER 1543 AND THAT PRIORITY STRIP REPORTS BE
FWDED MATCOM ATTN SOEVA3-5.

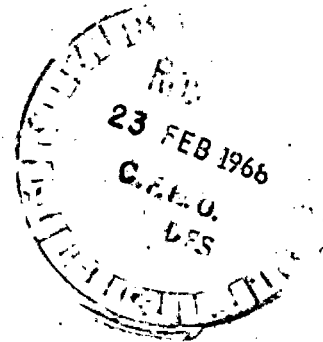
2. REF TELECON MAJ VANNIER AND MR DUNPGY THIS DATE.

BT

FEB 22 21 43 '68

O.P.I.

DFS



000019

PRIORITY
FEB 22 20 59 '68

FEB 22 20 3

VV PCB253 SCB224A034

O.P.I.

DFS.

O.P.

PP RCCWC

DE RCCSFJ 27 22/1950Z

P 221930Z FEB 68

FM 1105TSD LONGUEUIL

TO RCCPMR/CANMATCOM

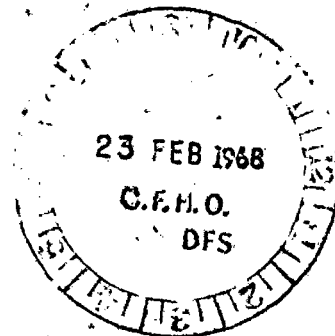
INFO RCCWC/CANFORCEHED

BT

UNCLAS T30

FOR SOEVA. CFHQ DFS LCDR BURNS

SUBJECT: TRACKER 1543, CONSTANT SPEED UNITS SERIAL NUMBER WH92082
(STBD) AND WH81164 (PORT)



REF: A. YOUR SOEVA1960 161510Z

1. INVESTIGATION COMPLETED ON SUBJECT CSUS AND RESULTS ARE AS FOLLOWS:

A. SETTING STOP SCREW FOUND SHEARED ON STBD CSU PROBABLY AS A RESULT OF IMPACT

B. DRIVE COUPLING SPRING RETAINER SPRUNG OUT OF POSITION ON PORT CSU PROBABLY AS A RESULT OF IMPACT

C. LOW AND HIGH PRESSURE RELIEF VALVES FROM BOTH CSUS FOUND IN NORMAL SPRING LOADED POSITION AND FREE MOVING. NO FURTHER DISMANTLING CARRIED OUT

D. BOTH CSUS FUNCTIONALLY TESTED SERVICEABLE ON TEST RIG

2. DETAILED REPORT WILL FOLLOW. ADVISE DISPOSITION OF SUBJECT CSUS

PAGE 2 RCCSFJ 27 UNCLAS

PRESENTLY BEING HELD IN QUARANTINE

BT

Phoned 04/1/80

MEMORANDUM

V 1010-1543 (VCDS/DFS)

21 February, 1968


VCDS

AIRCRAFT ACCIDENT
CS2F 1543 - 2 FEB 68

1. The attached letter is submitted for your signature.
2. The unusual circumstances of the accident placed a heavier than usual burden on the personnel involved at CFB Downsview and their response was exemplary.

Encl. 1

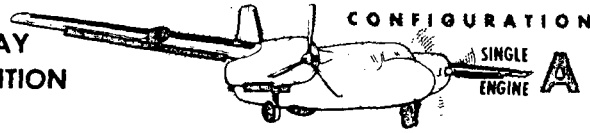

R.D. Schultz
Colonel
DFS
2-1880


J.R. Burns, LCDR, 2-1979/gs

RESTRICTED
 MICN 3-35-11A(1)

SINGLE ENGINE CLIMB CURVE

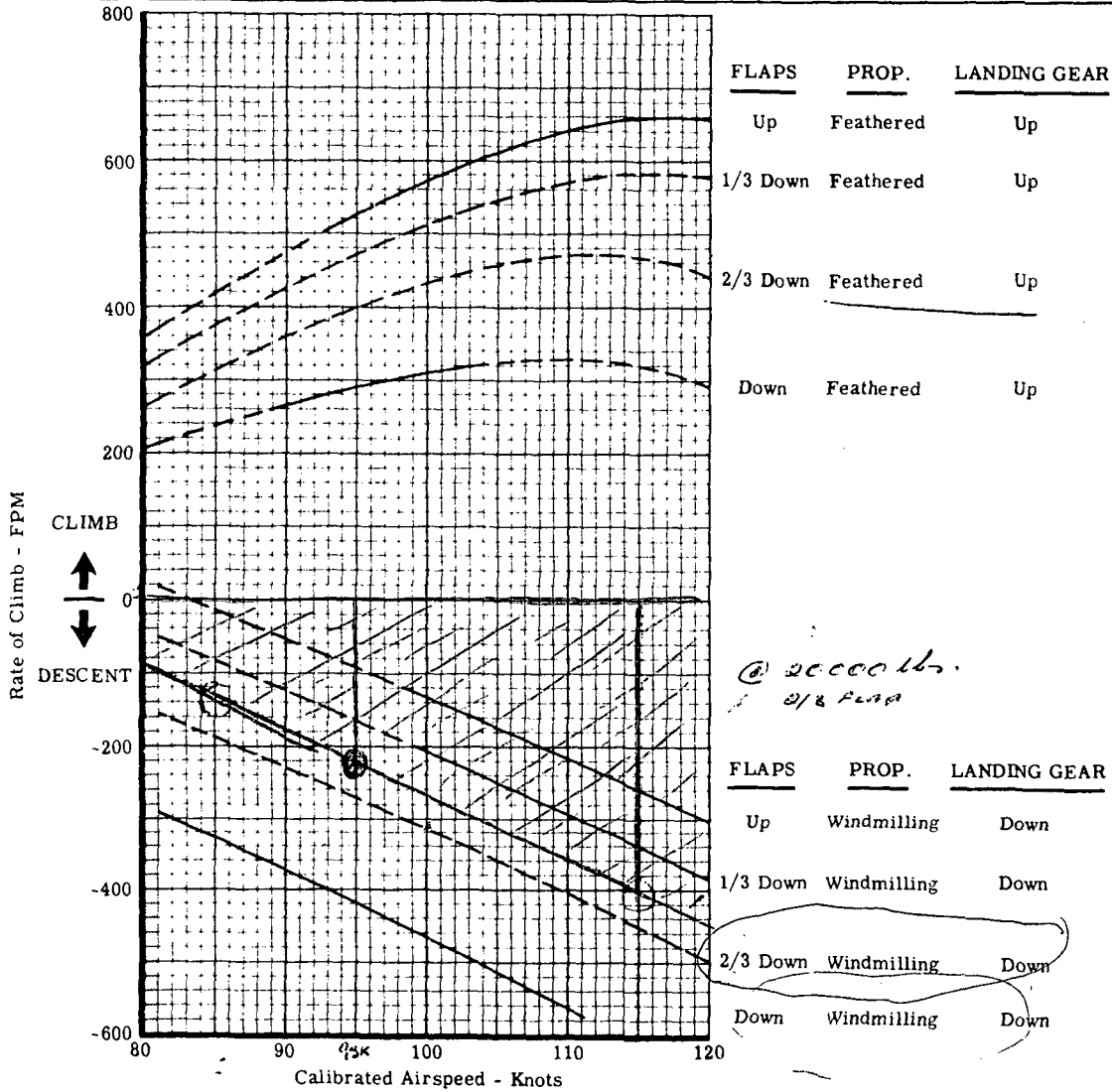
STANDARD DAY
 TAKE-OFF CONDITION



SEA LEVEL
 Wt - 22600 - Lb.

MODEL(S): CS2F-2

ENGINE(S): 983C9HE1



- REMARKS:
- Operative engine: Take off power, 56 in. Hg and 2800 rpm.
 - Both engines: Cowl and oil cooler flaps open.
 - No external stores.
 - At a given CAS, R/C increases approximately 90 fpm per 1000 lb decrease in weight.
 - Minimum control airspeed with take off power on one engine and the other propeller windmilling is 85 knots IAS (81 knots CAS).
 - The following chart indicates the approximate decrease in sea level R/C for the non-standard conditions shown.

CAT °C	Relative Humidity %	Specific Humidity lb water vapor/lb dry air	Δ R/C FPM Gross Weight	
			18000 lb	22000 lb
15°	0	0	0	0
15°	100	.010	-64	-52
32°	0	0	-64	-52
32°	100	.031	-290	-240

DATA AS OF: 29 April 1954
 DATA BASIS: Estimated (Based on Flight Test)

FUEL GRADE 3-GP-25C 115/145
 AND DENSITY: 7.2 Lb/Gal

Figure 8-23 Single Engine Climb Curve, Take-Off Conditions

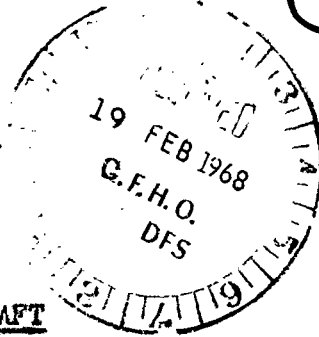
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CONFIDENTIAL

CPM
M

V 1010-1542 (SEC VCDS)

15 February, 1968



DSecDS(131)

CRASH OF TRACKER AIRCRAFT

Reference: A. Defence Council 239-6.

1. CDS, in covering memorandum to Reference A, directed VCDS to provide the following information as quickly as possible:

- a. the Report of the Board of Inquiry convened to investigate the crash; and
- b. a paper reviewing all flying activities at CFB Downsview and setting out the arguments for and against continued use of the base by the Canadian Armed Forces.

2. Attached is an interim report covering paragraph 1 a. Target date for the completed Board of Inquiry is approximately 1 March, 1968.

3. A paper covering paragraph 1 b. has been requested by 16 February, 1968.

encl. 5

[Signature]
D. J. Sancon
Commander
S.C. VCDS
2-3104

cc: ESO/CDS (without attachments)

A.S. Henry, Major/2-4137/cebn

CONFIDENTIAL

DFS

NNVV PCB269GJA107 HH

PP RCCWC

DE RCCPGJ 79 16/1854Z

P 161955Z FEB 68

FM CANFORBASE TORONTO

TO RCEOC/CANMARCOM

INFO RCEOC/COMYARDLANT

RCCWC/CANFORCEHD

BT

C O N F I D E N T I A L OPS10

CFHQ FOR DFS SUBJ: BOARD OF INQUIRY ACCIDENT TO CS2F 1543

DUE TO LARGE NUMBER OF WITNESS AND COMPLEXITY OF THIS

INVESTIGATION IT IS NOT POSSIBLE TO SUBMIT B.O.I. IN REQUIRED 14.

DAYS

~~3~~. ESTIMATE COMPLETION DATE TO BE 21 FEB

BT

~~C WA 14. DAYS.~~

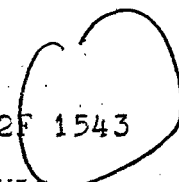
FEB 16 20 28 '68

CONFIDENTIAL

DFS

PRIORITY

A C NO UNCLASSIFIED
REPLY OR REFERENCE



*DFS informed
at 162040z*

CONFIDENTIAL

PRIORITY

A C NO UNCLASSIFIED

A415MRB277

UU

RCCWC

DE RCCPMR 291 16/1855Z

R 161600Z FEB 68

FM CANMATCOM

TO RCCSCX/1106TSD MONTREAL

RCCSFJ/1105TSD LONGUEUIL

INFO RCCWC/CANFORCEHED

BT

UNCLAS SOEVA1962

FOR CFHQ/DFS LCDR BURNS

SUBJECT TRACKER 1543 PROPELLERS

REFERENCE TELECON SGT BLOTNIUK MATCOM B LUSHER 1106TSD AND MWO

JUSTRABO 1105TSD 16 FEB

1 FOR 1106TSD SHIP SUBJECT PROPELLERS TO 1105TSD LONGUEUIL UACL

2 FOR 1105TSD ON RECEIPT SUBJECT PROPELLERS ARE TO BE PLACED IN

QUARANTINE UNTIL FURTHER ADVISED BY THIS HEADQUARTERS

BT

FEB 16 23 44 '68

O.P.I.

DFS

[Handwritten signature]

BEST AVAILABLE COPY

FEB 16 20 06 '68

O.P.I.

DFS

RECEIVED
19 FEB 1968
G.M.O.
DFS

NNNN

PCA 290 MRB197 UU

FP RCCUC

DE RCCP/R 284 16/1355Z

P R 161500Z FEB 68

FM CANMATCOM

TO RCCSCX/1106TSD MONTREAL

RCCSCX/1111TSD MONTREAL

INFO RCCWC/CANFORC ^{EM} ~~REHED~~

BT

UNCLAS SOEVA1961

FOR CFHQ DFS LCDR ERUNS 1106TSD B LUSHER

SUBJECT: TRACKER 1543, ENGINE DRIVEN FUEL PUMPS

1. FOR 1106TSD SHIP SUBJECT FUEL PUMPS TO AVIATION ELECTRIC LTD
1111TSD MONTREAL

2. FOR 1111TSD ON RECEIPT OF SUBJECT PUMPS, IT IS REQUESTED THAT A
PRIORITY TEST AND STRIP INVESTIGATION BE CARRIED OUT. TELECON
MAJOR VANNIER MATCOM AND H DUNPHY AEL REFERS

BT

MESSAGE FORM

FOR COMMEN/SIGNALS USE

NUMBER

CONFIDENTIAL 000378

PRECEDENCE - ACTION PRIORITY	PRECEDENCE - INFO DEFERRED	DATE - TIME GROUP 131610Z FEB 68	MESSAGE INSTRUCTIONS
FROM CANMATQUAL HULL		FEB 14 18 31	PREFIX 68 GR
TO CANFORCEHD / DFS		RECEIVED 14 FEB 1968 C.F.H.O. DE	SECURITY CLASSIFICATION CONFIDENTIAL
INFO			ORIGINATOR'S NUMBER QA 7309

TRACKER AIRCRAFT SERIAL 1543 ACCIDENT.

REFERENCE INVESTIGATION OF EXTENSION ENGINE SHAFT PART NUMBER A 2219 AND AIRCRAFT INSTRUMENTS PASSED TO THIS LABORATORY BY LT. CDR. BURNS 12 FEB. THE RESULTS OF THIS INVESTIGATION TO DATE ARE AS FOLLOWS:

A. EXTENSION ENGINE SHAFT:

WITH THE TWO FRACTURE FACES OF THE SHAFT MATED TOGETHER THE FOLLOWING CHARACTERISTICS ARE OBVIOUS:

- I) THE THREADED HOLES IN THE SHAFT THRU WHICH THE FRACTURE PASSED ARE ELONGATED INDICATING BENDING.
- II) THE POINT OF FRACTURE INITIATION IS OPEN AND JAGGED WHICH IS TYPICAL OF TENSION LOADING.

PAGE 1 OF 3 PAGES		REFERS TO MESSAGE	
		CLASSIFIED YES <input type="checkbox"/> NO <input type="checkbox"/>	
FOR OPR'S USE	R	DATE	TIME SYSTEM OPERATOR DATE
			D

DND 905
7530-21-562-1557

C

MESSAGE FORM

FOR COMBAT/CONTROL/SIGNALS USE

FILE

NUMBER

CONFIDENTIAL

PRECEDENCE - ACTION	PRECEDENCE - INFO DEFERRED	DATE - TIME GROUP	MESSAGE INSTRUCTIONS
FROM			PREFIX GR
TO	III) THE SIDE OPPOSITE THE POINT OF FRACTURE INITIATION IS VERY TIGHT AND RELATIVELY UNIFORM WHICH IS INDICATIVE OF COMPRESSIVE LOADING. IV) THE PIECES OF THE TWO BROKEN OIL SEAL RINGS, PART NUMBER 53144, WERE MATCHED AND EXAMINED. THIS EXAMINATION FAILED TO DISCLOSE ANY EVIDENCE OF A RING FAILURE DURING OPERATION. IT IS THEREFORE CONCLUDED THAT THE EXTENSION ENGINE SHAFT FRACTURED AS A RESULT OF HAVING BEEN SUBJECTED TO BENDING LOADS OF AN IMPACT NATURE.		SECURITY CLASSIFICATION
INFO			ORIGINATOR'S NUMBER

B. AIRCRAFT INSTRUMENTS

- I) EXAMINATION OF ALL INSTRUMENTS UNDER ULTRA VIOLET LIGHT FAILED TO PRODUCE AN INDICATION OF INSTRUMENT READING AT IMPACT.

PAGE 2 OF 3 PAGES	REFERS TO MESSAGE						
CLASSIFIED YES <input type="checkbox"/> NO <input type="checkbox"/>							
FOR OPR'S USE	R	DATE	TIME	SYSTEM	OPERATOR	D	DATE

DND 905
7830-21-582-1557

FOR COMMEN/SIGNALS USE

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PRECEDENCE - ACTION	PRECEDENCE - INFO DEFERRED	DATE - TIME GROUP	MESSAGE INSTRUCTIONS
FROM			PREFIX GR
TO			SECURITY CLASSIFICATION
INFO			ORIGINATOR'S NUMBER

II) DAMAGE TO THE DIAL FACE OF THE INDICATOR TACHOMETER CAUSED BY THE INDICATOR POINTERS INDICATES THAT AT IMPACT THE NUMBER 1 ENGINE WAS REGISTERING 3100 RPM WHILE THE NUMBER 2 ENGINE WAS REGISTERING 2500 RPM.

III) THE AIR-SPEED INDICATOR SECTOR WAS FOUND TO HAVE A ZERO SETTING. THE POINTER AND INDICATOR DIAL FACE HOWEVER ARE BOTH BENT AND MATCHING THE CONTOUR OF THE POINTER BEND TO A SIMILAR CONTOUR ON THE DIAL FACE INDICATES THAT THE INSTRUMENT WAS READING APPROXIMATELY 85 KNOTS AT IMPACT.

EXAMINATION OF THE REMAINING INSTRUMENTS IS STILL UNDERWAY AND THE RESULTS WILL BE REPORTED AS AVAILABLE.

PAGE 3 OF 3 PAGES		REFERS TO MESSAGE	DRAFTER'S NAME <i>J.R. Clark</i>	OFFICE LSP	TEL. 6-2860				
CLASSIFIED YES <input type="checkbox"/> NO <input type="checkbox"/>		J.R. CLARK							
FOR OPR'S USE R	DATE	TIME	SYSTEM	OPERATOR D	DATE	TIME	SYSTEM	OPERATOR	RELEASING OFFICER'S SIGNATURE <i>V.H. Sager P. Eng.</i>

DND 905 7630-21-562-1557

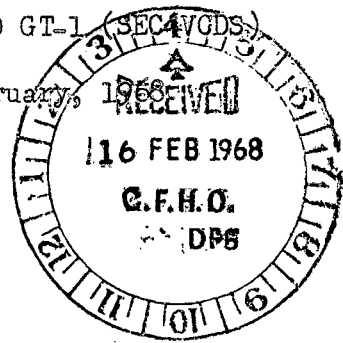
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V1010-1517

V 11500 GT-1 (SEC VCDS)

14 February, 1968



Distribution List

CRASH OF TRACKER AIRCRAFT

Reference: A. V 11500 GT-1 (SEC VCDS).

1. Copies of Reference A, issued on 9 February, 1968, are to be destroyed and replaced by new Reference A. (attached). Copy of Defence Council memorandum 239-6 which is attached to this office memorandum of 9 February, should now be attached to the replacement memorandum enclosed herewith.

[Handwritten Signature]
D.E. Samson
Commander
SEC VCDS
2-3104

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MEMORANDUM

V 11500 GT-1 (SEC VCDS)

14 February, 1968

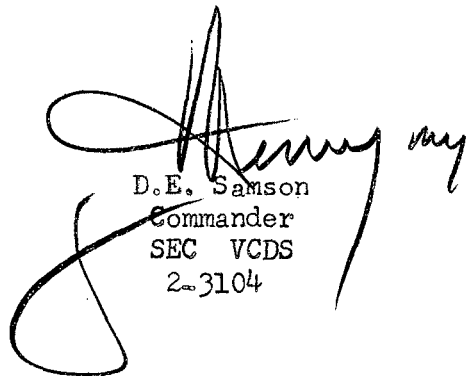
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1. VCDS designates the following OPIs to take action required by the attached Dep Sec memorandum:

- a. Paragraph 1 a. - DFS
- b. Paragraph 1 b. - DC PLANS.

2. OPIs are requested to note the requirement for urgent action. May action be completed or interim replies forwarded to SEC VCDS by 16 February, 1968.



D.E. Samson
Commander
SEC VCDS
2-3104

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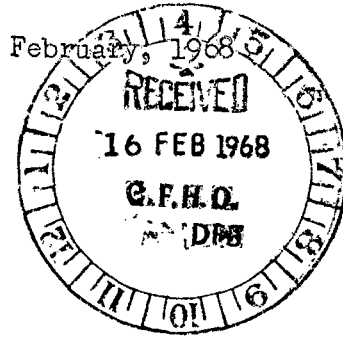
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V1010-1543

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V 11500 GT-1 (SEC VCDS)

14 February, 1968



Distribution List

CRASH OF TRACKER AIRCRAFT

Reference: A. V 11500 GT-1 (SEC VCDS).

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[Handwritten Signature]
D.E. Samson
Commander
SEC VCDS
2-3104

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MEMORANDUM

V 11500 GT-1 (SEC VCDS)

14 February, 1968

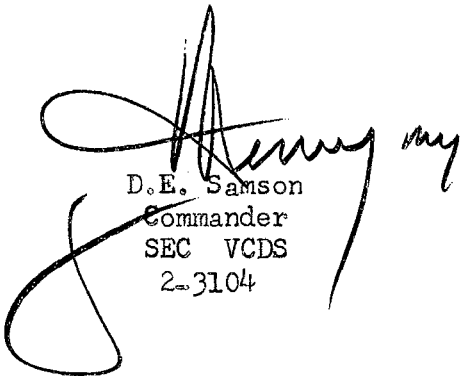
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Commander
SEC VCDS
2-3104

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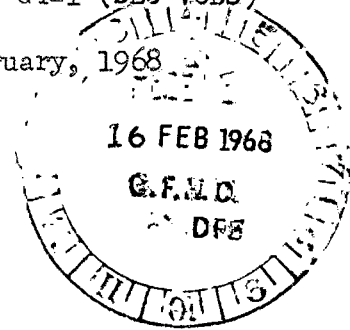
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V 1010-1543

V 11500 GT-1 (SEC-VCDS)

14 February, 1968



Distribution List

CRASH OF TRACKER AIRCRAFT

Reference: A. V 11500 GT-1 (SEC VCDS).

1. Copies of Reference A, issued on 9 February, 1968, are to be destroyed and replaced by new Reference A. (attached). Copy of Defence Council memorandum 239-6 which is attached to this office memorandum of 9 February, should now be attached to the replacement memorandum enclosed herewith.

[Handwritten Signature]
D.E. Samson
Commander
SEC VCDS
2-3104

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MEMORANDUM

V 11500 GT-1 (SEC VCDS)

14 February, 1968

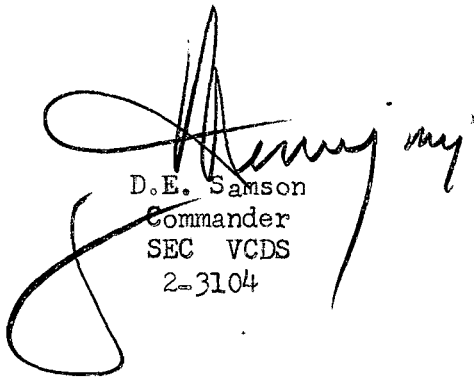
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SEC VCDS
2-3104

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NNNNVV PCB181P RCCWC

FEB 16 11 08 '68

DE RCCPMR 79 16/1558Z

P R 161510Z FEB 68

FM CANMATCOM

TO RCCSFJ/1105TSD LONGUEUIL

INFO RCCWC/CANFORCEHED

BT

UNCLAS SOEVA1960

FOR CFHQ DFS LCDR BURNS

SUBJECT: TRACKER 1543, CONSTANT SPEED UNITS

REF: TELECON SGT BLOTNIUK MATCOM AND MWO JUSTRABO 1105 TSD

16 FEB

1. ON RECEIPT FROM 1106TSD, SUBJECT CSUS ARE TO BE TEST RUN AND

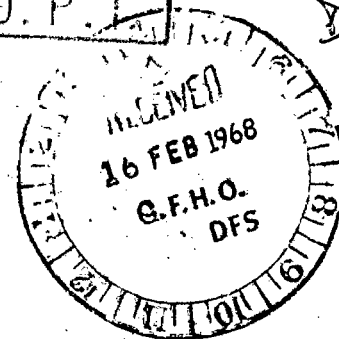
COMPLETE STRIP INVESTIGATION CARRIED OUT

2. PRIORITY ACTION IS REQUESTED

BT

O.P.L.

DFS



Handwritten signature or initials

DEPARTMENT OF NATIONAL DEFENCE

MINUTE SHEET

SECURITY CLASSIFICATION

FILE NUMBER

TD

REFERENCE

DATED

REFERRED TO

REMARKS

(To be signed in full showing Appointment, Telephone Number and Date)

1600710 Feb

1. Cyl temp 230°C. #1
2. Oil Temp. 150°C. ? Both.
3. CSU's not received @ UACC - TSD
to them - collect.

~~4~~

1500 19 Feb

1. CSU's still @ BAAE !!! Urgent
to UACC. Hurry to return.
2. Cyl head sthd 230
none on Port,
Cable Air - Port +20
sthd No Read.

DEPARTMENT OF NATIONAL DEFENCE

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REMARKS

(To be signed in full showing Appointment, Telephone Number and Date)

MA + LAB Results

1 extension shaft - conclusion in metal.

3 Jack reading #1 3000 +
#2 2400 →

3 ASI 85K.

4 M.P. #1 52" ✓
#2 14"

from 7⁴²

Port down half way alt. + die ✓

Stbd " 2/3 towards alt. ✓

Rudder OK ✓

to check feather pump + motor.

Milit 6212121
137.

DEPARTMENT OF NATIONAL DEFENCE

SECURITY CLASSIFICATION

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FILE NUMBER

TD

REFERENCE

DATED

REFERRED TO

REMARKS

(To be signed in full showing Appointment, Telephone Number and Date)

16 Feb

Called Charlton to check into
logic for 19.5° PP setting on C52F.
+ correct emergency procedure.

183-

UACL

677 - 9411

TSIS

515°

SD May Stoker

Boitel -

CONFIDENTIAL

MEMORANDUM

V 1010-1543 (VCDS/DFS)

15 February, 1968

SEC VCDS

AIRCRAFT ACCIDENT - CS2F-1 1543
CFB DOWNSVIEW - 2 FEB 68

Reference: A. V 11500GT-1 (SEC VCDS) 9 Feb 68

1. The attached resume of the reference aircraft accident is forwarded.
2. The Board of Inquiry investigating the accident has not yet completed the investigation. Extreme care must therefore be taken to ensure that the context of any information extracted from the resume is not changed.

Encl. 1


R.D. Schultz
Colonel
DFS
2-1880

J.R. Burns, LCDR, 2-1979/gs

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RESUME OF THE AIRCRAFT ACCIDENT
TO CS2F-1 1543

DATE : 2128 hrs local 2 Feb 68

PLACE: 1.5 miles SE CFB Downsview

FATAL/INJURIES: S/Lt M.G. McRadu - Pilot - Killed
S/Lt P.E. Kaersvang - Co-pilot - killed
S/Lt W.J. Bowles - Crew - Killed
AB Scholefield - Crew - Killed

CIRCUMSTANCES

The aircraft CS2F-1 Serno 1543 departed from CFB Shearwater on a routine instrument cross-country training flight to CFB Downsview. The aircraft took off at about 1600 hrs local and made a refuelling stop and to drop one passenger, S/Lt Carrier, at CFB St Hubert. At St Hubert the fuel tanks were filled and an instrument flight plan filed for the flight to CFB Downsview. The take-off at 1915 hours and enroute portion of the flight were apparently normal, no difficulties were reported to the air traffic control centres enroute. Approaching Downsview the aircraft contacted Toronto Approach Control and completed the initial approach to the radio beacon located at Kleinburg, 15 miles NW of CFB Downsview. At this point control was passed to the GCA controller at Downsview. The weather at the time of the approach was ceiling 2000' broken, visibility 5-10 miles in light snow showers. The aircraft was cleared to carry out a GCA approach to runway 15, followed by a left circling approach to runway 27, because the wind was from the west at 20-25 mph.

The response of the aircraft to the GCA controller's directions was smooth and an accurate approach was flown by the pilot, S/Lt McRadu. The aircraft levelled off at approximately 500' above ground on the center line of Runway 15 and was in level, slightly climbing flight as it passed the control tower. It crossed the airfield to the south end of the runway and made a left turn downwind to the east to parallel the duty east-west runway. The tower controller observed the aircraft in level flight until it neared the point where it could be expected to commence the final left turn to the runway heading and the descent to touchdown. At this point the controller transferred his attention to the final approach area to ensure the glidepath was clear prior to giving the aircraft final clearance to land on runway 27. When he looked back the aircraft had crashed. The only unusual factor in the whole flight to this point was that the aircraft had not contacted the Tower controller by radio on completing the GCA approach.

INVESTIGATION

The aircraft crashed in the backyard of #34 Invermay Ave, shortly after beginning the turn towards the runway. It struck the ground at an angle of about 70° from the horizontal, inverted, and rolling to the right.

... /2

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-2-

The speed at impact was about 85 knots, and the majority of the wreckage was contained within a 60' x 50 ft area. It is believed at this time that the aircraft stalled at an altitude of 300-500' above ground.

An initial inspection of all flying and engine controls, wing flaps, engines and propellers has been completed and a thorough inspection of each system has been started. It appears that the pilot may have had a serious problem with the starboard engine and was unable to feather the propeller. The resultant drag due to the windmilling propeller introduces a very difficult control problem. Most of the evidence available at this point supports this circumstance but the actual nature and cause of the failure, if it did exist, has not been proven and is the subject of further investigation.

The pilots graduated from Flying Training School at CFB Portage la Prairie in the fall of 1967. They began their advanced flying training at VU 32 at CFB Shearwater on 1 Nov 67 and had just completed the conversion and instrument flying syllabus on the CS2F. Both pilots were instrument rated and considered to be of average ability as pilots. The medical examination has been completed and there is no evidence of any significant medical problem which could have caused the accident.

The Board of Inquiry is continuing the investigation at CFB Downsview. The aircraft engines are being stripped and examined at the Overhaul Contractor in Montreal, together with the propellers. Most of the available witnesses (in excess of 52) have been interviewed and their evidence is being analysed and assessed.

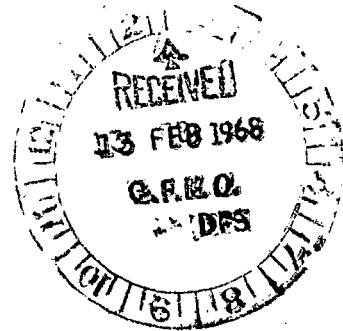
There is no evidence of misconduct on the part of the crew. The flight was properly briefed and authorized.

CAUSE

The cause factors have not been positively established at this time but there is a strong suggestion of mechanical difficulty occurring in the stbd engine or its propeller.

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✓ 100-1543



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MEMORANDUM

V 11500 GT-1 (SEC VCDS)

9 February, 1968

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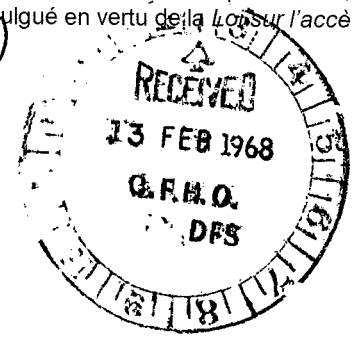
D.E. Samson
D.E. Samson
Commander
SEC VCDS
2-3104

DISTRIBUTION

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		SEC CP	1
		SEC DS	1
		SEC VCDS	1

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V1010-1547



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MEMORANDUM

V 11500 GT-1 (SEC VCDS)

9 February, 1968

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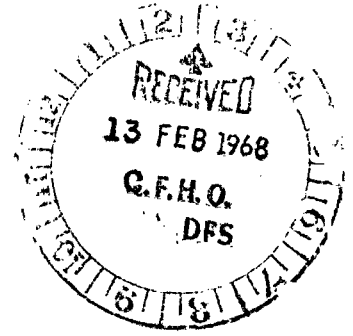
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DE Samson
 D.E. Samson
 Commander
 SEC VCDS
 2-3104

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V1010-1543

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MEMORANDUM

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D.E. Samson
 D.E. Samson
 Commander
 SEC VCDS
 2-3104

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FILE NUMBER

TO

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DATED

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REMARKS

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Please attach to V11500 GT-1 dated
9 Feb 68

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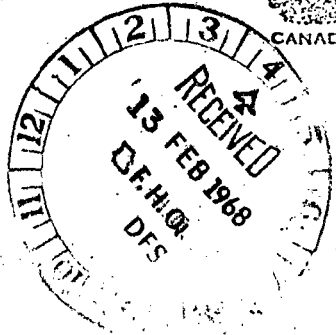
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OFFICE OF THE DEPUTY MINISTER OF NATIONAL DEFENCE



CABINET DU SOUS-MINISTRE DE LA DÉFENSE NATIONALE

MEMORANDUM
NOTE



ESD	
NS	
APG	

Defence Council 239-6

7 February, 1968

1588

Referred to C.D.S.

FEB 7 1968 TD 8038

File No. 1151-4110/D1

Chg'd. to

Chief of the Defence Staff

CRASH OF TRACKER AIRCRAFT

1. After discussion of the crash of a Tracker aircraft on 2 February, 1968, near CFB Downsview at the 239th Meeting of Defence Council on 5 February, 1968, the Minister directed that a short brief on the accident be prepared by the Director of Information Services for his use in the House of Commons that afternoon and requested that he be provided with:

- a. the Report of the Board of Inquiry convened to investigate the crash; and
- b. a paper reviewing all flying activities at CFB Downsview and setting out the arguments for and against continued use of the base by the Canadian Armed Forces.

J.F.F.
D.L.O.P.
D.L.O.P.

2. Would you please take the necessary action to quickly implement the decisions at para 1 a. and b. above.

R.J. Sutherland
R.J. Sutherland
Secretary
Defence Council

cc: DM
DIS
Sec DS (MM)

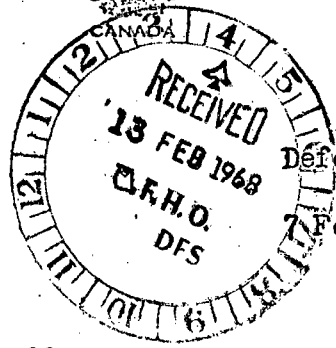
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CABINET DU
SOUS-MINISTRE DE LA DÉFENSE NATIONALE



ESD	
NS	
ADC	

MEMORANDUM
NOTE

Defence Council 239-6

7 February, 1968

Referred to CDS

FEB 7 1968 TD 80387

File No. 21151-4110/D1

Chg'd. to _____

Chief of the Defence Staff

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JEH
D. Cooper
D. Cooper?

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R. J. Sutherland
R.J. Sutherland
Secretary
Defence Council

cc: DM
DIS
Sec DS (MM)

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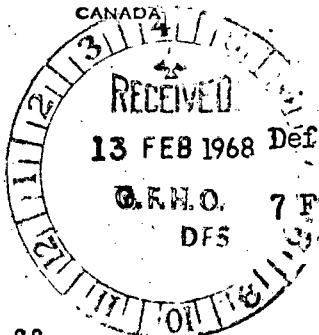


CANADA

ESD	
NS	
ABC	

MEMORANDUM

NOTE



15680
1968

Referred to C.D.S.

FEB 7 1968 TD 80587

File No 1151-4110/D1

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Chief of the Defence Staff

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J.F.F.
D.L.S.
D.L.S.?

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R.J. Sutherland
R.J. Sutherland
Secretary
Defence Council

cc: DM
DIS
Sec DS (MM)

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Copy to D.S.C.D.S. on 21010-1
" " D.S.C.D.S.-2 - loose

FILE NOTE

V 1010-1543 (VCDS/DFS)

SPIN CHARACTERISTICS

Reference: A. Telephone conversation LCDR Peckham/Maj Henderson
1440 hrs 12 Feb 68

1. LCDR Peckham notifies that USN has done no intentional stall checks on this type of aircraft. Patuxent River have been checked and confirm this. There are rumours that certain pilots have accidentally stalled or spun the aircraft but these are unconfirmed.
2. A study based on wind tunnel tests apparently indicates that a stall in the takeoff configuration will result in pronounced fall off on the right wing with rapid pitch up of the nose which will subsequently fall through.



G.A. Henderson
Major
DFS/AIB 2-2-2
2-1979

12 February, 1968

V ICA131PEA067 OEA085A014 UU

PRIORITY

PP RCCWC

File 64 27 '68

DE RCEOA 3 03/0647Z

P 030648Z FEB 68

FM CANFORBASE SHEARWATER

VOID-1543

CASUALTY - DEATH

TO RCCWC/CANFORCEHED

RCEOC/CANMARCOM

RCEPA/REG SURG HALIFAX

INFO RCCPGJ/CANFORBASE TORONTO

Surgeon

DPI²

DS SEC

DWS

DIS³

MSO

DPI RR

DPLS

DM

JAG

DPS

DOPSO

BT

UNCLAS

BCOMD

①

*Not for Family Copy
for JAG
05 Feb 68*

CASUALTY

REF: CFAO 24-1 ANNEX A

A. CFB TORONTO - DOWNSVIEW 3 FEB 68 0232Z AIRCRAFT ACCIDENT.

- B. (1) [REDACTED] SLT BOLES W.J. UCC KILLED.
- (2) [REDACTED] SLT KAERSVANG P.E. RELIGION LISTED NONE. KILLED.
- (3) [REDACTED] SLT MCRADU M.G. UCC KILLED.
- (4) [REDACTED] ABABE SCHOFIELD M. ACC KILLED.

C. AIRCRAFT ACCIDENT

- D. (1) BARBARA ANN BOLES WIFE 24 ALBRO LAKE PMQ DARTMOUTH N.S. NOTIFIED.
- (2) VILLY KAERSVANG FATHER 184 THAMES ST. S. INGERSOIL ONTARIO. BEING NOTIFIED.
- (3) GEORGE MCRADU FATHER 2112 BROADWAY AVE SASKATOON

PAGE 2 RCEOA 3 UNCLAS

SASK. BEING NOTIFIED

- (4) FREDRICK SCHOFIELD FATHER 66 LAUREL AVE ISLINGTON ONTARIO. BEING NOTIFIED.

E. (1) NORTHWEST GENERAL HOSPITAL TORONTO ONTARIO

(2) BRANSON HOSPITAL TORONTO ONTARIO

(3) BRANSON HOSPITAL TORONTO ONTARIO

(4) BRANSON HOSPITAL TORONTO ONTARIO

F. (1) YES

(2) YES

(3) YES

(4) YES

②

DFS:

*For your retention, pls
for money copy
for JAG
05 Feb 68*

CFMO OPERATIONS CENTRE
FEB 3 04 39 '68
DOPSO



BT

CONFIDENTIALMEMORANDUM

DFS

V 1550-1010 (VCDS/DFS)
V 1010-1543 (VCDS/DFS)

5 Feb 68

Distribution List

URGENTREPORT TO THE MINISTER
AIRCRAFT ACCIDENT - CAF TRACKER NO 1543
CFB SHEARWATER - 3 FEB 68

1. The following is submitted for the Minister's information in the event that a question on the subject is raised in the House.
2. At approximately 0230Z on 3 Feb 68 CAF Tracker aircraft No 1543 of CFB Shearwater crashed at Downsview Airport, Toronto, during the approach to land. The crew consisted of:

	S/Lt W.J. Boleo
	S/Lt P.E. Kaerevang
	S/Lt M.G. McRadu
	AB M. Schofield
- All were killed and the next-of-kin have been notified.
3. The aircraft was on a training flight from CFB Shearwater to Downsview via CFB St Hubert. The aircraft discharged a passenger at St Hubert, refuelled and proceeded to Downsview on an instrument flight clearance. A smooth and successful ground control radar approach had been completed to runway 15 and the pilot proceeded to overshoot and continue a visual approach and landing to runway 27 which was into wind. During the left hand turn to runway 27 the aircraft descended very steeply and crashed inverted into the back yard of a private dwelling. The pilot at the controls has not been firmly established but the indications are that it was Sub-Lt M.G. McRadu.
4. A Board of Inquiry has been convened and two AIB investigators have been at the scene since 1000 hrs local 3 Feb 68.

UNCONFIRMED INFORMATION

5. There was damage to private property and claims against the Crown will be made. No civilians were injured. Preliminary investigation indicates that the aircraft stalled in the turn and commenced a spin to

... /2

CONFIDENTIAL

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-2-

the left. Weather at the time was good and there is no obvious reason for the loss of control. Light rime icing was experienced during the flight and the radar approach. This might be a contributing factor but reports from an aircraft which had followed the same route just ahead indicate that the icing was not serious enough in the lower levels to cause control difficulty.

(Handwritten signature)
(R.D. Schultz) Col
2-1880

(Handwritten signature)
F.S. Caldwell
Commodore
Secretary Defence Staff

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PRIORITY^A C NO UNCLASSIFIED
REPLY OR REFERENCE

FEB 5 04 05 '68

NNNNVV PCB017 GJA005 HH
PP RCCWC
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FM CANFORBASE TORONTO
TO RCCWC/CANFORCEHD
RCCPMR/CANMATCOM
RCEOC/CANMARCOM
RCEOA/CANFORBASE SHEARWATER
INFO RCCRC/CANLIFTCOM
ZEN/CANMEDAV

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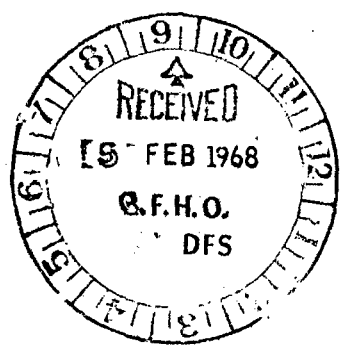
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CFMO OPERATIONS CENTRE
FEB 5 04 46 '68
DOPSO



BT

C O N F I D E N T I A L COMD8

AIRCRAFT ACCIDENT CS2F-1 1543 2 FEB 68.

CO'S 24 HOUR REPORT.

1. IT HAS BEEN CONFIRMED THAT CS2F-1 1543 CRASHED ONE AND ONE-HALF MILES SE OF THE AIRFIELD AT 020231Z DURING A CIRCLING APPROACH TO RUNWAY 27 FOLLOWING A GCA LETDOWN TO RUNWAY 15.
2. THE AIRCRAFT LANDED AT ST HUBERT AT APPROX 1800 LOCAL TO DROP SLT D CARRIERE AND TO REFUEL. 235 GAL WERE ADDED AT ST HUBERT TO FILL MAIN FUEL TANKS. TAKE OFF AND DEPARTURE AND ENROUTE FLIGHT WERE APPARENTLY NORMAL. INITIAL CRUISING ALTITUDE WAS AT 6000. 1543 WAS CLEARED TO MAINTAIN 4000 FEET TO PERMIT CS2F 1520 CRUISING AT

PAGE 2 RCCPGJ 4 C O N F I D E N T I A L

8000 FT TO DESCEND TO 6000 FT AFTER 1520 ENCOUNTERED ICING. 1543 DID NOT REPORT ICING ENROUTE. 2533

3. 1543 ARRIVED AT KLEINBURG AT APPROX 2125 LOCAL, THE APPROACH CONTROLLER AT MALTON REPORTED A NORMAL FLIGHT DURING INITIAL APPROACH PHASE AND HANDED THE AIRCRAFT OVER TO DOWNSVIEW GCA APPROACHING THE KLEINBURG BEACON.

4. THE AIRCRAFT WAS CLEARED FOR A GCA APPROACH TO RUNWAY 15 FOR A LEFT HAND CIRCLING APPROACH TO RUNWAY 27. WEATHER WAS APPROX 3000 FT WITH SEVEN TO TEN MILE VISIBILITY IN LIGHT SNOW SHOWERS, WIND 240 AT FIFTEEN TO TWENTY MPH. THE GCA APPROACH WAS NORMAL AND STEADY. THE AIRCRAFT LEVELLED OFF AT APPROX FIVE HUNDRED FT AGL AND RADAR CONTACT WAS HELD UNTIL IT PASSED OVER THE GCA TOUCHDOWN POINT ON THE RUNWAY CENTRE LINE. THE PILOT ACKNOWLEDGED GEAR DOWN DURING THREE SECOND BREAK AT ONE MILE FROM TOUCHDOWN.

5. THE TOWER CONTROLLER OBSERVED THE AIRCRAFT LEVEL OFF AT FIVE HUNDRED FT APPROX, CONTINUE DOWN RUNWAY 15 AND MAKE A LEFT TURN TO 090 FOR HIS DOWNWIND LEG. HE MOVED HIS ATTENTION TO THE APPROACH AREA OF RUNWAY 27 TO SCAN BEFORE ISSUING FINAL LANDING CLEARANCE. WHEN HE LOOKED BACK 1543 WAS NOT VISIBLE AND HE NOTED SMOKE SE OF AIRFIELD. THE AIRCRAFT HAD NOT CONTACTED TOWER FOLLOWING GCA

VINCEY* THE VINCENEL RVD HOL COMBLED LOER BOTTONS SCV
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PAGE 3 RCCPGJ 4 C O N F I D E N T I A L

ANDOFF. THE CONTROLLER CALLED 1543 WITH NO RESPONSE AND INITIATED THE CRASH PROCEDURE.

6. THE TORONTO EMO ORGANIZATION AND BASE CRASH VEHICLES RESPONDED IMMEDIATELY AND WERE AT THE CRASH SCENE IN A FEW MINUTES. THE FIRE WAS CONTROLLED AND CASUALTIES REMOVED BY CIVIL AND BASE AUTHORITIES.

7. INITIAL INVESTIGATION INDICATES AIRCRAFT IMPACTED AT SIXTY TO SEVENTY DEGREES INVERTED. WRECKAGE SCATTER CONFINED TO AREA ONE HUNDRED BY FIFTY FEET WITH MAJORITY OF WRECKAGE IN SIXTY BY FORTY FOOT AREA. DIRECTION OF IMPACT ROUGHLY NORTHEAST. ATTITUDE ON IMPACT WOULD INDICATE AIRCRAFT HAD ENTERED FULL STALL CONDITION. CAUSE NOT APPARENT AND NO REPORTS OF DIFFICULTY WERE RECEIVED FROM 1543 AT ANY TIME. LIGHT RIME ICE WAS NOTED ON ONE WING LE BUT NOT CONSIDERED TO BE OTHER THAN NORMAL.

8. PATHOLOGICAL INVESTIGATION NOT YET COMPLETED BUT EVIDENCE AVAILABLE INDICATES SLT MCRADU WAS PILOT AND COPILOT WAS SLT KAERSVANG.

9. WRECKAGE HAS BEEN REMOVED TO DOWNSVIEW SITE FOR DETAILED TECHNICAL INVESTIGATION.

10. BOARD OF INQUIRY HAS CONVENEED AND HAS COMMENCED INVESTIGATION WITH ASSISTANCE OF DFS/AIB INSPECTOR. EARLY INVESTIGATION MAINLY

PAGE 4 RCCPGJ 4 C O N F I D E N T I A L

CONCENTRATED ON GATHERING EVIDENCE FROM LARGE NUMBER OF WITNESS REPORTS AND INITIAL INSPECTION OF WRECKAGE WAS HAMPERED BY SNOWFALL AFTER CRASH.

11. DETAILED TECHNICAL INVESTIGATION OF WRECKAGE WILL BEGIN AM MONDAY 5 FEB 68. WILL REPORT FURTHER IF ANY SERIOUS TECHNICAL MALFUNCTION BECOMES QUICKLY APPARENT

BT

CONFIDENTIAL

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INVESTIGATION BECOMES CRITICAL ELEMENT

RECORDS & REPORTS WILL BE REQUIRED EARLIER IN THE TECHNICAL
DETAILED TECHNICAL INVESTIGATION OF SUBJECT WILL BE IN AN
EARLY STAGE

RECORDS AND INITIAL INVESTIGATION OF SUBJECT ARE HANDLED BY STAFF
CONCERNED ON OBTAINING EVIDENCE FROM POLICE REPORT OF WITNESS
AND REPORT OF COMBINATION

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TECHNICAL INVESTIGATION

THE SUBJECT HAS BEEN REPORTED TO POLICE AND WILL BE INVESTIGATED
EARLY

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RCEOA/VS 880

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RCCWC/CANFORCEHED

RCEPA/CANFORBASE HALIFAX

RCCPMR/CANMATCOM

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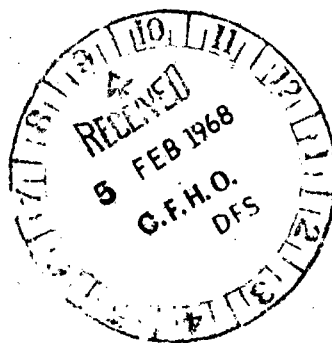
CANFORCEHED FOR DFS

BOARD OF INQUIRY CS2F 1543

A. CANMARCOM COMD 025 030820Z

1. ACKNOWLEDGED BY THE PRESIDENT PARA 3(J) REF A.

BT



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I* VCKKOCFEDCED DA THE PRESIDENT BABV 2(2) BEP A*

V* CANNABCOM COND 032 0208502

DOARD CE INDUITY C2SE 1242

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BCCBYANMIGMCOM

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ESBOVLAN 2S

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RCCWC/CANFORCEHED

RCEPA/CANFORBASE HALIFAX

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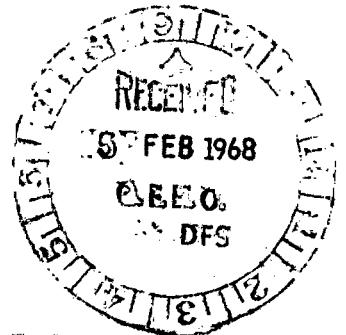
CANFORCEHED FOR DFS

BOARD OF INQUIRY CS2F 1543

1. A BOARD OF INQUIRY AS COMPOSED HEREUNDER SHALL ASSEMBLE AT THE CALL OF THE PRESIDENT TO INVESTIGATE AN AIRCRAFT ACCIDENT INVOLVING CS2F 1543 NEAR CFB TORONTO 02 FEB

2. PRESIDENT [REDACTED] CDR A T BICE

IMMEDIATE



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CANFORCEHED FOR DFS

BOARD OF INQUIRY CS2F 1543

1. A BOARD OF INQUIRY AS COMPOSED HEREUNDER SHALL ASSEMBLE AT THE CALL OF THE PRESIDENT TO INVESTIGATE AN AIRCRAFT ACCIDENT INVOLVING CS2F 1543 NEAR CFB TORONTO 02 FEB

2. PRESIDENT [REDACTED] CDR A T BICE

CFMO OPERATIONS CENTRE
FEB 3 10 47:50
0030

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PAGE 2 RCEOC 22 C O N F I D E N T I A L

MEMBER [REDACTED] LCDR J S CANTLIE

MEMBER [REDACTED] LCDR A J SPRUCE RN

MEMBER [REDACTED] CAPT G R HUMPHREYS

3. THE BOARD SHALL

A. STUDY ALL RELEVANT REGULATIONS AND ORDERS INCLUDING QR AND O CHAPTER 21 AND CFP 135 CHAPTER II

B. QUESTION AND OBTAIN STATEMENTS FROM ALL AVAILABLE WITNESSES

C. VIEW THE PLACE OF OCCURRENCE AND ALL DOCUMENTS AND OTHER OBJECTS

D. MAKE FINDINGS

1. AS TO DATE, TIME AND PLACE OF OCCURENCE

2. AS TO CAUSE OF THE ACCIDENT

3. AS TO WHETHER ALL FLYING AND AIRCRAFT MAINTENANCE ORDERS WERE COMPLIED WITH

4. IN ACCORDANCE WITH ARTICLE 21.47 QR AND O

E. REPORT IMMEDIATELY IN ACCORDANCE WITH QR AND O 21.19 IF A CLAIM AGAINST THE CROWN MAY ARISE

F. MAKE RECOMMENDATIONS AS TO ACTION THAT SHOULD BE TAKEN TO PREVENT FURTHER OCCURRENCES OF THIS NATURE

G. THE INQUIRY SHALL COMMENCE AS SOON AS POSSIBLE AND THE MINUTES

~~C WB REGULATIVE E E E E E E E G PARA 3. WB REGULATIONS RELEVANT~~

CONFIDENTIAL

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REPLY OR REFERENCE

PAGE 3 RCEOC 22 C O N F I D E N T I A L

s.19(1)

PAGE 2 RCEOC 22 C O N F I D E N T I A L

- MEMBER [REDACTED] LCDR J S CANTLIE
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~~C. WB REGULATIVE E E E E E E E C PARA 3. WB REGULATIONS RELEVANT~~

CONFIDENTIAL

A C NO UNCLASSIFIED
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PAGE 3 RCEOC 22 C O N F I D E N T I A L

OF THE PROCEEDINGS SHALL BE DELIVERED TO THE COMMANDING OFFICER VU 32 IN ACCORDANCE WITH QR AND O 21.15 WITHIN FOURTEEN DAYS OF

OCCURRENCE. SHOULD IT BE IMPOSSIBLE TO COMPLETE THE BOARD ON THE SPECIFIED DATE, A FULL WRITTEN REPORT SHALL BE SUBMITTED TO THE COMMANDER MARITIME COMMAND ON THE DUE DATE

H. THE PRESIDENT AND MEMBERS OF THIS BOARD OF INQUIRY SHALL NOT DEPART ON POSTING OR LEAVE WITHOUT PERMISSION OF THE COMMANDER MARITIME COMMAND

J. THE PRESIDENT SHALL ACKNOWLEDGE RECEIPT OF THESE TERMS OF REFERENCE BY RETURN PRIORITY MESSAGE

PRIORITY

NNNNMVV PCA174V GJA025

UU

FEB 3 1968

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FM CANFORBASE TORONTO

TO RCCWC/CANFORCEHED

RCCPMR/CANMATCOM

RCCRC/CANLIFTCOM

RCEOC/CANMARCOM

WEN/CANMEDAV TORONTO

BT

UNCLAS COMD7

AIR ACCIDENT

A. RED

B. VV32 CFB SHEARWATER

C. DOWNSVIEW, 3 FEB 68, 0232Z

D. CS2F-1, CANFORCE 1543

E. A

F. UNKNOWN

G. INSTRUMENT TRAINING

H. CRASHED IN BACKYARD OF PRIVATE DWELLING SITUATED ON INVERMAY AVENUE, DOWNSVIEW AFTER OVERSHOOTING FROM RADAR APPROACH RUNWAY 150 AND DOING CIRCLING APPROACH TO RUNWAY 27

PAGE 2 RCCPGJ 18 UNCLAS

J. UNKNOWN

K. DECEASED

M. AIB INVESTIGATION. LT CMDR JR BURNS ARRIVING 0930, 3 FEB

N. YES

P. NOT YET NOTIFIED

Q. AS ABOVE

R. N/A

BT

PRIORITY

ALPHABET	...	...	...
DGAF	...	...	DPS (2)
DM	...	...	DPS (3)
CPGC	...	...	DPS (A)
DWBS	...	...	DPS (2)
CF	...	...

DOPSO

CPHO OPERATIONS CENTRE

FEB 3 00 31 '68

DOPSO

**THE ENCLOSED
PROCEEDINGS/REPORTS OF AN
AIRCRAFT ACCIDENT/INCIDENT
HAVE BEEN PREPARED UNDER
AUTHORITY OF QR&O 21.56
AND CFP 135.**

**THEY SHALL BE USED SOLELY
FOR PURPOSES OF ACCIDENT
PREVENTION, AND ARE TO BE
SEEN ONLY BY THOSE WITH A
NEED-TO-KNOW.**

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VOLUME



VOLUME
COMPLET

DATED FROM À CONTER DU	<i>July 1965</i>	TO JUSQU' AU	<i>SEPT 1966</i>
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AFFIX TO TOP OF FILE — À METTRE SUR LE DOSSIER

DO NOT ADD ANY MORE PAPERS — NE PAS AJOUTER DE DOCUMENTS

FOR SUBSEQUENT CORRESPONDENCE SEE — POUR CORRESPONDANCE ULTÉRIEURE VOIR

FILE NO. — DOSSIER N°	<i>V1010</i>	VOLUME	<i>1543</i>
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Type.....CS2F.....

No1543.....

ENTRY NO	Place of Accident	Unit	Pilot	Assessment and Type of Occurrence	Case Closed Initials
207019 1	Shearwater	VU32		Engine failure Power Plant Factor	Closed
508059 2	SHEARWATER	VU-32	LCDR HE HOLLYWOOD	Pilot descended below OCA minimum in very poor weather conditions Pilot Factor - Error in judgment	Closed
609076 3	VU 32	Shearwater	Lt GE WHITE	Malfunction exhaust stack Failure	B. 000068

DIRECTORATE OF FLIGHT SAFETY

PROCESS RECORD

609076

ACC G ACC A INC SOR

Aircraft OS 2F-1 1543 date 19 Sep 66 CASE NUMBER 3
 Unit VU 32 place Shearwater

to follow	S M R	UNIT CF210	UNIT CF211	RESUME	COMMAND CF210	COMMAND CF211	PENSION LETT
	<u>23 Sep</u>						

BF	DATE	INIT	DATE	INIT	DATE	INIT	DATE	INIT	DATE	INIT
	<u>3 Oct</u>									

AIB
PAST HISTORY

ADDITIONAL DATA

CAUSE FACTORS
Material - exhaust stack fracture

CLOSED BY AS DATE 20/10/66
 KARDEX BP DATE 26 Sep 66

FLIGHT COMMENT & PUBLICITY
AIB REMARKS

EDITOR	YES	NO	BF	PHOTOS	SLIDES

STATISTICS SKE/EO/D VIRE WFC (ML)

REGISTER	MCBEE CARD	SEELEY CARD	PILOT CARD	STATS FILE
<u>21/9/66 - IBM</u>	<u>21/9/66 - IBM</u>		<u>IBM - 20/11/66</u>	<u>000071</u>

(3)

VV ICA186PEA1920EB1620VV AOA030 UA

RCCWC

DE RCEOA 14 23/1436Z

SEP 23 16 33 '66

R 231448Z

FM VU32

TO RCCWC/CANFORCED

RCCPMR/CANMATCOM

RCEOC/CANMARRON

ZEN/CFB SHEARWATER

BT

UNCLAS FOR VCDS/DFS

AIR INCIDENT SMR

VU32 201438Z SEP

A CS2F-1 1543 *706263*

B CFB SHEARWATER 192321Z SEP. STARBOARD ENGINE FIRE
WARNING LIGHT ILLUMINATED IN LANDING PATTERN. NO
VISUAL INDICATION OF FIRE. AIRCRAFT LANDED WITHOUT
FURTHER INCIDENT

C EXHAUST STACK ASSY PT NO 89P1280.5

D 5.1. PRIMARY. 547.4

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[Handwritten signature]

PAGE 2 RCEOA 14 UNCLAS

E VU32 6-627/67

F MATERIAL FAILURE

G KNOWN DEFECT

H RETURNED TO NAVSUPDEP DART FOR DISPOSAL

J NIL

49

NNNNVV ICA275PEA2150EA154 AOA054 UU

SEP 20 16 48 '66

RR RCCWC

DE RCEOA 39 20/1433Z

R 201438Z

FM VU32

TO RCCWC/CANFORCEHED

RCCPMR/CANMATCOM

RCEOC/CANMARCOM

ZEN/CFB SHEARWATER

BT

UNCLAS F1

FOR UCDS/DFS AIR INCIDENT

A WHITE

B VU 32 CFB SHEARWATER

C CFB SHEARWATER 192321Z SEP 66

D CS2F-1 1543

E D

F 0-77438 LT G E WHITE UNINJURED

G 0-74834 A/S/LT J VALLEE UNINJURED

H N/A

J TRAINING

K ON TAKE-OFF FROM TOUCH AND GO LANDING, STARBOARD ENGINE FIRE

WARNING LIGHT ILLUMINATED. POWER REDUCED AND LIGHT REMAINED ON

UNTIL 180 DEG POSITION. NO VISUAL INDICATION OF FIRE. AIRCRAFT

LANDED WITHOUT FURTHER INCIDENT

M FRACTURED PORT UPPER EXHAUST COLLECTOR

N CFB SHEARWATER

P VU 32 INVESTIGATION

Q NO

BT 49

WHITE CRASH (18)
DGAF DFS (2)
MSO DCENG
DM DGEA
DT DIS (3)
DAE DCOPS
CFOC DMFORA
DSSEC DLFORA



*Logged
3 Oct 66
M/S*

508059

DFS PROCEDURE CHECK

Case No 2

Aircraft CS2F

Date of Air/Ground Accident/Incident 18 Aug 65

Unit VU-32

Place SHEARWATER

	Date	BF Date	Initials
Crash Message received	20 Aug 65	7 Sept	ML
CO's 24 Hour Report (Fatal, A&B Cat)			
Bail Out, Ditching or Survival forms sub			
Resume (Fatal, A&B Cat)			
D14 (Advance) Received			
D14 (Command) Received			
Board of Inquiry Convened			
D6 (Advance) Received			
Pension Memo to RO			
D6 (Command) Received			
AIB Investigators' Report Received And Acknowledged			
Exhibits and Slides Prepared And Catalogued			

Correspondence Record/Cross Reference

File No	To or From	Date

Case closed by [Signature] Date 30 Sept 65
 BF for follow-up action 30 Sept 65

FLIGHT SAFETY INFORMATION

Accident Info Bulletin Sent _____
 Flight Comment Review WR

STATS INFORMATION

ACCIDENT CARD INITIATED: 7/11/65
 PILOT CARD COMPLETED: 1BM-7/11/65
 REGISTRY ACTION COMPLETED: 23/8/65
 ACCIDENT CODE: GI/PSMS/PDR/P/USM/XOE/WVED

(PF)

[Signature]
 000076

INSPECTOR'S ACTION SHEET

Brief Description of Occurrence

During ^{night} GCA approach, aircraft drifted to left side of runway. Right front undercarriage sensor struck runway light. Overshoot successful, proceeded to alternate.

Past History Relative - (Previous Accidents, UGRs, TFRs F141s, other Services)

Only one other landing error in trackers this year.

Investigation Procedures -

Investigated by tower and squadron personnel, weather report 1 x 1/8 in fog. (night.) It was determined that pilot descended below minimum limits.

Follow-up Action Required

Not required this HQ. Possibly DOT violation will be filed. Disciplinary action should be taken by Squadron CO.

CAUSE - Pilot descended below GCA minimum in very poor weather conditions.

FINAL ASSESSMENTS - (As per AFAO 21.56/01)

- (a) Pilot Factor - (Error in Judgment)
- (b)

CORRECTIVE ACTION

See CFP 100 para 11.51 - weather observed from cockpit. 000077

V ICA111 OE4138T A0A025

RR RCCWC

E RCEOA 8 28/1440Z

R 281444Z

FM VU-32

TO RCCWC/CANFORCED

RCCPMR/CANMATCOM

RCEOC/CANFLAGLANT

ZEN/CANAS

BT

UNCLAS FOR COPR/DFS AIR INCIDENT SMR REF VU-32 191936Z

A 1543 CS2F

B SHEARWATER 18 AUG 0011Z. A/C DECENDED BELOW MINIMUMS ON GCA.

TOUCHED DOWN TO LEFT OF RUNWAY 16L. STBD MAIN GEAR STRUCK RUNWAY

LIGHT ON LEFT SIDE OF RUNWAY. WEATHER REPORT 1 X 1/8 F. NIGHT

C N/A

D N/A

E N/A

F PILOT DECENDED BELOW MINIMUMS. PILOT ERROR

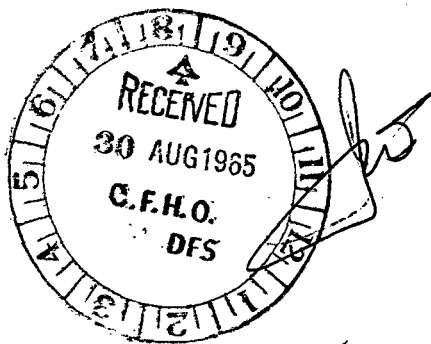
G RECOMMEND DISCIPLINARY ACTION

H N/A

J NONE

BT

DFS
DASENG



6
01010-1543

REP 11/5/85

100'
sky obscured
1/8 mile in Fog.

note
with s/l
30 Aug.

126

V ICA111 OEA138T A0A025 UU

RR RCCWC

DE RCEOA 8 28/1440Z

R 281444Z

DFS

FM VU-32

DASENG

TO RCCWC/CANFORCED

RCCPMR/CANMATCOM

(6)

RCEOC/CANFLAGLANT

ZEN/CANAS

BT

UNCLAS FOR COPR/DFS AIR INCIDENT SMR REF VU-32 191936Z

A 1543 CS2F

B SHEARWATER 18 AUG 0011Z. A/C DECENDED BELOW MINIMUMS ON GCA.

TOUCHED DOWN TO LEFT OF RUNWAY 16L. STBD MAIN GEAR STRUCK RUNWAY

LIGHT ON LEFT SIDE OF RUNWAY. WEATHER REPORT 1 X 1/8 F. NIGHT

C N/A

D N/A

E N/A

*Shearwater limits
200 and 1/2.*

F PILOT DECENDED BELOW MINIMUMS. PILOT ERROR

G RECOMMEND DISCIPLINARY ACTION

H N/A

J NONE

BT

(126)

NR OVU ICA2540EB179 AOA085 19 20 23 '65

PP RCCWC

DE RCEOA 64 19/1916Z

P 191936Z

FM CANAS (VU-32)

TO RCCWC/CANFORCED

RCCPMR/CANMATCOM

RCEOC/CANFLAGLANT

BT

UNCLAS AIRINCIDENT

A WHITE

B VU-32

C CANAS 180011Z

D ~~E~~ CS2F - 1543

E E

F HOLLYWOOD HE LCDR O-33826 UNINJURED

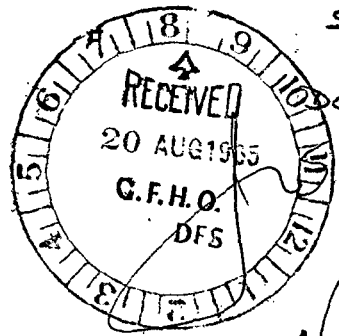
G BYRNE AJ LCDR O-11064 UNINJURED

J PILOT TRAINING

K AIRCRAFT RIGHT FRONT SCISSORS STRUCK RUNWAY LIGHT

RUNWAY LIGHT AND STANDARD DAMAGED

PRIORITY



DGAF, DFS, MSO, DM,
SEC/CS, DIS, DESENER (AERO SPACE),
GAS ENG, DT, DM FOR (C FOR)

DOPSG at 192030Z

W.P.

2

PAGE 2 RCEOA 64 UNCLAS

L OVERSHOOT EXECUTED AFTER AIRCRAFT DRIFTED TO LEFT SIDE
OF RUNWAY ON LANDING

M SHEARWATER

2. INVESTIGATION DELAYED UNTIL RETURN OF AIRCRAFT FROM ALTERNATE

BT

70k 1420237 Aug 65

129

PRIORITY

NNNNVV ICA158 OEA2240A0414

VV AOA041 UU

PP RCCWC

DE RCEOA 25 20/1452Z

P 201454Z

FM VU 32

TO RCCWC/CANFORCEDH

RCCPMR/CANMATCOM

RCEO/CANFLAGLANT

BT

UNCLAS MY 191936Z AMEND PARAS D AND E

D. CS2F SERNO 1543

E. E.

H. NIL

N. LOCAL INVESTIGATION PLANNED.

O. NO

BT

LGAF DFS WISO DM
SEC/OS DIS GENGR (AEROSPACE)
ASENG DT DMFORA CFO C



(93)

131

AUG 65

MESSAGE FORM

FILE 1016-2 (COPY 1/3)

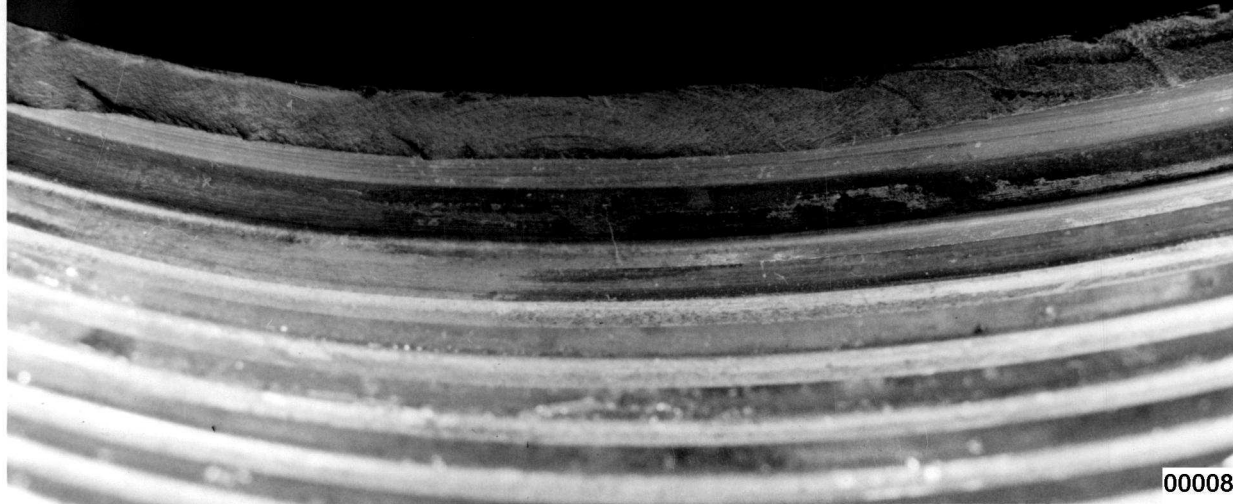
FOR COMMEN/SIGNALS USE

NUMBER

PRECEDENCE - ACTION ROUTINE	PRECEDENCE - INFO DEFERRED	DATE - TIME GROUP 20 12 45 Z	MESSAGE INSTRUCTIONS
FROM CANFORGEHED			PREFIX GR
TO VU32			SECURITY CLASSIFICATION UNCLAS
INFO CANFLAGLANT CANMATCOM			ORIGINATOR'S NUMBER XOPS222

YOUR AIR INCIDENT 191936Z PD ADVISE AIRCRAFT TYPE AND SERIAL NUMBER

PAGE OF PAGES	REFERS TO MESSAGE		DRAFTER'S NAME <i>(JFE Stewart)</i> Sgt				OFFICE 270 Carling	TEL. 2-1881		
	CLASSIFIED YES <input type="checkbox"/> NO <input type="checkbox"/>							RELEASING OFFICER'S SIGNATURE <i>(HA Fawcett)</i> F/L VS2-2		
FOR OPR'S USE	R	DATE	TIME	SYSTEM	OPERATOR	D	DATE	TIME	SYSTEM	OPERATOR



T.I.R.

W1248

000088

ROYAL CANADIAN AIR FORCE
TECHNICAL INSPECTION REPORT

NAVY

OVERHAUL CONTRACTOR OR REPAIR DEPOT BRISTOL AERO INDUSTRIES (MONTREAL) LIMITED		REPORT NUMBER W1248	
DATE 16 Sep 65	SECTION REFERENCE NUMBER 35/8/2810-21-803-7953	ITEM SERIAL NUMBER PC 10005	
NOMENCLATURE Wright 983C9HE1 (R1820-82) Engine		PART NUMBER	
MANUFACTURED BY Cdn. Pratt & Whitney	DATE N/K	TSN 2076 hrs.	
LAST OVERHAULED BY B.A.I.L.(M)	DATE 6 Apr 65	TSO 55 hrs.	
AIRCRAFT TYPE AND MARK Tracker CS2F	AIRCRAFT SERIAL NO. 1543	STATS 318 CNA21 / VU-32/28/65	DATE 14 Jul 65
RECEIVED FROM UNIT Utility Squadron No. 32 Date: 15 Jul 65		STATS 325 TFR N/A	DATE N/A

UNIT COMMENTS (Symptoms of Failure - L54 Tag)	<p>CNA 21 COMMENTS:</p> <p>"On completion of simulated single engine flight, starboard engine returned to normal setting, rough running occurred. Black smoke and oil coming from starboard cowling."</p>
CONTRACTOR/DEPOT FUNCTIONAL TEST AND/OR VISUAL INSPECTION BEFORE DISMANTLING	<p>Preliminary visual inspection revealed that No. 7 cylinder barrel had fractured in an annular fashion, causing the cylinder head to come adrift. As a consequence, extensive secondary damage was inflicted to the adjacent cylinder head baffles and to the ignition harness assembly, through impact from the loose cylinder head.</p>
CONTRACTOR/DEPOT DISMANTLING - CONDITION FOUND	<p>On dismantling the engine power section, it was noticed that further secondary damage had been inflicted to No. 7 piston, its related connecting rod and to the crankshaft counterweight.</p> <p>Microscopic examination of the above cylinder barrel's fracture surface revealed rest lines nucleating from the bottom of a thin groove on the outer surface of the barrel (Refer attached photograph).</p> <p>Another check subsequent to removal of the cylinder barrel fins, revealed rough machining tool marks inside the fin grooves it was also evident that the affected cylinder barrel had not been shot-peened to relieve surface stresses in the fin grooves.</p> <p style="text-align: right;">Cont'd.</p>
REMARKS AND RECOMMENDATIONS (Include opinion of cause of failure e.g. faulty design, wrong lubricant, poor maintenance, etc., and recommendations to increase or decrease established life)	<p>Fracturing of the aforementioned cylinder barrel is attributed to metal fatigue nucleating from a stress riser, such as rough machine marks or a small surface crack, at the base of a fin groove.</p> <p>To alleviate the possibility of a recurrence, it has been recommended that all non shot-peened Wright R1300 and R1820 cylinders be crack checked and shot-peened at their barrel fin groove locations.</p>

completes 0 450 1000
 va oil 0 FGP
 LN/pd
 DISMANTLING CONDITION BOOK

DATE 16 Sep 65	SIGNATURE FOR OVERHAUL CONTRACTOR F.G. PHILPOTTS <i>F.G. Philpotts</i>
--------------------------	---

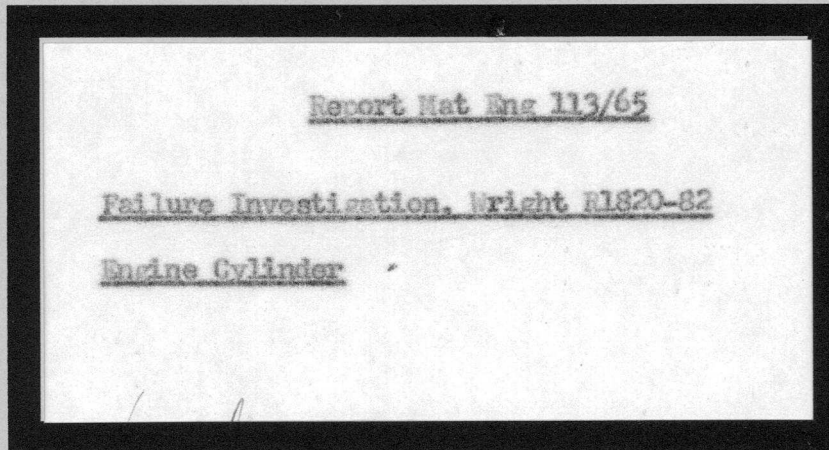
DISMANTLING CONDITION FOUND: Cont'd.

As oil containing ferrous contaminants had re-circulated through this engine, a complete overhaul was recommended.

V1010-1543
TD 5190

RCAF MATERIEL LABORATORY

RCAF Station Rockcliffe Ottawa Ont



LABORATORY TECHNICAL REPORT



RCAF MATERIEL LABORATORY
RCAF Station Rockcliffe
Ottawa Ontario

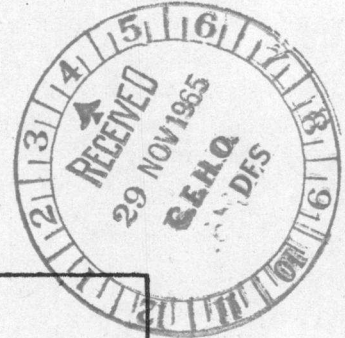
Pages 5

File 51-50-Mat Eng 113/65

For: HCHQ/PA5-4 - 3; CPHQ/DFS - 1; ITR - 2

Date 24 Nov 65

Reference: 10358-28-3(PA5-4) 10 Sep 65



Report Mat Eng 113/65
Failure Investigation, Wright R1820-82
Engine Cylinder

Prepared by *Kornfeld*
(K. Kornfeld)

Submitted by *Kornfeld*
(K. Kornfeld)
Division Head

Approved *E.G. MacInnis*
(E.G. MacInnis) S/L CO

Report No. Mat Eng
113/65

Failure Investigation, Wright R1820-82
Engine Cylinder

PURPOSE: Materiel Command letter 1035S-28-3(PA5-4) of 10 Sep 65 requested investigation of No. 7 cylinder (Part No. 429645) of Wright R1820-82 engine Ser. No. 10005 which fractured below the head after an undisclosed period of service.

EXPERIMENTAL: After visual examination, some measurements of the cylinder were made, specimens for metallographic assessment were extracted from the area of fatigue initiation and tensile test pieces were extracted from the cylinder wall. The nitrided layer was removed from the tensile test pieces which were of $\frac{1}{4}$ " width, 0.080 thickness and 1" gauge length.

TEST RESULTS: The fatigue failure initiated in the 17th rib groove of the cylinder, proceeded to approx 60% of the circumference to end in catastrophic fracture. The head of the cylinder fell off and the steel portion distorted while hitting the ground with its fracture.

The results of dimensional checks are presented in Appendix "A". The cylinder was ovalized outside its attachment collar ($2\frac{1}{2}$ " from lower outlet) and "belled" out towards the fracture. The ovalization was in average 0.0083", the increase of diameter towards fracture 0.0060". The minimum wall thickness (between ribs) was varying within 0.005".

Photo 1 shows the presence of cracks up to 0.017" deep on the nitrided inside wall of the cylinder. The cracks did not considerably expand outside the nitrided layer (photo 2) and existed long enough to shave some aluminum off the piston (see white metal filling the cracks in photo 2). These ways of cracking suggests plastic deformation of the cylinder wall and a shear movement of the core against the much less ductile nitrided case.

The mechanical test results follow:

Test Piece No.	0.2% Yield Strength lb/in ²	UTS lb/in ²	Elong %
1	--	118600	12.2
2	87800	117700	21.0
3	82000	118400	19.6
Average	85900	118233	--

Report No. Mat Eng
113/65

DISCUSSION:

The mode of fracture of the cylinder indicates a strong influence of the axial stress, with nearly no influence of the hoop stress. Therefore the causes of the failure are considered from the point of view of the maximum axial stress.

Appendix "B" gives details of arrival at the stress characteristics. Two stress elements were evaluated:

The constant static stress exerted on the rib by forcibly inserted aluminum rings designed for heat exchange and the fluctuating stress from the maximum power applied. The latter was obtained as maximum force of 39600 lb from MC/PA-5. From the Yield Strength, Ultimate tensile strength, and fluctuating stress with 32660 lb/in² mean stress, Soderberg and Goodman lines were plotted in graph 1 under the assumption (very frequent for steels) that the fatigue limit on alternating load condition is equal to half of the UTS.

Graph 1 predicts that under Soderberg principle yielding of the material of the cylinder will take place at an equivalent of 35000 lb/in² of fluctuating stress. This prediction is confirmed by the cracking of the nitriding and is compatible with the estimate of the maximum total stress (static and fluctuating) exceeding 35000 lb/in² (assessed in Appendix "B" to be 44660 lb/in²).

Goodman line has been selected on graph 1 instead of the less conservative Gerber's parabolic relation, because the stress concentration factor taken in Appendix "B" did not take the weakening caused by cracking in the nitrided layer into consideration. The Goodman line indicates that the cylinder would not fail in fatigue if the maximum (total) stress would not exceed 42000 lb/in². The last figure compared with the calculated 44600 lb/in² fluctuating stress maximum permits an assumption that the approximate life of the cylinder would be 9 million cycles of the maximum load i.e. approx 45 million revolutions at the maximum working load, or again with coarse approximation 200 - 250 hours, taking cumulative fatigue from lower stresses into consideration.

Report No. Mat Eng
113/65

CONCLUSION:

The cylinder was underdesigned and failed in fatigue caused by combination of the constant stress from forcing aluminum heat exchangers between the ribs with the maximum of the cylinder fluctuating pressure. The cylinders life is approximated as 200 - 250 hours of maximum power. When inspection of the inner cylinder surface discloses cracks running in spirals on its inner surface, the cylinder should be rejected. The formation of such cracks may be expected at 150 to 180 hrs at maximum engine power.

APPENDIX "A" TO
 Report No. MAT ENG
 113/65
 DATED 24 NOV 65

DIMENSIONS OF THE CYLINDER

(a) Inside diameter, in inches

Depth from crank case end inch	Position degrees			Average	Ovality
	0°	45°	90°		
1	6.1377	6.1355	6.1297	6.1343	0.0080
2 $\frac{1}{2}$	6.1335	6.1330	6.1360	6.1342	0.0020
3 $\frac{1}{2}$	6.139	6.132	6.141	6.1373	0.0090
5	6.137	6.135	6.149	6.1403	0.0140
Average	6.1368	6.1338	6.1389	6.1365	0.0083

(b) Cylinder wall thickness between ribs

Distance from last bottom groove	Position			Average
	0°	45°	90°	
1"	0.135"	--	--	0.135"
1 $\frac{1}{2}$ "	0.136"	0.140"	2.137"	0.1377"

(c) Depth of grove 0.1358" average

(d) Width of grooves
 Close to fracture 0.1101"
 Opposite fatigue start
 1st slot 0.1073"
 2nd slot 0.1075"
 3rd slot 0.1094"

(e) Width of rib
 0.0667" mid position
 0.068" near fracture

(f) Thickness of aluminum sheet 0.0263" to 0.0268"

(g) Thickness of aluminum spacer between sheets 0.0670"

APPENDIX "B" TO
 Report No. MAT ENG
 113/65
 DATED 24 NOV 65

ESTIMATES OF STRESSES

Internal diameter of the cylinder 6.135"
 Area of the piston pressure 28.3 sq. in.
 Total force given $P = 39600$ lb at 1400 lb/in² max pressure

Inside cylinder diameter 6.135" (d)
 Wall thickness 0.135" (t)
 Outside diameter 6.405" (D)
 Mean diameter 6.270" (d_m)

Cross-sectional area under max pressure $\frac{D^2 - d^2}{4} \pi = 2.659$ sq. in.
 $d_m \pi t = A = 2.659$ sq. in.

Nominal fluctuating stress in cylinder wall:

$$S_n = \frac{P}{A} = 14720 \text{ lb/in}^2$$

Stress concentration factor:

grove height $a = 0.1075$ "
rib thickness $b = 0.0674$ "
 total strained length $c = 0.1749$ "

$$K = \frac{0.1749}{0.1075} = 1.63$$

Fluctuating stress $S_f = K S_n = 24000$ lb/in²

Pressure exerted by Aluminum sheet inserts

Thickness of Aluminum (see (f) and (g) Appendix "A"):

$0.0263 \times 2 + 0.067 = 0.1196$ "
 Rib grove width $\frac{0.1101}{0.0095}$ "

Compression strain on Aluminum $\frac{.0095}{.1101} = 0.00863$ in/in

The strain on aluminum is highly plastic and therefore its flow stress is acceptable as pressure on the cylinder ribs at $p = 10000$ lb/in².

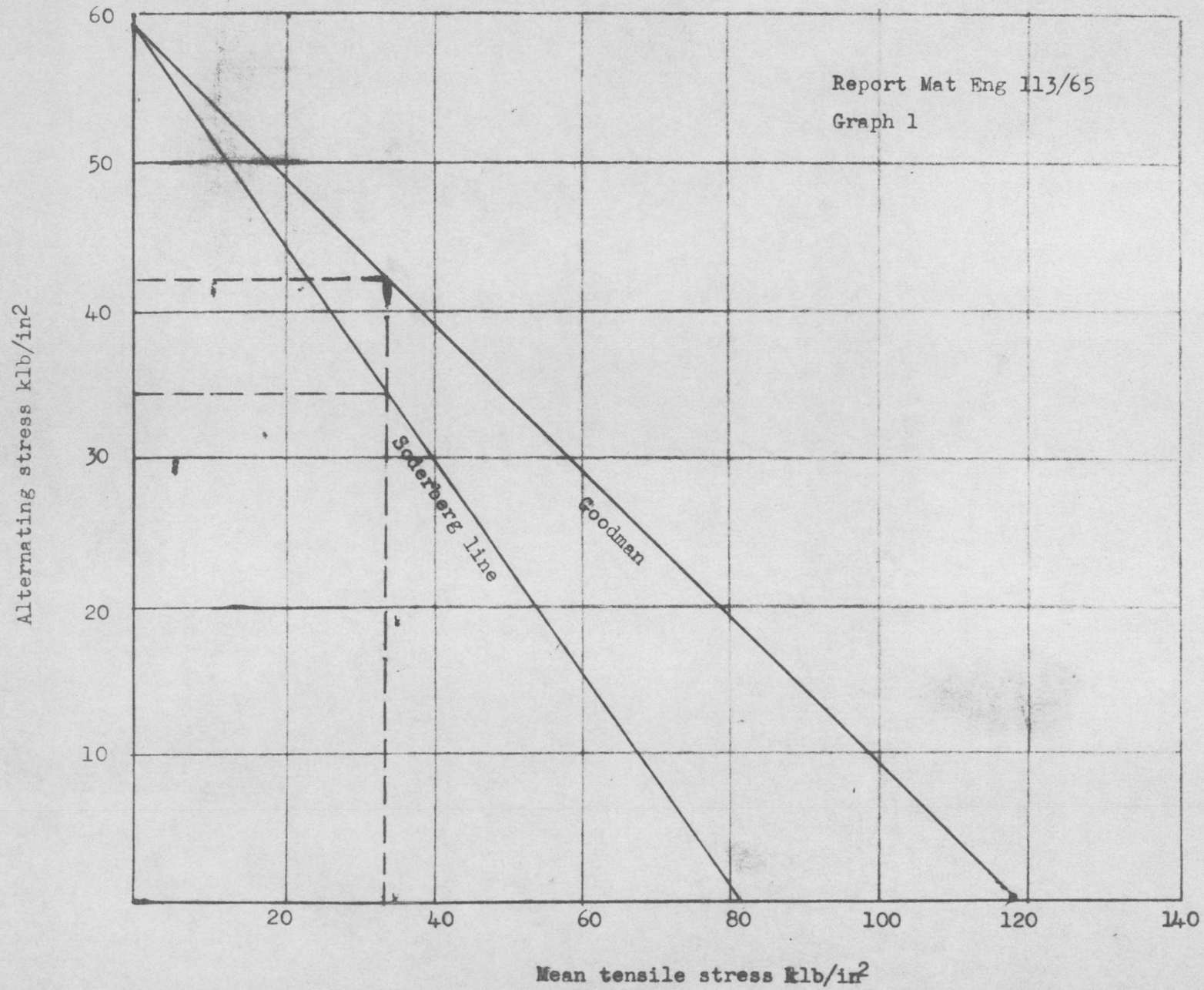
This pressure bends the cylinder ribs of 0.1358 " = b length, outside diameter $D_r = 6.405$ " $\neq 2 \times 0.1358$ " = 6.6766" and inside diameter $d_r = 6.405$ ".

$M_{max} = 1/2 p l^2 = 5000 \times (0.1358)^2 = 92.2$ lb/in per running inch of the rib.

Stress $S_c = \frac{M_{max}}{r} = \frac{92.2}{0.0668^2 \times 1} = \frac{92.2}{0.00446224} = 20660$ lb/in²

Concluding:

Constant stress 20660 lb/in²
 Fluctuating stress 24000 lb/in²
 Maximum (total) stress 44660 lb/in²
 Mean stress 32660 lb/in²



X10

Nital

Photo 1

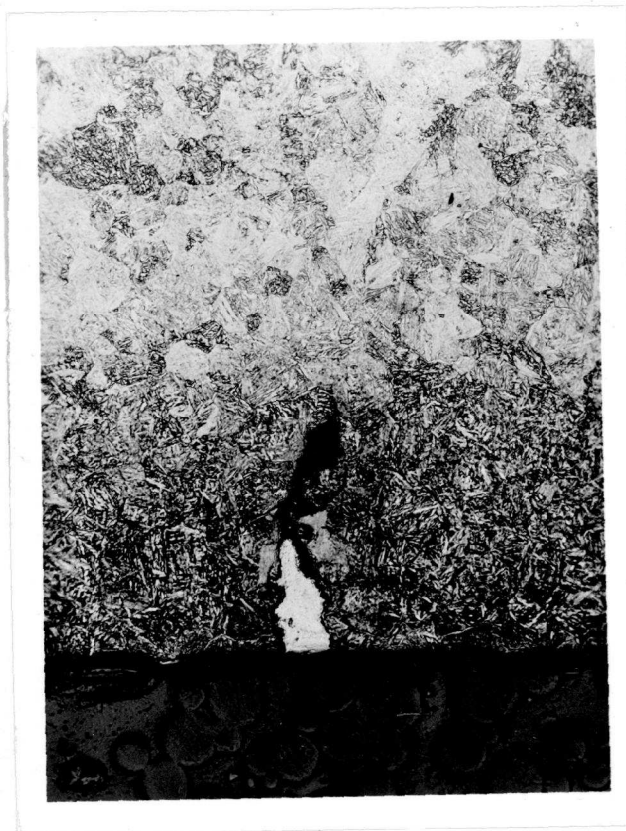
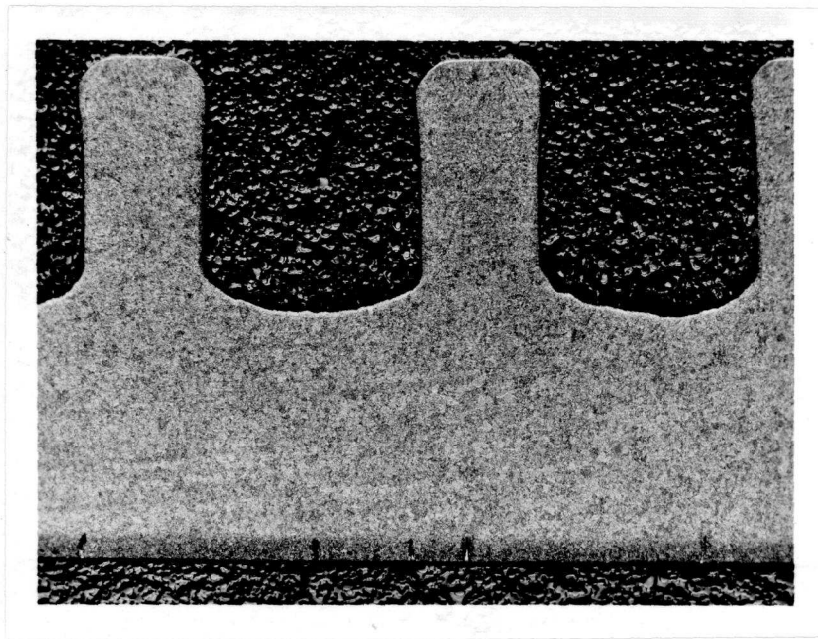
Section through the cylinder wall near fatigue initiation. Cracks in the nitrided layer of the cylinder wall are shown.

X100

Nital

Photo 2

Detail of a crack on the cylinder wall. The crack runs in nitrided layer only. The mouth of the crack is filled with aluminum.



DFS PROCEDURE CHECK

507019

Case No 1

Aircraft CS2F 1543

Date of Air/Ground Accident/Incident 2 Jul 65

Unit VU 32

Place SHEARWATER

	Date	BF Date	Initials
Crash Message received	6 Jul		
CO's 24 Hour Report (Fatal, A&B Cat)	✓		
Bail Out, Ditching or Survival forms sub	✓		
Resume (Fatal, A&B Cat)	✓		
D14 (Advance) Received	29 Jul.		
D14 (Command) Received			
Board of Inquiry Convened	—		
D6 (Advance) Received	—		
Pension Memo to RO	—		
D6 (Command) Received	—		
AIB Investigators' Report Received And Acknowledged			
Exhibits and Slides Prepared And Catalogued			

Correspondence Record/Cross Reference

<u>File No</u>	<u>To or From</u>	<u>Date</u>

Case closed by [Signature] Date 10 Aug 65.
 BF for follow-up action whole contractors T. IR received.

FLIGHT SAFETY INFORMATION

Accident Info Bulletin Sent _____

Flight Comment Review _____

STATS INFORMATION

ACCIDENT CARD INITIATED: IBM- 9/7/65
 PILOT CARD COMPLETED: IBM- 7/10/65
 REGISTRY ACTION COMPLETED:
 ACCIDENT CODE: SKK/E 10 (M4)

[Signature]
10 Aug 65.

INSPECTOR'S ACTION SHEET

Brief Description of Occurrence

On flight from Shearwater to Bogotville, two ~~several~~ Single Engine practice sessions carried out, feathering PORT. On flight Bogotville to Downview SE practice feathering STBD. On unfeathering STBD after practice, rough running and smoke encountered, feathered, landed St. Huberts. P.Q.

Past History Relative - (Previous Accidents, UCRs, TFRs F141s, other Services)

A few years ago of R1820/82 engine brake stop this year, several seem to have followed S/E simulated practice.

Investigation Procedures -

Total investigation to date confined to engine examination at St. Huberts - No. 7 cylinder reported from engine with major piston and bowl damage.

Follow-up Action Required

Case will be reviewed when T.I.R. from Contractor's strips available. D.F.S. & Shearwater Reps. will attend strips.

CAUSE - Engine Failure - undetermined pending strip report.

FINAL ASSESSMENTS - (As per AFAO 21.56/01)

- (a) Material - Power Plant Factor.
- (b)

CORRECTIVE ACTION

Pending.

File: O 1010-1343 TD 5190

DFS Request # ...36...

Canadian Forces Headquarters
Ottawa, 4, Ont.

Date .12. AUG. 65.

PRIORITY:
URGENT
ROUTINE ✓

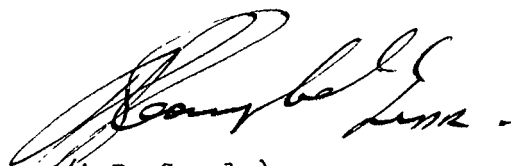
TO: AFHQ/SAMO

RECIPROCATING/TURBINE ENGINE/ACCESSORIES
TECHNICAL INFORMATION REQUEST

	UNIT	DIA
1. SUBJECT	ENGINE FAILURE VU 32	
2. REPORT(S) REQUIRED	T.I.R.	U.C.R.
ENGINE (TYPE)	R.1820/82	SERIAL NO PC10005
PREVIOUSLY INSTALLED IN AIRCRAFT NUMBER	1543	TRACKER
COMPONENT	N/A	SERIAL NO N/A
PREVIOUSLY INSTALLED ON ENGINE NUMBER	N/A	
REPORTED BY:	MESSAGE VU32-081900Z UCR SPNA 21 TFR	
	JULY 65. (VU 32/28/65)	

3. Two copies of report(s) to be forwarded to CFHQ/DFS quoting the above file reference.

for


(A.B. Searle)
Group Captain
for Chief of the Defence Staff

[Handwritten mark]

IBM
28/7/65

FORM C.N.A. 25 (REVISED SEPTEMBER 1952)

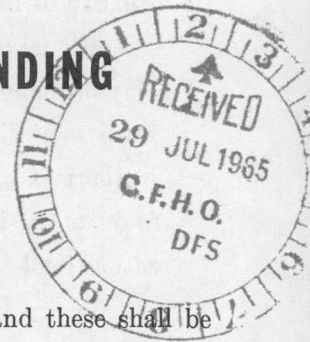
Serial No.....

**REPORT ON AIRCRAFT ACCIDENT OR FORCED LANDING
NOT ATTRIBUTABLE TO ENEMY ACTION**

This Form shall be rendered as directed in Naval General Orders

INSTRUCTIONS FOR COMPLETING THIS FORM

Instructions and a guide are printed on the Folder "C.N.A. 25 (Instructions) (Revised)" and these shall be consulted when this form is being completed.



1. Previous report by message of this accident—
State here:—
Date, time of origin, and month.....
Originator.....
Addresses.....

2. Squadron.....
Ship or Station.....
Did fire occur (a) in the air?.....
(b) on the ground?.....

3. Weather Conditions at Time and Site of Incident
Weather..... Cloud Base and amount.....
..... Visibility.....
Wind-speed and direction.....
(Amplify if necessary).....

4. Date Time and Zone of incident.....
Site (a) Name of ship, airfield.....
(b) Place, if not (a).....
(c) If ship, whether at sea or in harbour.....
NOTE.—(a) to be completed if incident occurred on a ship, airfield or landing ground, when taking off or approaching to land.

5. Occupants of Aircraft	Duty	Name and Initials	Rank	Official Number	Degree of Injury
Names to be entered in order of duty: pilot, observer, aircrewman, etc. Degree of injury to be quoted as follows: Missing: M Killed: K Injured (admitted to hospital): I Slightly injured (not admitted to hospital): I(s) Uninjured: U	PILOT	C. D. ...	LT	0-67534	U
	2nd P	J. C. ...	SUB	0-67532	U
	3rd P	D. T. ...	SUB	0-67555	U
	CHIEF G	V. GILLESPIE	PILOT	15739-8	U
	PARA	E. G. ...	LTJG	0-22695	U

6. Type of airframe and engine, and extent of damage:

Details	Airframe	Power Plant	Engine		Brief description of damage
			Single or Port	Starboard	
Type and mark	NA		7 cylinder split and separated from engine with major piston and coil and superficial propeller damage
Serial Number	1543	101-79	NA		
Total hours run or flown	2675.5	2240.0		202.5 hrs 54.3 slings	
Date last installed in airframe		13-5-65		13-5-65	
Category of damage		C		D	

DFS PROCESSED
Cause Assessment:
Material
Date: 15/8/65
Initials: [Signature]
Rank: [Signature]

7. Brief report of incident:
(Note: This space to be used only in the case of a precautionary landing.)
A/C was enroute from ... to ... when a simulated ... was carried out simulating a starboard engine failure. When the 8300 engine was returned to normal power rough running occurred. Various checks were carried out to determine the cause and during this time a cracked coil and oil on the cooling of the 8300 engine were noticed. The 8300 engine was subsequently feathered and secured.

Serial No. of A21.....

Signature.....

8. Nature of flight:

Operational or non-operational.....
 Day or night.....
 Purpose of flight.....
 Authorized by.....
 State entry in Column "E" of Flight Authorization Book.....

Briefing instructions for the flight (relevant to the incident):

.....
 Original signed
 LT. P. A. WILTS
 Signature of Briefing Officer.....

9. Pilot's report (or if not available senior survivor of air crew).

During the flight from SHERBROOKE to MONTREAL 2 simulated single engines and 1 simulated single engine landing were carried out. In all cases the port engine was the simulated dead engine and the starboard was the live engine. On landing, excess oil on the inboard cowling of the SIBS engine was noticed and Petty Officer GILLESPIE tightened one connection. Checking the oil, Petty Officer GILLESPIE noted that oil usage had been normal for the flight and the aircraft was declared serviceable.
 During the flight from Begetville to Downsview another simulated single engine was carried out and in this case the starboard engine was the simulated dead engine.
 On the attached enclosure are listed the power settings and action by the pilot from the time of the simulated single engine to the feathering of the starboard engine.

If aircraft landed on water, state:

- (1) Did aircraft dinghy: (a) Inflate automatically?..... (b) Inflate manually?.....
 (c) Fail to inflate?..... (d) Have emergency equipment attached?.....
- (2) How many personal dinghies: (a) Available?..... (b) Used?..... (c) Serviceable?.....
- (3) How long were aircrew in dinghy and how rescued?.....

Duration of flight.....
 QDM of runway used.....
 Original signed
 LT. G. FURBER
 Signature of Pilot.....

10. Landing Signal Officer's report (or other specialist officers as required)

No information available at this time. ... is being removed from aircraft and engine is being turned over to the contractor for investigation under the supervision of AIT.

Deck movement.....
 Wind speed over deck.....
 Original signed
 LT. H. WYNN
 Signature of Landing Signal Officer.....
 (or other Specialist Officer)

This section is to be used for the affixing of photographs and/or additional reports.

12. Squadron Commander's report.

Cause of engine failure not known at this time. Strip investigation will be carried out by contractor.

Flying experience of Pilot:

Hours Last 3 Months: (a) Total ^{75.4} (b) On Type ^{28.6} (For (c), (d), & (e))
 (c) Instrument flying ^{5.3} (d) Simulated I.F. ^{3.4} (e) Link Trainer ^{NLL} (See Note (iv))

Power Unit	Total Flying Hours				(c) Total Number of Deck Landings (See Note (iii))				(d) Total I. F. Hours (See Note (iv))	
	(a) Day & Night		(b) Night (See Note (i))		On Type		All Types		Actual	Link
	On Type	All Types	On Type	All Types	Day	Night	Day	Night		
Single		2655.4		204.2			TBM 8		897.3	77.5
M/E	CS2F 1800.0	5072.1	CS2F 250.0	625.1	78	46	CS2F 78	46	(e) Flying Assessment (See Note (ii))	(f) I.F. Assessment (See Note (iv))

Original signed:
 Signature of Squadron Commander (R. H. WILLIAMSON) LGJR.
 60 00 22

13. Station or Ship Air Engineer Officer's report:

State whether airframe and engine log books and Form 700

have been examined and result of examination.....

Is Form C.N.A. 21 being rendered?.....

If so, state Ref. Number.....

Is "Other Defect Reporting" Action being taken?.....

Signature of A.E. Officer.....

NOTES: To Section 12. (i) To be quoted if incident occurred during night flying.

(iii) To be quoted if accident occurred when taking off from or attempting to land on carrier.

(ii) To be quoted by Squadron Commander (See Folder "C.N.A. 25 (Instructions) (Revised)")

(iv) To be quoted if loss of control may have been due in part to flying at night or in bad visibility or in cloud by day. Note (i) is also to be complied with.

14. Commander (Air) report:

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

Signature of Commander (Air).....

15. Remarks of Captain of Ship or Parent Station:

Ref. Number.....

Date.....

Signature of Captain.....

16. Remarks of Senior Officer in Chief Command.

Ref. No.....

Date.....

Signature of Senior Officer in Chief Command.....

N.B.—In cases of accidents normally requiring a Board of Inquiry when the Senior Officer in Chief Command decides that a Board of Inquiry is not necessary his reasons are to be given in this Section.

SECTION 11

STBD ENGINE 1543 - 2 JULY 65

<u>MIX</u>	<u>PITCH</u>	<u>THROTTLE</u>	<u>REMARKS</u>
L	1800	23"	Time 1540 approximately
L	1800	OFF	Simulating "DEAD" engine.
R	FF	OFF	
R	1500	15"	Simulating feathered engine
R	1800	28"	"DEAD" engine brought back
L	1800	28"	After leaning mixture several rough surges felt.

L	1800	23"	Smooth, TAP normal
L	1800	28"	Rough surges, possible backfiring or detonation
R	1800	23"	Throttled back, Mix "R" - smooth
R	1800	28"	Rough surges
CHANGED STBD ENGINE FUEL SELECTOR TO PORT TANK			
R	1800	23"	Smooth
R	2300	30"	Rough
R	2300	23"	Smooth
R	2300	30"	Held prime on STBD engine - Smooth
R	2300	30"	Let go prime to see if this was definitely the reason for smooth running - very rough - throttle back, saw oil front of engine plus cracked cowl - feathered STBD engine. Time 1550 (approx.)

NOTE: TEMPS AND PRESS NORMAL THROUGHOUT.

DFS PROCESSED
Cause Assessment:
[Signature]
Date 10/8/65
Rank *[Signature]*

NNNNVV ICA2440EA325 AOA060

UU

JUL 8 19 43 '65

PP RCCWC

DE RCEOA 40 08/1839Z

TO 081900Z

FM VU32

TO RCCWC/CANFORCEDH

INFO RCEOC/CANFLAGLANT

RCCPMR/CANAIRMAT

BT

UNCLAS FOR COPR/CFS G.O. 21.56/4

A CS2F 1543

B HMCS SHEARWATER VU 32


C APPROXIMATELY 100 N EAST ST HUBERTS (021940Z)

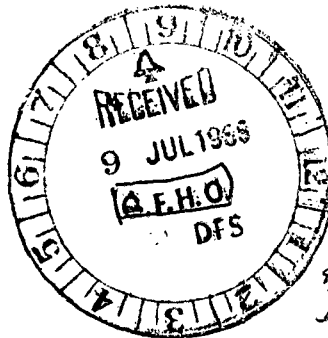
D PUMPLE G LT 0-60534 U

E SKINNER J SLT 0-67522 U

MCKAY D SLT 0-49505 U

EVERSFIELD N C LCDR 0-22095 U


Priority



*DFS
MILSEC
JGAF
DASE
DPCN
DMFOR(S)
COPR
Dm (ain)
DMFOR(A)
08/10/65 0820/5
(30)*

DFS PROCESSED
Cause Assessment:
Material
Date *10/8/65*
Initials *[Signature]*
Rank *[Signature]*

[Signature]
ENGINE STATION
1000 1/2

GILLESPIE W P2AT 15739-H U

F N/A

G N/A

H ROUGH RUNNING STBD ENGINE AND INDICATION OF ENGINE BREAKUP
OIL ON FRONT OF ENGINE AND TRAILING SMOKE. ENGINE FEATHERED.
AIRCRAFT LANDED SAFELY AT ST HUBERTS. UNDER INVESTIGATION

J NO

K AIRFRAME D ENGINE B

N NO

O NO

P NO

BT

124

M.D.C
705 COMM CORN
33

VV PCA257CA201SA068

UU

JUL-23 09 '65

PP RCCWC

DE RCCSC 239 02/2106Z

P R 022100Z

FM STN ST HUBERT

TO RCEOA/CANAS

INFO RCEOC/CANFLAGLANT

RCCWC/CANFORCEHDD

BT

UNCLAS NIL 2 JUL

FOR VU32 PD FROM LT GE PUMPLE CMM 0-6034 PD STARBOARD ENGINE FAILED

ENROUTE BAGOTVILLE TO DOWNSVIEW PD LOANDED SAFELY AT ST

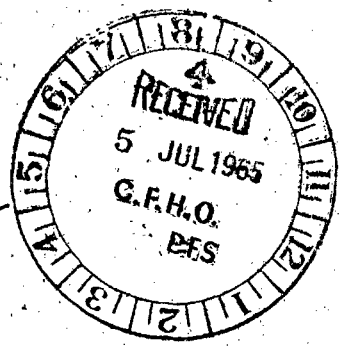
HUBERT PD SUSPECT MIXTURE CONTROL FAILURE CAUSING NUMBER 7 CYLINDER

TO SPLIT AND SEPARATE FROM ENGINE WITH MAJOR PISTON AND COWL

AND SUPERFICIAL PROPR DAMAGE PD ALSO LOW TENSION IGNITION

SEVERED PD PARA TWO NSD MONTREAL DO NOT HOLD A QCU

BT



Bh 12 July 65

D/S

D/AmTS

VV 1CA0580EA0770A023

UU

PP RCCWC

DE RCEOA 9 05/1337Z

JUL 5 14 20 '65

P R 051340Z

FM CANAS

TO RCCSUY/STN ST HUBERT

ZEN/AIRSUPDEP DART

RCCPMR/CANAIRMAT

INFO RCEOC/CANFLAGLANT

RCCWC/CANFORCEHED

BT

UNCLAS SAMO/AM/C (REC)

AERO ENGINE ALLOTMENT

1. YOUR 022100Z

3. 983C9HE-1 SERNO PC 10240(STBD)

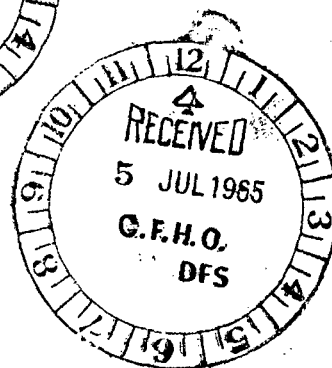
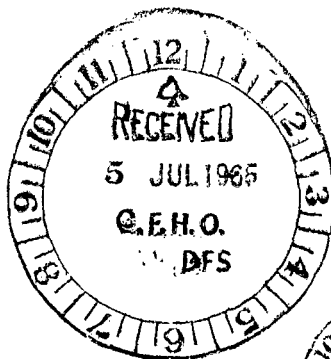
4. AMD-S

5. CS2F-1 SERNO 1543 AT RCAF STN ST HUBERT THROUGH AIRSUPDEP DART

6 CNR FREIGHT

7. REPLACEMENT FOR PC10005

BT



DFS
D/AMTS

3

132

VV ICA0580EA0770A023 UU

PP RCCWC

DE RCEOA 9 05/1337Z

JUL 5 14 20 '65

P R 051340Z

FM CANAS

TO RCCSUY/STN ST HUBERT

ZEN/AIRSUPDEP DART

RCCPMR/CANAIRMAT

INFO RCEOC/CANFLAGLANT

RCCWC/CANFORCEHED

BT

UNCLAS SAMO/AM/C (REC)

AERO ENGINE ALLOTMENT

1. YOUR 022100Z

3. 983C9HE-1 SERNO PC 10240(STBD)

4. AMD-S

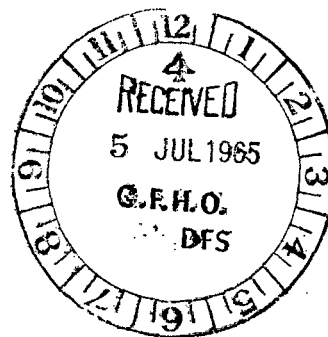
5. CS2F-1 SERNO 1543 AT RCAF STN ST HUBERT THROUGH AIRSUPDEP DART

6 CNR FREIGHT

7. REPLACEMENT FOR PC10005

BT

DFS
D/AMTS (3)



132

NNNNVV 1CA0900EBU35 AOA031

JUL 5 15 56
UU

RR RCCWC

DE RCEOA 15 05/1452Z

R 051454Z

FM CANAS

TO RCCPMR/CANAIRMAT

RCCSUY/STN ST HUBERT ATTN VU32 DET

INFO RCCSC/TSR 1106 TSD

RCEOC/CANFLAGLANT

RCCWC/CANFORCEHED

ZEN/AIRSUPDEP DART

BT

UNCLAS SAMO/AM/C (REC) MICN 2.25.24

1. STN ST HUBERT 022100Z

2. 983C9HE-1 SERNO PC 10005

3. N.K.

4. STN ST HUBERT 022100Z REFERS. REQUEST ALLOTMENT OF DEFECTIVE

ENGINE FROM CS2F-1 SERNO 1543 AT RCAF STATION ST HUBERT

TO TSR 1106 TSD AT BAIL. ENGINE TO BE REMOVED FROM QCU PRIOR

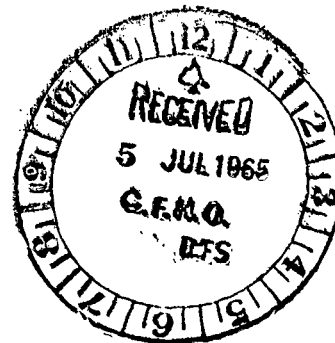
TO SHIPMENT. QCU AND COMPONENTS C/W SPARE QCU STAND TO BE

SHIPPED VIA CNR FREIGHT TO OIC A.M.D. SHEARWATER

5. CNA 21 VU32/28/65 REFERS

BT

DFS
DASEN
14



000114

TOR 051556^x JUL 65

127

NNNNVV 1CA0900EB035 AOA031

JUL 5 15 56
UU

RR RCCWC

DE RCEOA 15 05/1452Z

R 051454Z

FM CANAS

TO RCCPMR/CANAIRMAT

RCCSUY/STN ST HUBERT ATTN VU32 DET

INFO RCCSC/TSR 1106 TSD

RCEOC/CANFLAGLANT

RCCWC/CANFORCEHED

ZEN/AIRSUPDEP DART

BT

UNCLAS SAMO/AM/C (REC) MICN 2.25.24

1. STN ST HUBERT 022100Z

2. 983C9HE-1 SERNO PC 10005

3. N.K.

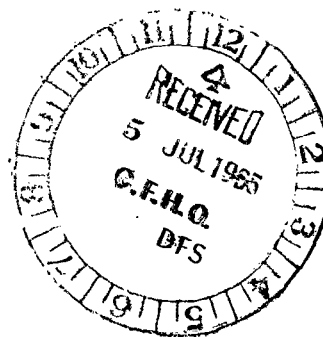
4. STN ST HUBERT 022100Z REFERS. REQUEST ALLOTMENT OF DEFECTIVE

ENGINE FROM CS2F-1 SERNO 1543 AT RCAF STATION ST HUBERT
TO TSR 1106 TSD AT BAIL. ENGINE TO BE REMOVED FROM QCU PRIOR
TO SHIPMENT. QCU AND COMPONENTS C/W SPARE QCU STAND TO BE
SHIPPED VIA CNR FREIGHT TO OIC A.M.D. SHEARWATER

5. CNA 21 VU32/28/65 REFERS

BT

DFS
DASEN
14



TOR 051556^z JUL 65

NNNNVV 1CA251 OEB132 AOA064 UU

JUL 6 18 40 '85

RR RCCWC

DE RCEOA 43 06/1651Z

R 061738Z

FM AIRSUPDEP DART

TO RCCSUY/VU32 DET RCAF STATION ST HUBERT

INFO RCEOC/CANFLAGLANT

RCCWC/CANFORCEHED

ZEN/CANAS

RCEPC/NAVMOV HFX

BT

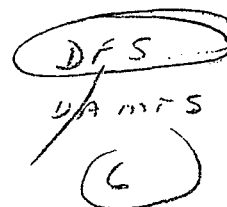
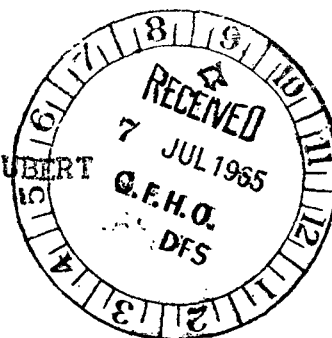
UNCLAS RCAF ST ST HUBERT 022100Z

QCU AND PROPELLOR SHIPPED CN FREIGHT 6 JUL OGS 368

GBL A066622 IN CAR CN 590128 PD HAVE REQUESTED CAR BE TRACED

TO EXPEDITE ARRIVAL ST HUBERT

BT



01010-1543

129

NNNNVV 1CA251 OEB132 AOA064 UU

JUL 6 18 40 '65

RR RCCWC

DE RCEOA 43 06/1651Z

R 061738Z

FM AIRSUPDEP DART

TO RCCSUY/VU32 DET RCAF STATION ST HUBERT

INFO RCEOC/CANFLAGLANT

RCCWC/CANFORCED

ZEN/CANAS

RCEPC/NAVMOV HFX

BT

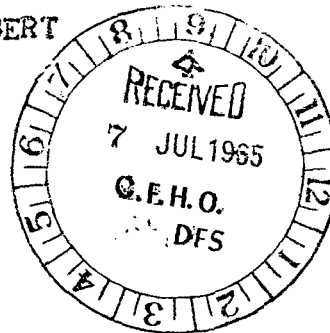
UNCLAS RCAF ST ST HUBERT 022100Z

QCU AND PROPELLOR SHIPPED CN FREIGHT 6 JUL 06S 368

GBL A066622 IN CAR CN 590128 PD HAVE REQUESTED CAR BE TRACED

TO EXPEDITE ARRIVAL ST HUBERT

BT



DFS
UAMS
C

129

NNNVV PCA132MRA001 UU

RR RCCWC

DE RCCPMR 272 06/1836Z

R 061730Z

FM CANAIRMAT

TO RCEOA/CANAS

INFO RCEOA/VU-32 SHEARWATER

RCCSC/1106TSD MONTREAL

RCEOC/CANFLAGLANT

RCCWC/CANFORCEDH

RCEOA/AIRSUPDEP DARTMOUTH

BT

UNCLAS QTO3917 6 JUL

FROM AM/C REC PD AERO ENGINE ALLOTMENT

1 YOUR 051454Z

3 ONE 983C9HE-1 SERNO PC 10005

4 CS2F-1 SERNO 1543 AT RCAF STN ST HUBERT

5 TSR 1106TSD AT BAIL

7 INVESTIAGATION REPORT AND REPAIR

8 WR 479863-13 FOLLOWS

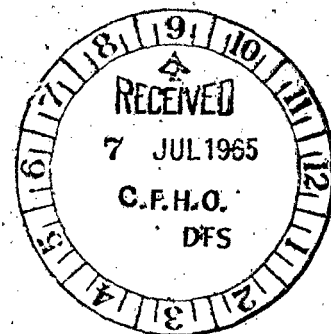
BT

JUL 7 06 20 '65

DFS

DSENG (A.R.)

01010-1543



MDC	
705 COMM SQN	
DIST'D BY	✓ 25
MAILED BY	

TOR JUL 5 22 55 '65

NNNNVV ICA2740EA337 AOA113 UU

RR RCCWC

DE RCEOA 89 05/1923Z

R 052016Z

FM CANAS

TO RCCPMR/CANAIRMAT

INFO RCEOC/CANFLAGLANT

RCCWC/CANFORCEHED

ZEN/AIRSUPDEP DART

RCCSUY/STN ST HUBERT

BT

UNCLAS SAMO/AM/C (REC) A S R 94/65

1 (A) CS2F-2 SERNO 1567

(B) AMD-OR TO VU32

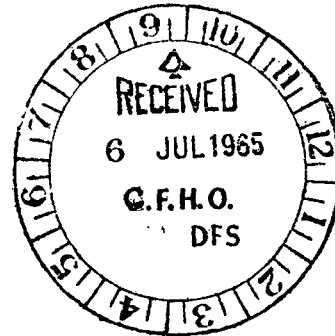
(C) CANAS 251302Z JUN (NOTAL)

2 (A) 983C9HE-1 SERNO PC 10240(STBD)

(B) AMD-S TO CS2F-1 SERNO 1543 AT ST HUBERT THROUGH AIRSUPDEP DART

(C) CANAS 051340Z

BT



DFS
D/AMTS.
DMA(AIR)

18

01010-1567

126

TOR JUL 5 22 55 '65

NNNNVV 1CA2740EA337 AOA113 UU

RR RCCWC

DE RCEOA 89 05/1923Z

R 052016Z

FM CANAS

TO RCCPMR/CANAIRMAT

INFO RCEOC/CANFLAGLANT

RCCWC/CANFORCEHED

ZEN/AIRSUPDEP DART

RCCSUY/STN ST HUBERT

BT

UNCLAS SAMO/AM/C (REC) A S R 94/65

1 (A) CS2F-2 SERNO 1567

(B) AMD-OR TO VU32

(C) CANAS 251302Z JUN (NOTAL)

2 (A) 983C9HE-1 SERNO PC 10240(STBD)

(B) AMD-S TO CS2F-1 SERNO 1543 AT ST HUBERT THROUGH AIRSUPDEP DART

(C) CANAS 051340Z

BT

DFS
D/AMTS.
DMA(AIR)

18

176