MINISTRY OF TRANSPORT — MINISTÈRE DES TRANSPORTS

SEE INSTRUCTIONS – INSIDE FRONT COVER.

VOIR AU VERSO POUR LES INSTRUCTIONS.

Confidential

SUBJECT – SUJET: AIRCRAFT

SUB-SUBJECT – SOUS-SUJET: AVIATION SAFETY INVESTIGATION

FILE TITLE – TITRE DU DOSSIER: AIRCRAFT ACCIDENT CF-BZV - 13 DEC. 1973

VOL. 1

5002 - C 30166

FROM – DE: DEC. 14, 1973

TO – À:

DATE ROUTED DATE DE SORTIE	PURPOSE FOR WHICH REFERRED RAISON DE L'ENVOI	REFERRED TO DESTINATAIRE	B.F. DATE DATE DE RENVOI	USER'S INITIALS INITIALES DE L'USAGER
	TRANSMIT & STORE IN ACCORDANCE WITH SECURITY REGULATIONS TRANSMETTRE ET ENTREPOSER CONFORMÉMENT AUX RÈGLES DE SÉCURITÉ			
11/1/74	6292	CAIO-PIM		P
11/02/74		CAM		H.D.
8/4/74	JF	CAIO-M.8		JF
19/4/74		CAIO-6		A
30/4/74	21/5/74 for SPAN	CAIO-1	① ⇒	A
3/4/74		CAI ①	②	A
30.4.74		CAIO-M	6/6/74	mb
17/5/74	BF 16/5/74	CAIO-M	6/6/74	mb
24/5/74	Span	Mary		mb
6/6/74	BF 6/6/74	MARY		mb

5002 - C

000001

Transport Canada
Air

Transports Canada
Air

ATTENTION

The contents of this microfiche are the property of Transport Canada, and shall not be used for any purpose other than accident prevention without the permission of aircraft accident investigation authorities.

ATTENTION

Le contenu de cette microfiche est la propriété de Transports Canada et ne doit pas être utilisée pour besoins autres que la prévention d'accidents sans la permission expresse de la direction des enquêtes d'accidents d'aviation.

000002

The report on file 5002-C30166

has been completed by CAI and

distributed to:

CAS	X
CAIE	X
ICAO	
NTSB	
OTHERS	X (see other side of paper.)

by: M Stevens

date: 6-6-74

Others:

1) Mr. S. Zurawski, Director,
Central Vehicle Agency,
Legislative Building,
Sask. Dept. of Govt. Services.

C

AIRCRAFT ACCIDENT INVESTIGATION DIVISION

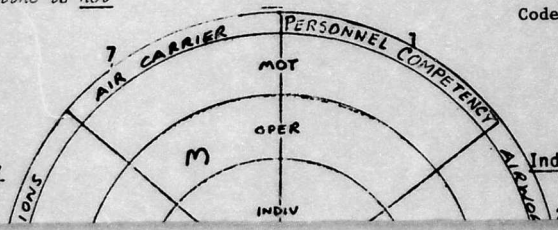
SPAN

Systems Performance Analysis Network

File: C30166 *Aircraft Type:* Cessna A185E (Ski wheels) *Reg:* CF-RZV
Date: 12 Dec 73 *Time:* 1142 CST *Operation:* State
Locale: Bush *Damage:* Substantial
Place: Near cumberland House Sask. 54/04N 102/59W
Weather: Sky clear, vis 15 + variable to 5 miles occassional ice crystals, temp 30°F wind ENE
Pilot: Commercial *Total hrs. All:* 1400 *On Type:* 75
Last 90 Days All: 75 *On Type:* 75
Casualties: Crew 1 killed: pass 3 killed.
Description of Occurrence: The aircraft did not reach its destination and was found three weeks later having struck the ground inverted at a steep angle at 125-132 mph.

Information below this line is not for Publication

Coded [X]

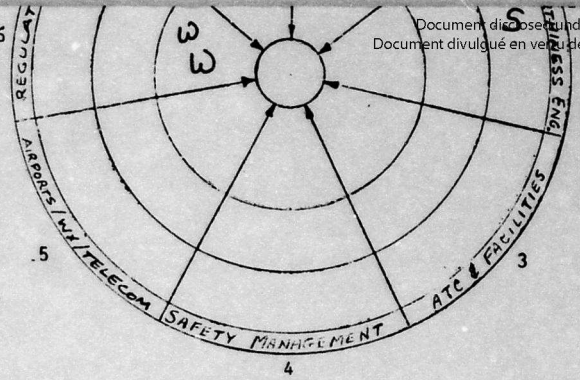


Performance Inadequacy

Individual

S-STANDARDS
C-COMMUNICATION
of standards
W-COMPLIANCE
with standards
M-MONITORING
F-FEEDBACK
of information
E-ENFORCEMENT

O-OTHER (Specify)



X-VOLUNTARY
(without knowledge
of consequences)
Y-VOLUNTARY
(with knowledge
of consequences)
Z-INVOLUNTARY

ANALYSIS

1	W	X	Pilot did not maintain airspeed in a steep turn
6	W		Pilot low flying
6	W		No flight plan or notification filed
7	M		Company did not apply adequate supervision
2	S		F.I installation standard inside aircraft not satisfactory
4	W		Good field investigation.
4	W		Good aeromedical investigation.

Copies sent to
CCAI
CAIO-1
CASP
Mr. Unger
Stats 23/5/74 MS

AIRCRAFT ACCIDENT INVESTIGATION DIVISION

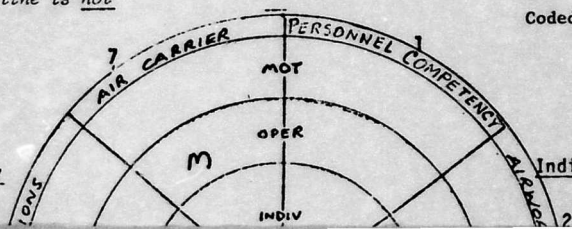
SPAN

Systems Performance Analysis Network

File: C30166 *Aircraft Type:* Cessna A185E (Ski wheels) *Reg:* CF-RZV
Date: 12 Dec 73 *Time:* 1142 CST *Operation:* State
Locale: Bush *Damage:* Substantial
Place: Near cumberland House Sask. 54/04N 102/59W
Weather: Sky clear, vis 15 + variable to 5 miles occassional ice crystals, temp 30°F wind ENE
Pilot: Commercial *Total hrs. All:* 1400 *On Type:* 75
Last 90 Days All: 75 *On Type:* 75
Casualties: Crew 1 killed: pass 3 killed.
Description of Occurrence: The aircraft did not reach its destination and was found three weeks later having struck the ground inverted at a steep angle at 125-132 mph.

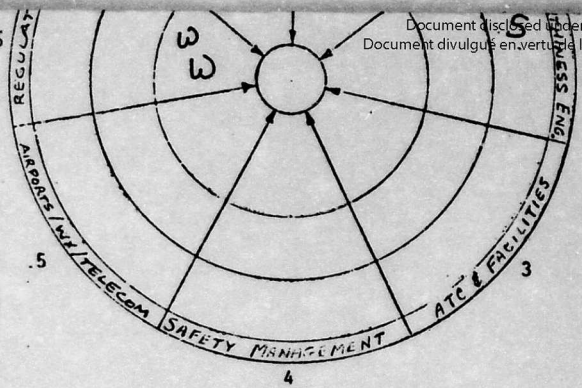
Information below this line is not for Publication

Coded [X]



S-STANDARDS
C-COMMUNICATION
of standards
W-COMPLIANCE
with standards
M-MONITORING
F-FEEDBACK
of information
E-ENFORCEMENT

O-OTHER (Specify)



Y-VOLUNTARY
(without knowledge
of consequences)
Y-VOLUNTARY
(with knowledge
of consequences)
Z-INVOLUNTARY

ANALYSIS

1	W	X	Pilot did not maintain airspeed in a steep turn
6	W		Pilot low flying
6	W		No flight plan or notification filed
7	M		Company did not apply adequate supervision
2	S		ELT installation standard inside aircraft not satisfactory
4	W		Good field investigation.
4	W		Good aeromedical investigation.

AIRCRAFT ACCIDENT INVESTIGATION DIVISION

SPAN

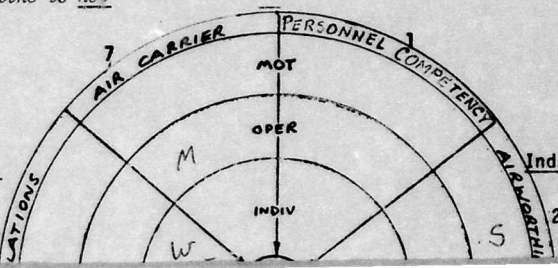
Systems Performance Analysis Network

File: C 30166 *Aircraft Type:* *Reg:* CF-RZV
Date: 12 DEC 73 *Time:* 1142 CST *Operation:* STATE
Locale: BUSH *Damage:* SUBSTANTIAL
Place: NEAR CUMBERLAND HOUSE SASK.
Weather: ~~CA~~ SKY CLEAR, VIS 15+ variable to 5 mile, occasional ice crystals, temp -30°F, wind ENE
Pilot: Commercial *Total hrs. All:* 1400 *On Type:* 75
Last 90 Days All: 75 *On Type:* 75
Casualties: Crew, killed; pass 3, killed
Description of Occurrence:

The aircraft did not reach its destination and was found three weeks later having struck the ground inverted at a steep angle at 125-132 mph.

Information below this line is not for Publication

[X] (COED)



Performance Inadequacy

Individual Error/Action

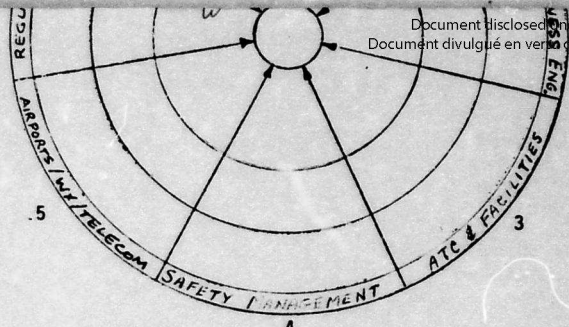
000009

S-STANDARDS

X-VOLUNTARY

C-COMMUNICATION
of standards
W-COMPLIANCE
with standards
M-MONITORING
F-FEEDBACK
of information
E-ENFORCEMENT

O-OTHER (Specify)



(without knowledge
of consequences)
Y-VOLUNTARY
(with knowledge
of consequences)
Z-INVOLUNTARY

SYS	FUNC	XYZ	ANALYSIS
1	W	X	Pilot did not maintain airspeed in a steep turn
6	W		Pilot low flying
6	W		No flight plan or notification filed
7	M		Company did not apply adequate supervision
2	S		ELT installation standard inside aircraft not satisfactory
4	W		[redacted] good field investigation
4	W		Good aeromedical investigation

000010

CAIO

Transport Canada Transports Canada

AIRCRAFT ACCIDENT INVESTIGATION DIVISION

This aircraft accident report has been prepared by the Aircraft Accident Investigation Division of the Ministry of Transport, Ottawa. The report is based on information determined during the Investigation. You will note that the report has been prepared to make it suitable for publication so that the aviation **Community may derive some benefit from learning of this occurrence.**

If there is any new evidence that has come to light since the Investigation and is not reflected in this report, please submit this evidence before MAY 14 1974

DIVISION DES ENQUÊTES SUR LES ACCIDENTS D'AVIATION

*Ce rapport d'accident a été rédigé par la Division des enquêtes sur les accidents d'aviation du Ministère des Transports à Ottawa. Il se fonde sur des renseignements recueillis au cours de l'enquête. Il est à noter que le rapport est présenté dans une forme simplifiée qui en facilite la publication, afin que La **Communauté aéronautique** puisse en tirer le meilleur parti possible.*

Tout nouvel indice découvert depuis l'enquête et qui n'est pas mentionné dans le présent rapport devrait être porté à la connaissance de la division avant le

Owner

Transport Canada Transports Canada

AIRCRAFT ACCIDENT INVESTIGATION DIVISION

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000011

MINISTÈRE DES TRANSPORTS

AIRCRAFT ACCIDENT REPORT
RAPPORT D'ACCIDENT D'AVIATION

ACCIDENT REPORT NO. / RAPPORT N° C30166

AIRCRAFT MAKE & MODEL — Marque & modèle d'aéronef	REGISTRATION — Immatriculation	DATE-TIME — Date-Heure	OPERATION — Opération
Cessna A185E (ski-wheels)	CF-BZV	12Dec73 1142 CST	STATE
PLACE — Endroit: Near Cumberland House, Sask		LATITUDE: 54/04N	LONGITUDE: 102/59W

LOCALE — Scène

Lightly wooded soft soil area, 940 ft asl

WEATHER — Conditions météorologiques

Sky clear, vis 15+ variable to 5 miles in occasional ice crystals, temp -30°F, wind ENE 7 mph

PILOT / PILOTE — LICENCE	TOTAL HOURS — Heures totales	TOTAL HOURS, LAST 90 DAYS — Total d'heures (90 derniers jours)
Commercial	1400 ALL TYPES — Tous types 200 ON TYPE — Type en cause	75 ALL TYPES — Tous types 75 ON TYPE — Type en cause

DESCRIPTION OF OCCURRENCE — Description de l'événement

The pilot departed on a VFR flight from La Ronge, Saskatchewan toward Cumberland House, Saskatchewan with three passengers on board. The aircraft did not arrive at its intended destination and an aerial search was instituted.

After a lengthy search the wreckage was located about 4 miles off its intended track and about 28 miles short of the destination. The aircraft had impacted the ground at a steep angle in an inverted attitude. The occupants had lost their lives in the impact. The engine had been producing considerable power and the impact speed was between 125 and 132 mph. An electronic locator transmitter carried within the fuselage had activated; the signals had not been received by search aircraft because there was no external antenna for the ELT equipment.

All evidence indicates that the party left La Ronge in a serviceable aircraft with ample fuel for the flight. There was sufficient emergency equipment and the aircraft was not overloaded. En route, the pilot engaged in low level "moose-spotting".

The circumstances of the accident and the condition of the wreckage indicate a loss of control during a steep turn at low altitude.

	TOTAL	FATALITIES — Pertes de vie	SERIOUS INJURIES — Blessures graves	MINOR INJURIES — Blessures légères
CREW — Équipage	1	1		
PASSENGERS	3	3		
OTHERS — Autres				

FINDINGS:

During a steep turn at low altitude the aircraft was allowed to enter a high speed stall from which recovery was not effected before it struck the ground.

"This accident was investigated in order to provide guidance toward the prevention of a recurrence. The content of this report is confined to cause-related circumstances and is published for accident prevention purposes only".

000012

23-0014
3-71

DEPARTMENT OF TRANSPORT
MINISTÈRE DES TRANSPORTS

AIRCRAFT ACCIDENT REPORT
RAPPORT D'ACCIDENT D'AVIATION

DRAFT

REFER TO REPORT NO.
REF. RAPPORT N°
C30166

AIRCRAFT MAKE & MODEL – Marque & modèle d'aéronef	REGISTRATION – Immatriculation	DATE-TIME – Date-Heure	OPERATION – Opération
Cessna A185E (ski-wheels)	CF-BZV	12Dec73	1142 CST

PLACE – Endroit	LATITUDE	LONGITUDE
Near Cumberland House, Sask.	54/04N	102/59W

LOCALE – Scène

Lightly wooded soft soil area, 940 ft. asl

WEATHER – Conditions météorologiques

Sky clear, vis 15+ variable to 5 miles ~~and~~ IN occasional ice crystals, temp-30°F, wind ENE 7mph

PILOT PILOTE	LICENCE	TOTAL HOURS – Heures totales		TOTAL HOURS, LAST 90 DAYS – Total d'heures (90 derniers jours)	
	Commercial	1400	ALL TYPES – Tous types	75	ALL TYPES – Tous types
		200	ON TYPE – Type en cause	75	ON TYPE – Type en cause

DESCRIPTION OF OCCURRENCE – Description de l'événement

The pilot departed on a VFR flight from La Ronge, Saskatchewan toward Cumberland House, Saskatchewan with three passengers on board. The aircraft did not arrive at its intended destination and an aerial search was instituted.

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CREW – Équipage	1	1		
PASSENGERS	3	3		
OTHERS – Autres				

ASSIGNED CAUSE(S) – Cause(s) assignée(s)

FINDINGS: During a steep turn at low altitude the aircraft was allowed to enter a high speed stall from which recovery was not effected before it struck the ground.

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APPROVED CAI

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23-0014
3-71

AIRCRAFT ACCIDENT REPORT
RAPPORT D'ACCIDENT D'AVIATION

REF. RAPPORT N° C30166

AIRCRAFT MAKE & MODEL — Marque & modèle d'aéronef	REGISTRATION — Immatriculation	DATE-TIME — Date-Heure	OPERATION — Opération
Cessna A185E (ski-wheels)	CF-BZV	12Dec73 1142 CST	
PLACE — Endroit		**LATITUDE**	**LONGITUDE**
Near Cumberland House, Sask		54/04N	102/59W

LOCALE — Scène

Lightly wooded soft soil area, 940 ft asl

WEATHER — Conditions météorologiques

Sky clear, vis 15+ variable to 5 miles in occasional ice crystals, temp -30°F, wind ENE 7 mph

PILOT PILOTE	LICENCE	TOTAL HOURS — Heures totales		TOTAL HOURS, LAST 90 DAYS — Total d'heures (90 derniers jours)	
	Commercial	1400	ALL TYPES — Tous types	75	ALL TYPES — Tous types
		200	ON TYPE — Type en cause	75	ON TYPE — Type en cause

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	TOTAL	FATALITIES — Pertes de vie	SERIOUS INJURIES — Blessures graves	MINOR INJURIES — Blessures légères
CREW — Équipage	1	1		
PASSENGERS	3	3		
OTHERS — Autres				

FINDINGS:

During a steep turn at low altitude the aircraft was allowed to enter a high speed stall from which recovery was not effected before it struck the ground.

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000014

C30166

RAPPORT D'ACCIDENT D'AVIATION

AIRCRAFT MAKE & MODEL — Marque & modèle d'aéronef	REGISTRATION — Immatriculation	DATE-TIME — Date-Heure	OPERATION — Opération
Cessna A185E (ski-wheels)	CF-BZV	12Dec73 1142 CST	
PLACE — Endroit		**LATITUDE**	**LONGITUDE**
Near Cumberland House, Sask		54/04N	102/59W

LOCALE — Scène

Lightly wooded soft soil area, 940 ft asl

WEATHER — Conditions météorologiques

Sky clear, vis 15+ variable to 5 miles in occasional ice crystals, temp -30°F, wind ENE 7 mph

PILOT PILOTE	LICENCE	TOTAL HOURS — Heures totales		TOTAL HOURS, LAST 90 DAYS — Total d'heures (90 derniers jours)	
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		200	ON TYPE — Type en cause	75	ON TYPE — Type en cause

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	TOTAL	FATALITIES — Pertes de vie	SERIOUS INJURIES — Blessures graves	MINOR INJURIES — Blessures légères
CREW — Équipage	1	1		
PASSENGERS	3	3		
OTHERS — Autres				

FINDINGS:

During a steep turn at low altitude the aircraft was allowed to enter a high speed stall from which recovery was not effected before it struck the ground.

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000015

23-0014
3-71

RAPPORT D'ACCIDENT D'AVIATION

L-30166

AIRCRAFT MAKE & MODEL — Marque & modèle d'aéronef	REGISTRATION — Immatriculation	DATE-TIME — Date-Heure	OPERATION — Opération
Cessna A185E (ski-wheels)	CF-BZV	12Dec73 1142 CST	

PLACE — Engroit	LATITUDE	LONGITUDE
Near Cumberland House, Sask	54/04N	102/59W

LOCALE — Scène

Lightly wooded soft soil area, 940 ft asl

WEATHER — Conditions météorologiques

Sky clear, vis 15+ variable to 5 miles in occasional ice crystals, temp -30°F, wind ENE 7 mph

PILOT PILOTE	LICENCE	TOTAL HOURS — Heures totales		TOTAL HOURS, LAST 90 DAYS — Total d'heures (90 derniers jours)	
	Commercial	1400	ALL TYPES — Tous types	75	ALL TYPES — Tous types
		200	ON TYPE — Type en cause	75	ON TYPE — Type en cause

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	TOTAL	FATALITIES — Pertes de vie	SERIOUS INJURIES — Blessures graves	MINOR INJURIES — Blessures légères
CREW — Équipage	1	1		
PASSENGERS	3	3		
OTHERS — Autres				

FINDINGS:

During a steep turn at low altitude the aircraft was allowed to enter a high speed stall from which recovery was not effected before it struck the ground.

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000016

AIRCRAFT ACCIDENT REPORT
RAPPORT D'ACCIDENT D'AVIATION

REF. RAPPORT No. C30166

AIRCRAFT MAKE & MODEL — Marque & modèle d'aéronef	REGISTRATION — Immatriculation	DATE-TIME — Date-Heure	OPERATION — Opération
Cessna A185E (ski-wheels)	CF-BZV	12Dec73 1142 CST	
PLACE — Endroit		**LATITUDE**	**LONGITUDE**
Near Cumberland House, Sask		54/04N	102/59W

LOCALE — Scène

Lightly wooded soft soil area, 940 ft asl

WEATHER — Conditions météorologiques

Sky clear, vis 15+ variable to 5 miles in occasional ice crystals, temp -30°F, wind ENE 7 mph

PILOT / PILOTE — LICENCE	TOTAL HOURS — Heures totales	TOTAL HOURS, LAST 90 DAYS — Total d'heures (90 derniers jours)
Commercial	1400 ALL TYPES — Tous types 200 ON TYPE — Type en cause	75 ALL TYPES — Tous types 75 ON TYPE — Type en cause

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	TOTAL	FATALITIES — Pertes de vie	SERIOUS INJURIES — Blessures graves	MINOR INJURIES — Blessures légères
CREW — Équipage	1	1		
PASSENGERS	3	3		
OTHERS — Autres				

FINDINGS:

During a steep turn at low altitude the aircraft was allowed to enter a high speed stall from which recovery was not effected before it struck the ground.

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000017

MINISTRY OF TRANSPORT
AIRCRAFT ACCIDENT INVESTIGATION DIVISION
ENGINEERING LABORATORY

MINISTÈRE DES TRANSPORTS
DIVISION DES ENQUÊTES SUR LES ACCIDENTS D'AVIATION
LABORATOIRE TECHNIQUE

LABORATORY REPORT
RAPPORT DE LABORATOIRE

FILE REFERENCE *RÉFÉRENCE DE DOSSIER*	NUMBER OF PAGES *NOMBRE DE PAGES*	NUMBER OF PHOTOS *NOMBRE DE PHOTOS*	FIGURES – *CHIFFRES* / APPENDICES – *ANNEXES*
5002-C30166	2		

REPORT *RAPPORT* **LP 10/74**

EMERGENCY LOCATOR TRANSMITTER

Accident - Cessna 185, CF-BZV
Cumberland House, Manitoba
12 December 1973

DATE COMPLETED – *TERMINÉ LE*
28 February 1974

SUBMITTED BY – *PRÉSENTÉ PAR*
P.L. Battrum (Avionics Specialist)

PREPARED BY – *RÉDIGÉ PAR*
P.L. Battrum

APPROVED – *APPROUVÉ*
T.W. Heaslip (CAIE)

LABORATORY SUPERINTENDENT – *SURINTENDANT DU L*

23-0022
10-73

1.0 INTRODUCTION

1.1 Following a 22 day search, the aircraft was located without the aid of the emergency locator transmitter (ELT). On discovery, the transmitter was held in the open and the transmitted signal was received by an overflying aircraft. The ELT was forwarded to the Engineering Laboratory by CCAI, Winnipeg with a request for technical investigation.

1.2 The technical examination of the transmitter was to consider five questions: Was the ELT in working order? Did the inertia switch function as designed? Would the ELT have transmitted as designed had it not been completely shielded in the luggage compartment of this all-metal aircraft? The ELT functioned when set to "test" after recovery. Could the batteries conceivably be of sufficient power to maintain a signal for so long a period? Any other relevant information that the examination might reveal was also requested.

2.0 EXAMINATION

2.1 A cursory check of the transmitter involved triggering the unit and establishing that a signal was being transmitted. This check was carried out in an electromagnetically shielded room using a Sony 8500 VHF receiver. A signal was received following activation of the inertia trigger switch in the transmitter. The original batteries were used.

2.2 It was noticed that an intermittence in the signal was present. This was traced to the antenna connection. Although, the connection seemed secure, the transmitted signal could be interrupted by manipulating the antenna.

2.3 The ELT was then tested in accordance with RSS 147 issue 2, the current performance standard for emergency locator transmitters, to establish the quality of its transmitted signal. This standard sets out the test procedure and performance requirements to be met by these devices. The parameter of interest in this instance was in the transmitter's radiated power, which was measured using the substitution method. This involved measuring the field strength of the transmitter. A power signal generator was then adjusted to produce the same field strength using a monopole antenna. The power of the signal generator output would then be the same as the radiated power of the ELT. This test was carried out on a test range as specified in RSS 147 issue 2 with the ambient temperature approximately 0°C and using new batteries. The results are tabulated below:

FREQUENCY (Mhz)	FIELD STRENGTH (dBuv)	RADIATED POWER (mW)
121.5	79	40
243	77	32

TABLE 1

2.4 A qualitative test of the switch resulted in it triggering the transmitter when subjected to accelerations well below those encountered during the catastrophic deformation of metal aircraft struct

3.0 DISCUSSION

3.1 The results of the radiated power measurements must be compared to the requirements defined in RSS 147 issue 2. These requirements are tabulated below:

ENVIRONMENT	CONTINUOUS RADIATED POWER	
	AFTER 24 HRS.	AFTER 48 HRS.
+ 40°C	⩾ 100 mW	⩾ 50 mW
cold soak at -40°C warm to -20°C	⩾ 50 mW	⩾ 25 mW

TABLE 2

These values must be achieved on both frequencies. The 40mW radiated power of the unit tested was at a temperature well above the severe environment specified in the standard yet its initial signal strength at a frequency of 121.5 Mhz is only 80% of the required value after 24 hours of continuous transmission. The signal strength of the 243 Mhz carrier was even lower, 64% of the strength specified in the standard.

3.2 An interesting finding was that the readings provided in Table 1 were obtained when the ELT was sitting in contact with a wire-mesh groundplane conductor. When the unit was hand-held, the field strength at a point 100 feet from the transmitter was reduced by 4dB on 121.5 Mhz and 2 dB on 243 Mhz. In other words, hand-holding this unit results in a 50% reduction in its radiated field strength.

3.3 The question of shielding of the transmitter by the aircraft structure would require extensive testing in situ. In view of the evidence available, it is felt that the metal airframe would have inhibited the proper propagation of the emergency signal.

3.4 The battery life is a function of temperature and power consumption rate. The life of a battery is greatly reduced when ambient temperatures are lowered. It would be expected that after some 22 days of continuous transmission, the battery power remaining would be much lower than necessary to operate the transmitter. However, there seems to be an anomaly in the evidence presented in the request for technical investigation. It is stated that the ELT functioned when set to "test" after recovery. On this unit, the "test" function does not cause a signal to be transmitted. The selection of the "test" position will either; indicate the condition of the batteries when the unit is not transmitting or indicate that the unit is transmitting if the inertia switch has been activated. Therefore, it can only be concluded that either the transmitter was jarred sufficiently during handling to trigger it and subsequently the signal was received or the unit had in fact been operating continuously for the duration of the search.

4.0 CONCLUSION

4.1 The emergency locator transmitter is capable of transmitting a signal on both 121.5 Mhz and 243 Mhz when activated by the inertia switch.

4.2 The output on both frequencies is below that required in the current standard for these devices.

4.3 The inertia switch is capable of functioning as designed.

4.4 The metal airframe of the aircraft would provide an effective shield that could eliminate or greatly reduce the normal radiation characteristics of the transmitter.

4.5 Although not generally accepted as possible, evidence indicates that the power supply was adequate to provide continuous transmission for the duration of the search.

4.6 The antenna connection was found to produce an intermittent interruption in the transmitted signal.

4.7 When the unit was hand-held, the signal strengtn was 50% of the signal strength from the unit when standing alone on the ground.

ACCIDENT SYNOPSIS

	+10	
accident report	+11	C 30166
aircraft type	+12	Cessna A185E
	+13	Ski-wheel plane fixed-wing piston 1-en
reg	+14	CF-RZV
date/time	+15	12 Dec 73 +16 1142 CST
operation	+17	~~Private~~ State transportation
damage	+18	Substantial
place	+19	54/04N 102/59W Nr Cumberland House, Sask
locale	+20	Bush
weather	+21	Sky clear, VIS 15, temp -30, wind ENE 7
pilot	+22	Commercial
	(totals) all	on type (90 days) all on type
TOTAL HOURS	+23 1400 +24 200	+25 75 +24 75 +26
casualties	+27	crew: 1 killed; pass: 3 killed
description of occurrence	+28	The aircraft did not reach its destination and was found three weeks later having struck the ground inverted at a very steep angle. +29

EDIT

000022

23-0035

Government of Canada / Gouvernement du Canada

MEMORANDUM **NOTE DE SERVICE**

SECURITY CLASSIFICATION - DE SÉCURITÉ	
OUR FILE - N/ RÉFÉRENCE	5002/C/3166
YOUR FILE - V/ RÉFÉRENCE	
DATE	April 2, 1974

TO / A: CAI OTTAWA

FROM / DE: CCAI WINNIPEG

00078

SUBJECT / OBJET: Aircraft Accident, Cessna A185E, CF-BZV
CUMBERLAND HOUSE, Saskatchewan
December 12, 1973

Enclosed is the completed Regional Accident

Report for the subject aircraft.

per G. A. Saull
Regional Superintendent
Accident Investigation

Enc.

Mailed 9.4.74 MB

000023

CGSE STANDARD FORM 22d 7540-21-865-6699 FORMULE NORMALISÉE 22d DE L'ONGC

Government of Canada / Gouvernement du Canada

MEMORANDUM **NOTE DE SERVICE**

TO / A: CAI OTTAWA

06292

FROM / DE: CCAI WINNIPEG

SECURITY - CLASSIFICATION - DE SÉCURITÉ	
OUR FILE - N/RÉFÉRENCE	5002/C/3166
YOUR FILE - V/RÉFÉRENCE	
DATE	January 9, 1974

SUBJECT / OBJET: Aircraft Accident - Cessna 185E, CF-BZV
NEAR CUMBERLAND HOUSE, Saskatchewan
December 12, 1973

Further to our CCAI 262 enclosed are pages 1 and 2 of the Regional Accident Report for the subject aircraft.

for G. A. Saull,
Regional Superintendent
Accident Investigation

Enc.

000024

DEPARTMENT OF TRANSPORT
AIRCRAFT ACCIDENT INVESTIGATION DIVISION

REGIONAL REF. C-3166
H.Q. REF. 500
AIRCRAFT REG. CF-BZV

REPORT OF THE INQUIRY INTO AN AIRCRAFT

(1) ACCIDENT [V] DISAPPEARANCE [ ] INCIDENT [ ]
NEAR MISS [ ] OTHER [ ]

FOR INSTRUCTIONS SEE REVERSE SIDE OF EACH PAGE

AT (Name of nearest gazetted place) Near Cumberland House — PROVINCE Saskatchewan

GEOGRAPHIC CO-ORDINATES 54 04' 45" N 102 59W — DATE DAY 12 MONTH Dec YEAR 73 — TIME (Standard Time Local) 1142 CST

REGION: PACIFIC [ ] WESTERN [ ] CENTRAL [V] ONTARIO [ ] QUEBEC [ ] ATLANTIC [ ]

PERSONNEL IDENTIFICATION (2)

OWNER
NAME: Province of Saskatchewan Central Vehicles Agency
ADDRESS: Room 28, Legislative Bldg., Regina, Sask.

OPERATOR
NAME: SAME AS OWNER [ ] OR: Province of Saskatchewan "Northern"
ADDRESS: Legislative Bldg. Regina, Sask.
ATC LICENCE NUMBER:
H.Q. USE OPER. CODE:
STATUS RESPECTIVE TO THIS AIRCRAFT: UNKNOWN [ ] OWNER [V] RENTER [ ] LESSEE [ ]

A.T.C. LICENCE CLASSIFICATION THIS FLIGHT
NONE [V] 4 [ ] 7 RF [ ] 7 AAD [ ] 7 AAM [ ]
1 [ ] 5 [ ] 7 FT [ ] 7 AIRA [ ] 8 [ ]
2 [ ] 6 [ ] 7 AP [ ] 7 AC [ ] 9 [ ]
3 [ ] 7 APS [ ] 7 A CONST. [ ]

PILOT IN COMMAND
NAME: SAME AS OWNER [ ] OPERATOR [ ] OR: JOHN, Paul J.
ADDRESS:
LICENCE NUMBER: WGC 8974
STATUS IF NOT OWNER OR OPERATOR: UNAUTHORIZED USER [ ] EMPLOYEE [V] RENTER [ ] BORROWER [ ] CLUB MEMBER [ ] OTHER [ ]
SPECIFY:

OTHER CREW ON BOARD (3)
NONE [V] THIRD PILOT [ ] FLIGHT ENGINEER [ ] FLIGHT OBSERVER [ ] NO. OF CABIN ATTENDANT(S)
SECOND PILOT [ ] NAVIGATOR [ ] CREWMAN [ ] TECHNICIAN [ ]

PASSENGERS NUMBER ON BOARD: 3

MATERIAL IDENTIFICATION

S/N 185-02023

AIR-CRAFT	REGISTRATION	MAKE	MODEL	TOTAL HRS.	MAXIMUM CERT. TAKE-OFF WEIGHT	YEAR OF MANUFACTURE
	CF-BZV	Cessna	A185E	760	3350	1972

CATEGORY
AEROPLANE [V] GLIDER [ ] VTOL [ ]
HELICOPTER [ ] GYRO COPTER [ ] GYRO GLIDER [ ]
DIRIGIBLE [ ] FREE BALLOON [ ] OTHER [ ]
IF OTHER SPECIFY:

HOME BUILT: YES [ ] NO [V]
ULTRA LIGHT: YES [ ] NO [V]

LANDING GEAR
AMPHIBIOUS (HULL) [ ] FLOATS [ ]
RETRACTABLE WHEELS [ ] FIXED WHEELS [ ]
SKI-WHEEL [V] WHEEL FLOATS [ ]
HULL [ ] SKIDS [ ]
SKIS [ ] FLOAT-SKID [ ]
OTHER [ ] IF OTHER SPECIFY

LANDING GEAR CONFIGURATION
TRICYCLE [ ] OTHER [ ]
TAIL WHEEL [V]

WING/ROTOR
LOW-WING [ ] BI-PLANE [ ]
HIGH-WING [V] MID-WING [ ]
SINGLE-ROTOR [ ] TWIN-ROTOR [ ]
OTHER [ ]

SPECIAL EQUIPMENT
NONE [V] TOWING GEAR [ ]
AMBULANCE [ ] AIR-DROP (CARGO) [ ]
AIR-DROP (PARACHUTIST) [ ] PHOTO [ ]
MAGNETOMETER [ ] SLING/HOIST [ ]
WATER BOMBING [ ] SPRAY DUST [ ]
MONSOON GEAR [ ]
IF OTHER

000025

ENGINE(S) MAKE	MODEL	SERIAL NO.	NUMBER INSTALLED
Continental	10-520-D	220962-72D	one

TYPE: SUPERCHARGED PISTON ☐ PISTON ☑ TURBO-COMPOUND ☐ JET TURBINE WITH AFTERBURNER ☐ TURBO PROP ☐ JET TURBINE ☐ OTHER ☐ IF OTHER SPECIFY

POWER: 285 RATED H.P. RATED THRUST

PROPELLER(S) MAKE	MODEL	SERIAL NO.
McCauley	D2A-34C58	715528

TYPE: FIXED WOODEN ☐ FIXED METAL ☐ VARIABLE PITCH ☐ CONSTANT SPEED ☑ CONSTANT SPEED FULLY FEATHERING ☐

SUB-TYPE: REVERSIBLE ☐ NOT REVERSIBLE ☑

ENVIRONMENT IDENTIFICATION (1)

OPERATION

SCOPE THIS FLIGHT: INTERNATIONAL ☐ DOMESTIC ☑ NOT KNOWN ☐

LOAD DESCRIPTION: NONE ☐ PASSENGERS ☑ PARACHUTIST ☐ FREIGHT/EXPRESS ☐ CARGO/PASSENGERS ☐ WATER/CHEMICAL ☐ PESTICIDES ☐ POLES/TOWERS ☐ PHOTO EQUIPMENT ☐ FERTILIZER ☐ FISH/FISH EGGS ☐ SIGN/DROGUE ☐ GLIDER ☐ OTHER ☐ IF OTHER SPECIFY:

LOAD POSITION: INTERNAL ☑ EXTERNAL ☐ N/A. ☐

OBJECTIVE (2): ADVERTISING ☐ CONTROL ☐ DEMONSTRATION ☐ FIRE CONTROL ☐ HOISTING ☐ INSPECTION ☐ TRANSPORTATION ☑ SURVEY ☐ SPRAY/DUST/SEEDING ☐ SEARCH ☐ RECREATION ☐ TESTING ☐ TOWING ☐ TRAINING ☐ FERRYING ☐ POSITIONING ☐ OTHER ☐ SPECIFY:

PRELIMINARY VERSION OF ACCIDENT (3)

PROVIDE A BRIEF HISTORY OF THE FLIGHT AND NARRATE AS MANY OF THE CIRCUMSTANCES OF THE ACCIDENT AS ARE KNOWN AT THIS TIME, BEGINNING WITH THE FIRST IRREGULARITY OF THE FLIGHT.

The aircraft, with three passengers on board, departed La Ronge, Saskatchewan on December 12th at 10:45 on a flight to Cumberland House. There was no flight plan filed.

On January 2, 1974, the wreckage was spotted in bushland 30-32 miles west northwest of the settlement of Cumberland House and a landing at the scene was accomplished on January 3/74.

The aircraft had contacted the ground inverted at a 45 degree angle and had penetrated to the leading edge of the wings. The four occupants had died at impact and remained contained in the cabin. There was no fire. Two watches and the aircraft clock had ceased to function at 1142.

PRELIMINARY POST-OCCURRENCE DATA

AIRCRAFT DAMAGE: NONE ☐ MINOR ☐ SUBSTANTIAL ☐ DESTROYED ☑ UNKNOWN ☐

NUMBER OF CASUALTIES	KILLED	SERIOUS INJURY	MINOR INJURY	UNINJURED
PILOT-IN-COMMAND	1			
OTHER CREW				
PASSENGERS	3			
PERSONS OUTSIDE AIRCRAFT				

INVESTIGATION:
BY CIVIL AVIATION INSPECTOR(S) ONLY ☐
BY CIVIL AVIATION AND AIRWORTHINESS INSPECTORS ☑
BY AIRWORTHINESS INSPECTOR(S) ONLY ☐
BY CORRESPONDENCE ☐
D.N.H.W. ASSISTANCE
TECHNICAL/METALLURGICAL

000026

PRE-OCCURRENCE CONDITIONS - CREW

CF-BZV (3)

PERSONAL DATA-QUALIFICATIONS

COMPLETE A SEPARATE PAGE FOR EACH PERTINENT CREW MEMBER. (2)

CREW MEMBER

PILOT-IN-COMMAND [V] | 2ND PILOT [ ]
3RD PILOT [ ] | FLIGHT ENGINEER [ ]
NAVIGATOR [ ] | CREWMAN [ ]
CABIN ATTENDANT [ ] | FLIGHT OBSERVER [ ]
OTHER [ ] SPECIFY:

STATION OCCUPIED

NOT KNOWN [ ] | PILOT SEAT [V]
SECOND IN COMMAND SEAT [ ] | FLIGHT ENGINEER SEAT [ ]
NAVIGATOR SEAT [ ] | REST POSITION [ ]
PASSENGER CABIN [ ] | OTHER [ ]
SPECIFY:

SPECIAL FUNCTION

NONE [V] | INSTRUCTOR [ ]
COMPANY EXAMINER [ ] | D.O.T. EXAMINER [ ]
TECHNICIAN [ ] | STUDENT [ ]
OTHER [ ] SPECIFY:

PERSONAL DATA

AGE	SEX	SURNAME	INITIALS	LICENCE NUMBER
24	Male	JOHN	P.J.	WGC 8974

LICENCES AND PERMITS HELD

CANADIAN [V] FOREIGN [ ]
NONE [ ]
UNKNOWN [ ] | AIRLINE TRANSPORT [ ]
SENIOR COMMERCIAL [ ] | COMMERCIAL [V]
PRIVATE [ ] | STUDENT PERMIT [ ]
FLIGHT ENGINEER [ ] | NAVIGATOR [ ]
GLIDER [ ] | GYROPLANE [ ]
BALLOON [ ] | MAINTENANCE ENGINEER [ ]

AIRCRAFT CLASSIFICATIONS

HELICOPTER ONLY [ ]
SINGLE-ENGINE LAND [ ] | SINGLE-ENGINE SEA [ ]
S.E. LAND AND SEA [V] | S. & MULTI ENGINE LAND [ ]
S. & MULTI ENGINE SEA [ ] | S. & M.E. LAND AND SEA [ ]

AIRCRAFT TYPE ENDORSEMENTS

HELICOPTER [ ] | GYROPLANE [ ]

RATINGS

NONE [ ]
INSTRUCTOR CL 1 [ ]
INSTRUCTOR CL 2 [ ]
INSTRUCTOR CL 3 [ ]
INSTRUMENT 1 [ ]
INSTRUMENT 2 [ ]
BLOCK AIRSPACE [ ]
NIGHT [V]

EXPERIENCE - FLYING TIME (To nearest hour - if unknown complete with X) (estimated times - no log books)

	ALL TYPES	THIS TYPE	DUAL ON THIS TYPE	THIS U/C CONFIGURATION	SINGLE ENGINE	MULTI ENGINE	ACTUAL INSTRUMENT	NIGHT	NIGHT X-COUNTRY	ROTOR-CRAFT
TOTAL HOURS	1400	200	x	x	1400	0	10	x	x	0
HRS. LAST 90 DAYS	75	75	0	50	75	0	0	x	x	0

FATIGUE FACTORS

FLYING TIME	TOTAL LAST 3 DAYS	TOTAL THIS FLIGHT	HOURS AWAKE SINCE LAST REST PERIOD
	4 HRS.	1 HRS.	approx. 4 HRS.

PILOT FLIGHT PREPARATION COMPLETE ON PILOT-IN-COMMAND PAGE ONLY

WEATHER BRIEFING

NONE [ ] | ACCREDITED BRIEFER [ ]
UNKNOWN [ ] | COMPANY FACILITY [V]
ACCREDITED FORECASTER [ ] | OTHER PILOT [ ]
SELF BRIEFING [ ] | OTHER OBSERVER [ ]

OTHER BRIEFINGS

NONE [ ]
UNKNOWN [Y] | ROUTE [ ]
DEPARTURE PROCEDURES [ ] | OPERATION [ ]
ARRIVAL PROCEDURES [ ] | NOTAMS [ ]

DOCUMENTS CARRIED

NONE [ ]
COCKPIT CHECK LIST [ ] | FLIGHT OR OPERATING MANUAL [ ]
ADEQUATE VFR [V] | INADEQUATE VFR [ ]
ADEQUATE IFR [ ] | INADEQUATE IFR [ ]

FLIGHT PLAN FILED

NONE [V] | SVFR [ ]
IFR [ ] | CONTROLLED VFR [ ]
VFR [ ] | FLIGHT NOTIFICATION [ ]

EXECUTION OF FLIGHT TO START OF OCCURRENCE

ADHERENCE TO PLAN

NO DEVIATION [ ]
ALTERATION FOR WX [ ]
ALTERATION FOR TRAFFIC [ ]
BECAME LOST [ ]
ALTERATION FOR U/S [ ]
OTHER [V]
SPECIFY: suspect game spotting

PHASE OF FLIGHT DURING WHICH FIRST IRREGULARITY OCCURRED

GROUND

START-UP [ ] | MOORING [ ]
STATIONARY [ ] | DOCKING [ ]
TAXIING [ ] | RAMPING (AMPHIBIOUS) [ ]
AIR-TAXIING [ ] | SHUT DOWN [ ]
STEP-TAXIING [ ] | PARKING [ ]
BEACHING [ ]

TAKEOFF

LINE-UP [ ]
RUN [ ]
LIFTOFF [ ]
HOVER [ ]

IN-FLIGHT

CLIMB [ ]
DESCENT [ ]
CRUISE [ ]
LEVEL TURN [V]
CLIMBING TURN [ ]
DESCENDING TURN [ ]
TRANSLATION [ ]
HOVER [ ]

LANDING

INITIAL APPROACH [ ]
FINAL APPROACH [ ]
FLARE [ ]
HOVER [ ]
TOUCH-DOWN [ ]
RUN-OUT [ ]
TURN-OFF [ ]

OTHER

LOAD-PICKUP [ ]
LOAD DROP [ ]
LOAD POSITIONING [ ]

NAVIGATION AND APPROACH AIDS

RADIO COMMUNICATIONS EQUIPMENT — ADEQUATE [V] INADEQUATE [ ]

AIDS AVAILABLE	V.H.F.	DME	VOR	TACAN	ILS	ASR	PAR	ADF	LORAN	I.F.R.N.G.	NONE
IN AIRCRAFT	V		V					V			
ON GROUND								V			
IN USE BY A/C AT TIME OF OC.											

000027

PRE-OCCURRENCE CONDITIONS

MATERIAL ①

DESCRIPTION OF SYSTEM CONDITIONS Condition A B S U A – NOT DETERMINED S – SERVICEABLE B – NOT INSTALLED U – UNSERVICEABLE	FUNCTION AFFECTED	COMPONENT/SUB-SYSTEM CAUSING PROBLEM	NATURE OF COMPONENT SUB-SYSTEM FAILURE
CANOPY WINDSCREEN			
DE-ICING-AIRFRAME			
ELECTRICAL SYSTEM - UP TO CONSUMER DEVICE			
EMPENNAGE - FIXED SURFACES			
ENGINES, ANCILLARIES AND CONTROLS			
FLIGHT CONTROLS			
FLAPS-SPOILERS-DIVEBRAKES AND CONTROLS			
FLUIDS AND GASES	NO UNSERVICEABILITIES REPORTED PRIOR TO FLIGHT		
FUEL SYSTEM-UP TO MIXTURE CONTROL DEVICE	AND NO EVIDENCE UNCOVERED IN WRECKAGE THAT WOULD		
FUSELAGE-STRUCTURE SKIN	INDICATE AN INFLIGHT MALFUNCTION.		
HYDRAULIC SYSTEM & ALL HYDRAULIC DEVICES			
INSTRUMENTS, FLIGHT DATA; DETECTORS CIRCUITS			
INSTRUMENTS, SYSTEMS DATA; DETECTORS, ETC.			
LIFE SUPPORT SYSTEM; OXYGEN-CABIN PRESS			
LIGHTING-INTERNAL/EXTERNAL			
PANELS/DOORS/WINDOWS/HATCHES/HOUSINGS			
PROPELLER(S) AND CONTROLS			
RADIO COMMUNICATIONS SYSTEM			
RADIO NAVIGATION SYSTEM-AURAL, VIS, AUTO.			
MAIN ROTOR-BLADES, STRUCTURE, DRIVETRAIN			
TAIL ROTOR-BLADES, STRUCTURE, DRIVETRAIN			
LANDING GEAR, WHEELS, TIRES, BRAKES, STRUC.			
WARNING SYSTEMS-VISUAL, AURAL			
WING-STRUCTURE, SKIN			
AUTO PILOT			

BASIC DATA ②

	I.A.S.	FUEL ON BOARD	CALCULATED	MIXTURE	CARB. HEAT POSITION
PRE-OCCURRENCE	approx 75 KTS	67 IMP. GALS.	A.U.W. 3210 LBS	RICH ☑ LEAN ☐ AUTO ☐	HOT ☐ N/A PARTIAL: ☐ COLD ☐
	C OF G POSITION _____ % MAC		OR 45.1 INS	AFT OF DATUM ☑	FORWARD OF DATUM ☐
	C OF G PERMISSIBLE RANGE _____ % MAC TO _____ % MAC		OR 41.9 INS TO 46.5 INS	AFT OF DATUM ☑	FORWARD OF DATUM ☐

	I.A.S.	POWER SETTING	LANDING GEAR POS'N	FLAP POSITION
AT GROUND CONTACT	approx 112 KTS	NONE ☐ PARTIAL ☐ ASYMMETRIC ☐ FULL ☑	UNLOCKED ☐ UP ☐ FIXED GEAR ☑ DOWN ☐	NO FLAPS ☐ PARTIAL ☐ DOWN ☐

000028

23-0003 (8-69)

ENVIRONMENT CONDITIONS

AT POINT OF FIRST IRREGULARITY OF FLIGHT IF APPLICABLE (2)

AIRCRAFT CONDITIONS

HEIGHT AGL

TERRAIN ELEVATION FT / FT, ASL

CLOUD

NONE ☐ UNKNOWN ☐

	HT. AGL	HT. ASL	VERTICAL EXTENT	AMOUNT
LOWEST LAYER	FT	FT	FT	/10
SECOND LAYER	FT	FT	FT	/10

VISIBILITY

AT AIRCRAFT HEIGHT _____ MILES

RESTRICTING PHENOMENA: NONE ☐ SMOKE ☐ CLOUD ☐ BLOWING DUST ☐ BLOWING SNOW ☐ FOG ☐ HAZE ☐ PRECIPITATION ☐ BLOWING SAND ☐ ICE CRYSTALS ☐

PRECIPITATION

NONE ☐ RAIN ☐ DRIZZLE ☐ SNOW ☐ FREEZING DRIZZLE ☐ HAIL ☐ FREEZING RAIN ☐ ☐

LIGHT ☐ HEAVY ☐ MODERATE ☐

TEMPERATURE AT AIRCRAFT HEIGHT

°F

°C

WIND

UNKNOWN ☐

AT AIRCRAFT HEIGHT

DIRECTION °TRUE

SPEED KTS

ELECTRICAL ACTIVITY

NONE ☐ UNKNOWN ☐ STATIC ☐ ST. ELMOS FIRE ☐ VIOLENT DISCHARGE ☐

SPECIAL HAZARDS

NONE ☐ BIRDS ☐ PARACHUTIST ☐ UNKNOWN ☐ AIRFRAME ICING ☐ TURBULENCE ☐ TALL STRUCTURE ☐ WHITE OUT ☐ AIR TRAFFIC ☐ HOAR FROST ☐ GLASSY WATER ☐ OTHER ☐

SPECIFY:

IN AREA WHERE AIRCRAFT CAME TO REST (3)

CLOUD

NONE ☑ UNKNOWN ☐

	BASE HT.	TOP HT.	AMOUNT
LOWEST LAYER	FT AGL	FT AGL	SCATTERED ☐ BROKEN ☐ OVERCAST ☐
SECOND LAYER	FT AGL	FT AGL	SCATTERED ☐ BROKEN ☐ OVERCAST ☐

TEMPERATURE AT GROUND LEVEL

-30 °F. UNKNOWN ☐

DEW POINT AT GROUND LEVEL

-40 °F. UNKNOWN ☐

VISIBILITY

AT SURFACE 15+ Var. 5 miles MILES RVR _____ FT.

RESTRICTING PHENOMENA: NONE ☐ CLOUD ☐ BLOWING DUST ☐ HAZE ☑ PRECIPITATION ☐ BLOWING SAND ☐ FOG ☐ ICE CRYSTALS ☑ BLOWING SNOW ☐ SMOKE ☐

(occasional)

PRECIPITATION

NONE ☑ RAIN ☐ UNKNOWN ☐ FREEZING RAIN ☐ DRIZZLE ☐ SNOW ☐ FREEZING DRIZZLE ☐ HAIL ☐

WIND AT GROUND LEVEL

UNKNOWN ☐

DIRECTION 060 (INT) °MAGNETIC

SPEED 7 M.P.H.

CHARACTERISTICS: STEADY ☑ SWINGING ☐ GUSTY ☐ UPWARD COMPONENT ☐ SUBSIDENCE ☐

SPECIAL HAZARDS

WIND SHEAR ☐ NONE ☐ UNKNOWN ☐ HOAR FROST ☐ BIRDS ☐ TURBULENCE ☐ SUN GLARE ☐ AIRFRAME ICING ☐ AIR TRAFFIC ☐ WHITE OUT ☐ GLASSY WATER ☐ OTHER ☐ DESCRIBE:

WEATHER DATA SOURCE

EYEWITNESS ☐ PILOT ☐ MET. OBSERVATIONS ☑ AFTERCAST ☑

LOCALE DESCRIPTION

GENERAL: MOUNTAINS ☐ HILLS ☐ ROLLING ☐ FLAT ☑

SPECIFIC: AERODROME ☐ CLEARING ☐ URBAN AREA ☐ ROAD ☐ SWAMP/MUSKEG ☐ TIDAL WATER ☐ RIVER ☐ BUSH ☑ LAKE ☐

OBSTRUCTIONS TO APPROACH/DEPARTURE

NONE ☐ TREE(S) ☐ POLELINE ☐ HIGH GROUND ☐ TOWER(S) ☐ BUILDINGS ☐

SURFACE

N/A

GENERAL: PAVED ☐ SAND/GRAVEL ☐ SOIL ☐ SNOW ☐ ICE ☐ WATER ☐ ROCK ☐

SPECIFIC: CONCRETE ☐ ASPHALT ☐ COMPACTED ☐ LOOSE ☐ LOW VEGETATION/GRASS ☐ HIGH WAVES ☐ SWELLS ☐

HAZARDS: NONE ☐ WATER FILM ☐ PUDDLES ☐ ICE PATCHES ☐ SLUSH ☐ SOFT ☐ ROUGH ☐ SNOW DRIFTS ☐

OBSTRUCTIONS TO T.O./LDG. RUN

NONE ☐ VEHICLES ☐ DITCHES/HOLES ☐ ANIMALS ☐ ROCKS/DEBRIS ☐ PEDESTRIANS ☐ RIDGES/SANDBARS ☐ SNOW BANK ☐ POSTS/FENCES ☐ OTHER ☐

SPECIFY:

VITAL DATA

USABLE LENGTH FT

USABLE WIDTH FT

ELEVATION FT

BRAKING ACTION NIL ☐ POOR ☐ FAIR ☐ GOOD ☐

RUNWAY PROFILE

N/A

LEVEL ☐ UP ☐ DOWN ☐

AVERAGE SLOPE IN DEGREES: UP

LIGHT CONDITIONS

BRIGHT DAY ☑ DARK DAY ☐ BRIGHT NIGHT ☐ DARK NIGHT ☐

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① PRE-OCCURRENCE CONDITION - CREW

PERSONAL – COMPLETE A SEPARATE PAGE FOR EACH PERTINENT CREW MEMBER

CREW MEMBER									
	PILOT-IN-COMMAND [V]	2ND PILOT [ ]	FLIGHT ENGINEER [ ]	CABIN ATTENDANT [ ]	OTHER [ ]	SPECIFY:
	NAVIGATOR [ ]	3RD PILOT [ ]	CREWMAN [ ]	FLIGHT OBSERVER [ ]		

TESTS AND FINDINGS ② QUANTITATIVE RESULTS SEE ATTACHED REPORTS NO TESTS DONE [ ]

ALCOHOL	BLOOD SUGAR	FOOD POISONING	DRUGS	OTHER TEST (S)
HYPOXIA	CARBON MONOXIDE	EXPLOSIVES RESIDUE	PESTICIDES	

SENSATIONS EXPERIENCED ③ ADMITTED [ ] OBSERVED [ ] NOT INVESTIGATED [✓]

PHYSICAL

NONE [ ]	EXCESSIVE PERSPIRATION [ ]	FATIGUE [ ]			
DROWSINESS [ ]	MUSCLE SPASMS CRAMPS [ ]	NAUSEA [ ]			
FEVERISHNESS/HOT [ ]	PAIN [ ]	DROWSINESS [ ]			
NUMBNESS [ ]	DIARRHOEA [ ]	OTHER:			
VISION DIFFICULTIES [ ]	STOMACH CRAMPS [ ]				
COLD/CHILLS [ ]	DIZZINESS [ ]				

EMOTIONAL

CONFUSION [ ]	DEPRESSION [ ]		
ANGER [ ]	ELATION [ ]		
IMPATIENCE [ ]	LISTLESSNESS [ ]		
NERVOUSNESS ANXIETY/TENSENESS [ ]	PREOCCUPATION [ ]		
OTHER:			
NONE EXPERIENCED [ ]			

MEDICAL HISTORY – LAST ROUTINE MEDICAL

DATE	PLACE		NAME AND/OR NUMBER OF MEDICAL EXAMINER
Oct 13/73	La Ronge, Saskatchewan		3066-246
MEDICAL PROFILE	RESTRICTIONS IMPOSED	RECEIVING MEDICAL TREATMENT	SPECIFY
1 1 1 1	None	YES [ ] NO [✓]	

TESTS OF PASSENGER CONDITIONS ④ TO BE COMPLETED ON PILOT-IN-COMMAND PAGE ONLY

CARBON MONOXIDE	FOOD POISONING	EXPLOSIVES RESIDUE	HYPOXIA	NONE PERFORMED

MEDICAL ANALYSIS – REGIONAL MEDICAL OFFICER TO DISCUSS ANY MEDICAL FACTORS WHICH, IN HIS OPINION, WERE INVOLVED IN THE OCCURRENCE.

See attached Human Factors Report - Copy of Lactate Profile sent to CAIO February 7, 1974.
Ref: CAM file 101-2-2

000030

OCCURRENCE DESCRIPTION (1)

FIRST IRREGULARITY OF FLIGHT (2)

NARRATE THE EVENT(S) WHICH FIRST INDICATED THAT THE FLIGHT WAS NOT PROCEEDING AS DESIRED.

The aircraft stalled (most probably it flicked during a steep low level turn)

RESULTANT ACTION(S) • REACTION(S) (3)

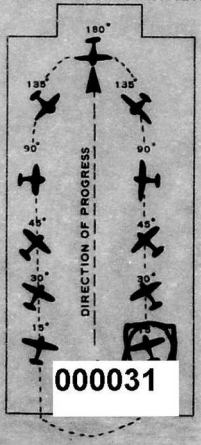
NARRATE ALL THE ACTIONS OF THE PILOT; ALL THE REACTIONS OF THE AIRCRAFT TO PILOT DEMANDS; ALL INTERACTIONS OF PILOT, AIRCRAFT, AND ENVIRONMENT.

The aircraft inverted. The nose lowered and height was lost rapidly. The sequence was so rapid that the pilot was unable to arrest it.

TERMINAL EVENT (4)

DESCRIBE THE MOVEMENTS OF THE AIRCRAFT FROM THE MOMENT BEYOND WHICH CORRECTIVE ACTION COULD NOT BE EXPECTED TO RETRIEVE THE SITUATION, OR FROM TOUCHDOWN PRECEDING A LANDING UNDER EMERGENCY CIRCUMSTANCES.

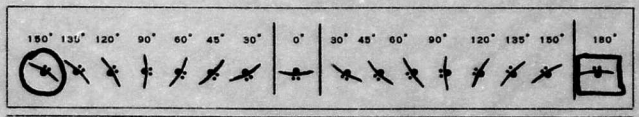
The aircraft contacted the ground inverted at approx. 70° angle. Death was instantaneous to all four aboard.



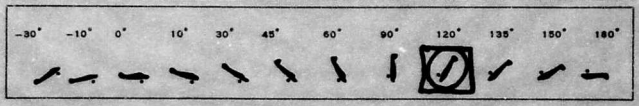
• CIRCLE THE SILHOUETTES WHICH MOST CLOSELY DESCRIBE ANGLE OF GROUND CONTACT

• DRAW A SQUARE AROUND SILHOUETTES TO DESCRIBE ATTITUDE OF AIRCRAFT AT REST

FRONT ELEVATION ▶



STARBOARD ELEVATION ▶



23-0003 (8-69)

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ELEVATION VIEW OF LOCALE (1)

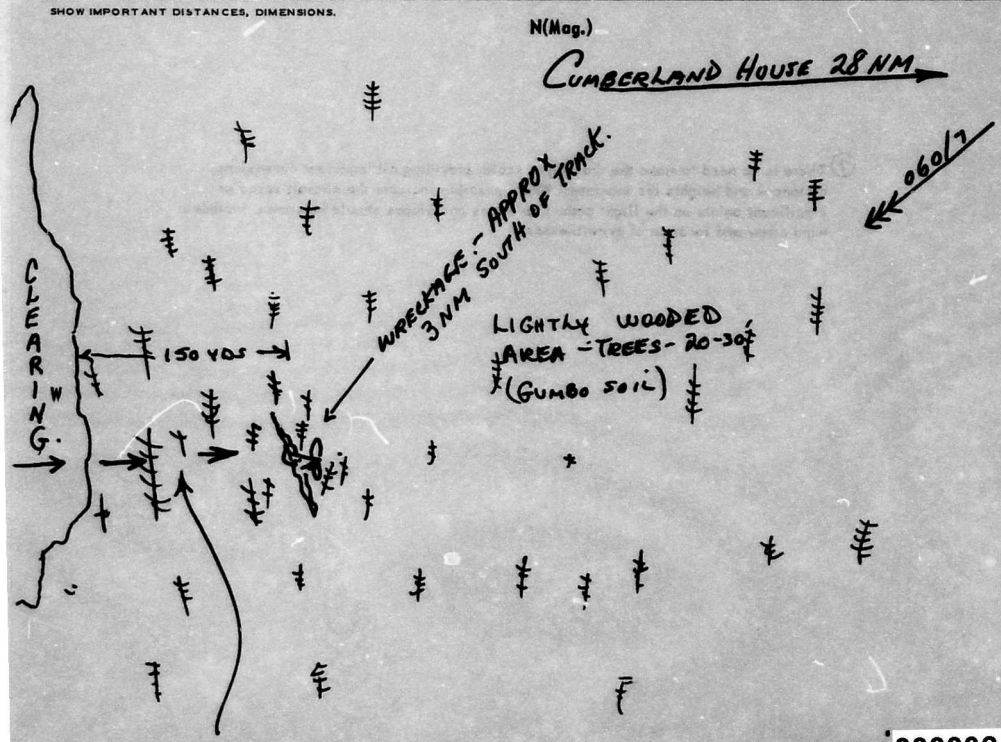
SKETCH IN SIGNIFICANT RUNWAYS, OBSTRUCTIONS, FLIGHT PATH, ETC.

SHOW IMPORTANT DISTANCES, DIMENSIONS.

PLAN VIEW OF LOCALE (2)

SKETCH IN SIGNIFICANT LANDING AREA, OBSTRUCTIONS, AIRCRAFT PATH, ETC.

SHOW IMPORTANT DISTANCES, DIMENSIONS.



ELEVATIO

PERSONNEL

CREW	FATAL	SERIOUS	MINOR	UNINJURED	NOT PERTINENT	DIED AFTER 30 DAYS
PILOT-IN-COMMAND	☑	☐	☐	☐		☐
SECOND PILOT	☐	☐	☐	☐	☐	☐
THIRD PILOT	☐	☐	☐	☐	☐	☐
FLIGHT ENGINEER	☐	☐	☐	☐	☐	☐
ALL OTHER CREW – NUMBER						
PASSENGER(S) – NUMBER	3					
PERSONS OUTSIDE A/C	0					

INJURY PATTERNS	HEAD	CHEST	LOWER TORSO	SPINE	ARM(S)	HAND(S)	LEG(S)	FOOT FEET	INTERNAL	MASSIVE
CREW/NO. OF PERSONS										1
PASS./NO. OF PERSONS										3
PERSONS OUTSIDE										0

EVENT CAUSING INJURY NO. OF PERSONS INVOLVED	CREW	PASSENGERS	PERSONS OUTSIDE A/C
CONTACT WITH PROPELLER/INTAKE/EXHAUST			
FELL FROM AIRCRAFT (OR THROWN)			
STRUCK INTERIOR OF AIRCRAFT AT IMPACT	1	3	
STRUCK INTERIOR OF AIRCRAFT IN TURBULENCE			
STRUCK BY FLYING OBJECT INSIDE AIRCRAFT			
STRUCK BY AIRCRAFT			
BURNS ONLY			
BURNS FOLLOWING OTHER INJURIES			
CRUSHED IN WRECKAGE			
PULLED UNDERWATER			
CAME IN CONTACT WITH MAIN ROTOR			
CONTACT WITH TAIL ROTOR			
OTHER (SPECIFY)			

AIRCRAFT

DEGREE OF DAMAGE
- NONE ☐
- UNKNOWN ☐
- MINOR ☐
- SUBSTANTIAL ☑
- DESTROYED ☐

DAMAGE PATTERN
- ENGINE ☑
- PROPELLER ☑
- NONE ☐
- AFT FUSELAGE ☐
- COCKPIT ☑
- EMPENNAGE ☑
- NACELLE(S) ☑
- NOSE ☑
- WING(S) ☑
- UNDERCARRIAGE ☑
- MAIN ROTOR ☐
- TAIL ROTOR ☐
- TOTAL ☐

EVENT CAUSING DAMAGE
- AIRBORNE COLLISION ☐
- AIRBORNE COLLISION AND GROUND IMPACT ☐
- COLLISION ON GROUND/WATER ☐
- EXPLOSION ☐
- FIRE ☐
- AERIAL BREAK UP ☐
- SUBMERGENCE ☐
- GROUND/~~WATER~~ IMPACT ☑
- OTHER ☐

SPECIFY:

OBJECT OF AIR COLLISION
- AIRCRAFT ☐
- BIRD(S) ☐
- BUILDING ☐
- DETACHED PORTION OF AIRCRAFT ☐
- POLE(S)/POST(S) ☐
- TOWER ☐
- TREE(S) ☐
- WIRE(S) ☐
- OTHER AIRBORNE OBJECT ☐
- OTHER ☐

SPECIFY:

OBJECT OF GROUND COLLISION
- AIRCRAFT ☐ BUILDING ☐
- DETACHED PORTION OF A/C ☐ FENCE(S) ☐
- PEDESTRIAN ☐ TREE(S) ☐
- POST/WIRE ☐ VEHICLE ☐
- DITCH ☐ RIDGE ☐
- SNOW BANK ☐ OTHER ☐

SPECIFY:

ENVIRONMENT

PROPERTY DAMAGE
- NONE ☑
- MINOR ☐
- EXTENSIVE ☐

PROPERTY DAMAGED
- RESIDENCE ☐
- PUBLIC BUILDING ☐
- PUBLIC UTILITIES INSTALLATION ☐
- VEHICLE ☐
- AIRFIELD FACILITY ☐
- DOMESTIC ANIMAL(S) ☐
- BARN/STORAGE ☐
- FARM CROP ☐
- AIRCRAFT ☐
- FENCE ☐
- SPECIFY ☐

000033

LIFE - PROTECTION DATA

CRASH PROTECTION

DEVICES

		SEAT(S)	SEAT ANCHORS (SETS)	LAP BELT(S)	SHOULDER HARNESS	BAGGAGE RESTRAINTS
CREW	NUMBER INSTALLED	1		1		NONE
	NUMBER USED	1		1		
	NUMBER FAILED IN CRASH	1		0		
PASSENGERS	NUMBER INSTALLED	3		3		
	NUMBER USED	3		1		
	NUMBER FAILED IN CRASH	3		0		

CRASH EVACUATION

AIRCRAFT EQUIPMENT

	ESCAPE SLIDE	ESCAPE LADDER/ROPE	DINGHY	NORMAL EXITS	ESCAPE HATCHES	PORTABLE EXTINGUISHER
NUMBER INSTALLED	☐	☐	☐	2	☐	1
NUMBER USED	☐	☐	☐	0	☐	0
NUMBER FAILED IMPROPER OPERATION	☐	☐	☐	0	☐	0
NUMBER FAILED IN USE	☐	☐	☐	0	☐	0

REMARKS AND RECOMMENDATIONS:

None

PERSONAL SAFETY EQUIPMENT

DEVICES	OXYGEN MASK	CRASH HELMET	LIFE VEST/INDIVIDUAL FLOTATION DEVICE	FILTER MASK	PARACHUTE	IMMERSION SUIT
NUMBER BEING USED			N/A			
NUMBER FAILED DUE TO IMPROPER USE						
NUMBER FAILED IN OPERATION						

REMARKS AND RECOMMENDATIONS:

SEARCH AND RESCUE

PERTINENT ☑ NOT PERTINENT ☐

SEARCH SUCCESS

BY

NONE ☐ PROVINCIAL POLICE ☐
SAR ORGANIZATION ☑ MUNICIPAL POLICE ☐
PRIVATE AGENCY ☑ D.O.T. ☐
COMMERCIAL AGENCY ☑ OTHER ☐
R.C.M.P. ☐ SPECIFY:

DURATION

LESS THAN 4 HRS ☐
4 HRS. BUT LESS THAN 12 ☐
12 HRS. BUT LESS THAN 24 ☐
1 DAY BUT LESS THAN 2 ☐
2 DAYS BUT LESS THAN 4 ☐
4 DAYS BUT LESS THAN 7 ☐
7 DAYS BUT LESS THAN 14 ☐
14 DAYS OR MORE ☑

TYPE

GROUND ☐
AIR ☐
BOAT ☐
COMBINED AIR/BOAT ☐
COMBINED GROUND/AIR ☑
ALL ☐

LOCATING METHOD

L/F RADIO ☐ VISUAL-SMOKE/FIRE ☐
SARAH ☐ VISUAL-WRECKAGE ☑
AUTOMATIC CPI ☐ VISUAL PYROTECHNICS ☐
VHF/UHF HOMING ☐ VISUAL OTHER ☐
VISUAL-MIRROR ☐ OTHER ☐
NOT SUCCESSFUL ☐
IF OTHER SPECIFY

SURVIVAL

PERTINENT ☐ NOT PERTINENT ☑

DEVICES

	TENT	SLEEPING BAG	FIRST AID KIT	EMERGENCY RATIONS	WEAPON	FISHING GEAR	FIRE SOURCE	PROTECTIVE CLOTHING
AVAILABLE-NOT USED	☐	4	☐	☑	☑	☐	☑	☑
NOT AVAILABLE	☐	☐	☐	☐	☐	☐	☐	☐
FAILED-IMPROPER USE	☐	☐	☐	☐	☐	☐	☐	☐
NOT SATISFACTORY	☐	☐	☐	☐	☐	☐	☐	☐

REMARKS AND RECOMMENDATIONS: None

000034

ANALYSIS

INVESTIGATOR'S APPRAISAL (1)

INDICATE WHICH ITEMS OF THE RECORDED FACTUAL DATA, IN THE VIEW OF THE INVESTIGATOR, CAUSED THE ACCIDENT. DESCRIBE IN NARRATIVE HOW THE ITEMS INTERACTED TO CAUSE THE ACCIDENT.

The Flight

This was a VFR flight departing La Ronge, Saskatchewan at 1045 hours local on December 12, 1973. The aircraft was a Cessna 185 on wheel/skis owned and operated by the Saskatchewan Government. The pilot was Paul John, a young Native Canadian of local origin. There were three passengers as follows:

Lionel Deschambeault
Roderick E. Morrison
Clifford J. Stanley

There was no flight plan filed. The first point of intended landing was Cumberland House, Saskatchewan, a small community 120 NM southeast of La Ronge. When the aircraft failed to arrive a route check was initiated by Provincial Government authorities and then the RCC was alerted at 1800 hours on 12 December. An extensive air search, utilizing both Military and Civilian

....2

RECOMMENDATIONS (2)

Continued education through publicizing reports.

FOR REGIONAL USE

CAUSES

The pilot allowed the aircraft to enter a high speed stall at an altitude insufficient for recovery action.

aircraft, was conducted without success until December 23. The search was reopened December 29. On January 2, 1974 a Department of Northern Saskatchewan aircraft spotted the wreckage of the missing aircraft at position 54° 05'N 102° 59'W. Investigators from this office accompanied a rescue team to the scene and assisted with recovery action. There were no survivors and apparently all occupants died on impact.

The Pilot - Paul John

Mr. John was a relatively experienced pilot who had been working for the Saskatchewan Government for but a few months. He had acquired approximately 1,400 hours on single engine aircraft, with approximately 200 hours on this type. He commenced training in November 69, received his private pilot's licence in July 71 and commercial licence in March 72. His commercial test record indicates that he was weak in Flight Planning, steep turns and instrument flying. These three sequences were passed after a second attempt only. The minimum pass mark is 315, Mr. John's mark was 324. There were rather strong rumours about the area regarding this pilot's ability to navigate. It appears that he could become disorientated easily and become lost. This report or rumour caused the RCC to expend more of their resources in the expanded search area leaving the close to track area for hired civilian search aircraft. Although he flew for the Saskatchewan Government he was hired directly by the Department of Northern Saskatchewan and was not processed through the Government Air Ambulance Organization as one would expect. Being a Native Canadian with an appropriate licence may have prompted those in charge to secure his services. As a matter of interest, Mr. John had been married but a few days to a young school teacher at La Ronge.

The Aircraft

The aircraft was almost new. It was manufactured in 1972 and had flown only 760 hours. All mods had been carried out as per AWDs. There had been some trouble with the aircraft generating system that caused some depletion of the battery. For this reason an extra battery was carried aboard in case of need. There was a Dart II ELT secured by Velcro to the side of the baggage compartment. The engine had been properly winterized. An adequate supply of survival gear was aboard. The aircraft had been purchased by the Province's Central Vehicle Agency to be used by the Department of Northern Saskatchewan as an "air taxi" for their purposes. As mentioned previously, this is quite apart from the Government Air Division known as the Saskatchewan Air Ambulance Service.

The Weather

The weather over the entire area was extremely cold and generally clear with excellent visibilities. The exceptions to this were in the immediate vicinity of built up areas and/or open water where ice crystals reduced visibility to less than a mile. On the morning of takeoff La Ronge was reporting very low visibility in one direction (Township) yet pilots reported that they had taken off to the east with good visibility. In any case, there was no open water near the crash site

....3

itself and information received from people in the general area on the ground indicates that the visibility was excellent. The weather office aftercast is inclined to support the assessment of clear weather in the area, while at the same time allowing a possibility for isolated areas of reduced visibility dependent on moisture on the surface.

Crash Site

The aircraft had evidently impacted the ground at a steep angle in an inverted attitude. The mean line of progress was 120° M at impact. All bodies were contained in the wreckage in their appropriate pre-impact seating positions and the passengers seated in the rear had been driven into the backs of the pilot and front passenger who were just below surface level. All components of the aircraft were present and all controls were connected. Notes taken during the on-site investigation were as follows:

- Flaps were "up"
- Elevator trim set for normal flight range
- Fuel was selected to "right" tank
- Left rear passengers arm around right rear passengers lower shoulder area
- Passengers watch stopped at 1142 hours
- Left rear passenger's seat belt done up
* - Right rear passenger's seat belt undone
- Pilot's seat belt done up
* - Right front passenger's seat belt undone
- Control column more or less centered
- Front passenger's watch stopped at 1143 hours/ 12 December
- Aircraft clock stopped at 1142 hours
- Altimeter subscale set at 30:40 inches (correct)
- Oil temperature jammed at normal cruise position
- Mixture Rich, Throttle at METO or Full setting, Pitch to fine range
- Artificial horizon jammed with reading corresponding to attitude at impact
- ELT (Dart II) in baggage compartment lying loose in "armed" position
- Pilot's notebook records takeoff from La Ronge at 1045 hours
* Human Factors Report page 7 (attached) in error

The engine was removed by the use of dynamite several days later as the soil was frozen to a depth of a few feet. This was carried out by a commercial slavage crew. Our investigators examined the engine and propeller before any further salvage action was taken. The results were as follows:

- One prop blade had definite signs of "power on" at impact.
- The engine had been rotated in the ground at impact a fact which was evident by bent spark plugs and attachments. This rotation was caused by residual torque as the prop was stopped by the

....4

frozen ground and is a good indication of power to the shaft.
- The rear right cylinder was removed. Rings and piston showed no sign of overheat as would be the case in the event of loss of oil or extreme viscosity through coring, blown seal, etc .
- There was no indication of any pre-impact damage and the main power train functioned when the prop was moved.
- The airspeed indicator was severely damaged and there was no evidence on the face to indicate speed at impact. Internally, however, there was definite tooth damage on the segment gear and pinion which was used to calculate a speed of 125-132 MPH at impact.
- The artificial horizon is of the type that can register 360° of roll and approximately 80° of pitch. As mentioned previously, it was jammed at impact. Internal inspection indicates that the reading as found on the face was the actual reading at impact.

Witnesses

There were no witnesses to the crash. Nevertheless, some information was received in an indirect manner from local residents both at La Ronge and Cumberland House. No statements as such were volunteered therefore little factual information remained. It appears that Mr. Deschambault, one of the passengers, had on many occasions requested local pilots to spot moose while enroute during flights on which he was aboard. One transient worker at La Ronge reported that a man who had been within earshot of the group (the four deceased) during fueling operations prior to the flight, heard Deschambault ask Paul John to "find me a large moose when we get near Cumberland and I will go out on the skidoo and have him for Christmas." This individual who heard this remark could not be located. One fact does remain, however, and this is that Mr. Deschambault's brother was hunting moose within 8 miles of the crash site at the time of the crash. He did not see the aircraft at any time, he claimed, and no statement was taken. The RCMP report that they had come across a native trapper who was within 3-4 miles of the crash site at the time. He reported that the weather was "good". He claims he saw the aircraft or "an aircraft" with smoke coming from it. Considering the extreme temperature, the smoke, as he calls it, can be easily explained.

It should be noted here that the area abounds with moose and no less than a dozen were spotted within one mile of the crash site on one of the trips in and out.

Discussion

All evidence indicates that the party left La Ronge in a serviceable aircraft with ample fuel for the flight. There was sufficient emergency equipment and a Dart II ELT which was armed. The aircraft was heavily loaded but within allowable limits for both gross and C of G. Takeoff was recorded as 1045 hours in the pilot's notebook. The average speed of this aircraft was 113 knots (average of 10 trips recorded in the notebook). The aircraft crashed 28 NM short of destination. The time of the crash was 1142 hours + or - 1 minute. The crash

site is within three miles of "on track." If track had been maintained since La Ronge it is calculated that the aircraft should have been 12 miles further on which constitutes a discrepancy of approximately 5-6 minutes.

The aircraft impacted the ground at a steep angle in an inverted attitude. Speed at impact was calculated to be between 125-132 MPH. There was power to the prop at impact. Prop and engine controls were set up for almost maximum power. The ELT triggered as designed, however it was completely shielded by airframe metal which blocked all signals.

There are but three ways that this aircraft could have achieved an inverted attitude prior to impact; (1) Purposely, by the pilot, as in the execution of a roll, (2) because of failure of an aerfoil section in flight, (3) because of a high speed stall which resulted in a flick at low level. The first has been discounted entirely for obvious reasons. The second, structural failure through overstress or previous impact, had also been discounted because of lack of physical evidence in the wreckage. It was for a time thought that this was a possibility, however, all damage can be accounted for on the one impact.

The third is considered the most logical i.e. a high speed stall emanating from a steep turn, and this is offered here as the cause of the crash. This being accepted, another more difficult question arises and this is the purpose of the steep turn that caused such a stall. There are two possible answers here. One falls in very nicely with the reports that imply moose spotting. The other is a possible weather factor which could conceivably cause the pilot to initially reduce altitude in a worsening weather condition and then to start a turn when the weather prevented further progress resulting in loss of horizon, disorientation and finally the stall.

The lactate profile shows that the pilot had a deep concern reaction for several minutes followed by an acute stress reaction of approximately 18 seconds. This is not compatible with the moose-spotting theory but would fit in very neatly with a patch of poor weather along the track.

Although this investigator feels that it was one or the other, the evidence tends to contradict each theory to some extent leaving us in a quandary. The fact that the pitch control was set for high power and the right hand passengers both front and back had not used or had undone their seatbelts, favours a low level left turn over moose. The lactate profile does not agree here. On the other hand, the weather theory compliments the lactate profile but leaves the seatbelts and pitch setting not fully explained. There is room here for endless controversy and it is felt that the chance for proving any theory is indeed remote.

This wreckage laid for nearly a month before discovery and much snow had fallen. Transport to and from the site was difficult and it proved impractical at the time to attempt snow removal in the large area around the wreckage in search of additional clues. When the opportunity permits, we will revisit the area after all snow has gone in the hope of discovering some evidence that could serve as a tie-breaker between two theories.

Quite apart from the accident itself, there appears to be some inadequacy

in supervision. This young pilot was more or less on his own. The aircraft was serviced by Norcanair and he operated the aircraft as a sort of air taxi for government employees. Such a situation might leave such an inexperienced young individual open to the influence of passengers with respect to the conduct of the flights. His situation, we feel, would be much improved had there been a senior pilot to report to and from whom to seek advice and direction.

General Comments

For the sake of completeness, it should be added here that the wreckage was very difficult to spot. Ironically, the wreckage was discovered quite by accident by a Saskatchewan Government aircraft that was conducting a low level survey on moose in the immediate area of the crash site. It appears that the shrubbery at and around the site is particularly delectable to the animals which accounts for their numbers.

A potentially dangerous situation arose when the military helicopter had great difficulty re-locating the site in order to transport out the investigators and two remaining bodies. As darkness was approaching a hand held flare was used to orient the helicopter crew. In future, investigators from this office will have available in such remote areas recently acquired 2-way VHF radios and a plentiful supply of flares. This equipment will be discussed by Central Region representatives at the next symposium.

NOTE:

New information just received (1/4/74) reveals that the lactate profile has been re-evaluated and the severe stress time could be as low as 6 seconds. All evidence now points to the pilot being engaged in moose-spotting.

AFFIRMATION OF THE CONTENT OF THIS REPORT

INVESTIGATOR(S) SIGNATURE(S)

G. A. Saull H.H. Doupe

REGIONAL SUPERINTENDENT COMMENTS (1) 1,772 hours of flight were expended on this search only to have the wreckage spotted by accident from a non-search aircraft. A fine case to present to those who may still object to the new ELT order. An external antenna for the ELT would have saved the day.

G. A. Saull — REGIONAL SUPT. ACCIDENT INVESTIGATION — DATE 1/4/74

R. F. Heiliger — REGIONAL CONTROLLER, CIVIL AVIATION — DATE 2 APR 74

DOCUMENTS SUPPORTING THE DETAILS OF THIS REPORT AND APPENDED HERETO

POLICE REPORT ☐	MEDICAL REPORT ☑	MATERIAL LABORATORY REPORT ☑	WEATHER INFORMATION ☐
CRIME LABORATORY REPORT ☐	PATHOLOGIST'S REPORT ☑	PILOT'S STATEMENT (S) ☐	ATC TAPE/TRANSCRIPTION ☐
CORONER'S REPORT ☐	CASUALTY LIST ☐	WITNESSES' STATEMENT (S) ☐	TECHNICAL REPORTS ☐
MAPS AND CHARTS ☑	PASSENGER STATEMENTS ☐	OTHER ☐ SPECIFY:	

ADMINISTRATIVE DETAIL

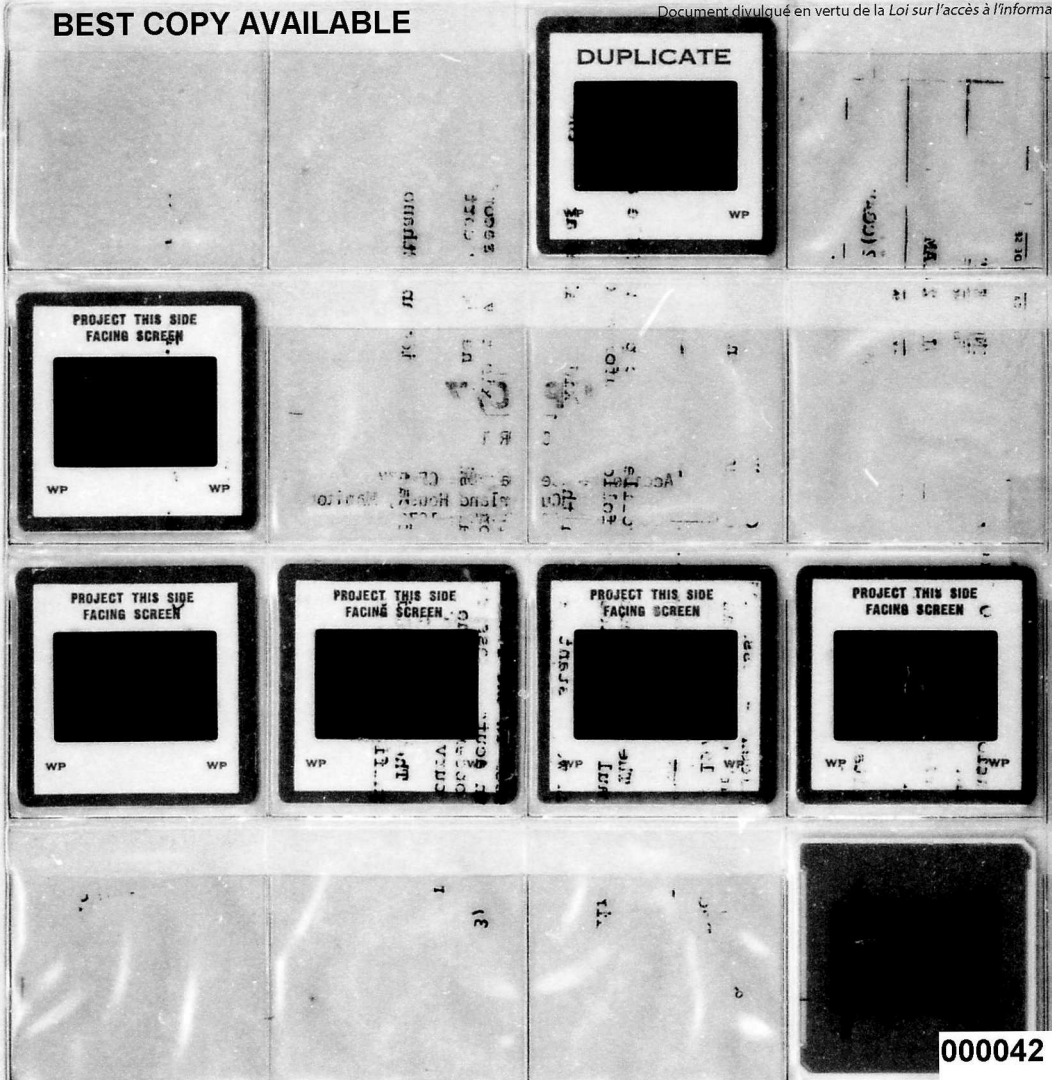
INVESTIGATION	ELAPSED TIME FROM ACCIDENT TO INVESTIGATOR'S ARRIVAL ON THE SCENE: 22 days HRS.	ELAPSED TIME FROM ACCIDENT TO RECEIPT OF NOTIFICATION BY REGION: 3 HRS.
EXPENDITURES	CASH: COST OF FARES, CHARTERS, ETC.: $ ____ ALL OTHER CASH EXPENSES: $ ____ TOTAL CASH EXPENDITURES: $ ____	
	MAN-HOURS: TIME SPENT ON THIS CASE BY ACCIDENT INVESTIGATOR(S) INCLUDING TIME. HOURS: 200	

H.Q. USE

CAUSE FACTORS ASSIGNED

000041

23-0003 – (8-69) (12)



MINISTRY OF TRANSPORT
AIRCRAFT ACCIDENT INVESTIGATION DIVISION
ENGINEERING LABORATORY

MINISTÈRE DES TRANSPORTS
DIVISION DES ENQUÊTES SUR LES ACCIDENTS D'AVIATION
LABORATOIRE TECHNIQUE

LABORATORY REPORT
RAPPORT DE LABORATOIRE

FILE REFERENCE *RÉFÉRENCE DE DOSSIER*	NUMBER OF PAGES *NOMBRE DE PAGES*	NUMBER OF PHOTOS *NOMBRE DE PHOTOS*	FIGURES – *CHIFFRES* / APPENDICES – *ANNEXES*
5002-C30166	2		

REPORT *RAPPORT* **LP 10/74**

EMERGENCY LOCATOR TRANSMITTER

Accident - Cessna 185, CF-BZV
Cumberland House, Manitoba
12 December 1973

DATE COMPLETED – *TERMINÉ LE*: 28 February 1974

SUBMITTED BY – *PRÉSENTÉ PAR*: P.L. Battrum (Avionics Specialist)

PREPARED BY – *RÉDIGÉ PAR*: P.L. Battrum

APPROVED – *APPROUVÉ*: T.W. Heaslip (CAIE)
LABORATORY SUPERINTENDENT – *SURINTENDANT DU*

1.0 INTRODUCTION

1.1 Following a 22 day search, the aircraft was located without the aid of the emergency locator transmitter (ELT). On discovery, the transmitter was held in the open and the transmitted signal was received by an overflying aircraft. The ELT was forwarded to the Engineering Laboratory by CCAI, Winnipeg with a request for technical investigation.

1.2 The technical examination of the transmitter was to consider five questions: Was the ELT in working order? Did the inertia switch function as designed? Would the ELT have transmitted as designed had it not been completely shielded in the luggage compartment of this all-metal aircraft? The ELT functioned when set to "test" after recovery. Could the batteries conceivably be of sufficient power to maintain a signal for so long a period? Any other relevant information that the examination might reveal was also requested.

2.0 EXAMINATION

2.1 A cursory check of the transmitter involved triggering the unit and establishing that a signal was being transmitted. This check was carried out in an electromagnetically shielded room using a Sony 8500 VHF receiver. A signal was received following activation of the inertia trigger switch in the transmitter. The original batteries were used.

2.2 It was noticed that an intermittence in the signal was present. This was traced to the antenna connection. Although, the connection seemed secure, the transmitted signal could be interrupted by manipulating the antenna.

2.3 The ELT was then tested in accordance with RSS 147 issue 2, the current performance standard for emergency locator transmitters, to establish the quality of its transmitted signal. This standard sets out the test procedure and performance requirements to be met by these devices. The parameter of interest in this instance was in the transmitter's radiated power, which was measured using the substitution method. This involved measuring the field strength of the transmitter. A power signal generator was then adjusted to produce the same field strength using a monopole antenna. The power of the signal generator output would then be the same as the radiated power of the ELT. This test was carried out on a test range as specified in RSS 147 issue 2 with the ambient temperature approximately 0°C and using new batteries. The results are tabulated below:

FREQUENCY (Mhz)	FIELD STRENGTH (dBuv)	RADIATED POWER (mW)
121.5	79	40
243	77	32

TABLE 1

2.4 A qualitative test of the switch resulted in it triggering the transmitter when subjected to accelerations well below those encountered during the catastrophic deformation of metal aircraft structu

3.0 DISCUSSION

3.1 The results of the radiated power measurements must be compared to the requirements defined in RSS 147 issue 2. These requirements are tabulated below:

ENVIRONMENT	CONTINUOUS RADIATED POWER	
	AFTER 24 HRS.	AFTER 48 HRS.
+ 40°C	⩾ 100 mW	⩾ 50 mW
cold soak at -40°C warm to -20°C	⩾ 50 mW	⩾ 25 mW

TABLE 2

These values must be achieved on both frequencies. The 40mW radiated power of the unit tested was at a temperature well above the severe environment specified in the standard yet its initial signal strength at a frequency of 121.5 Mhz is only 80% of the required value after 24 hours of continuous transmission. The signal strength of the 243 Mhz carrier was even lower, 64% of the strength specified in the standard.

3.2 An interesting finding was that the readings provided in Table 1 were obtained when the ELT was sitting in contact with a wire-mesh groundplane conductor. When the unit was hand-held, the field strength at a point 100 feet from the transmitter was reduced by 4dB on 121.5 Mhz and 2 dB on 243 Mhz. In other words, hand-holding this unit results in a 50% reduction in its radiated field strength.

3.3 The question of shielding of the transmitter by the aircraft structure would require extensive testing in situ. In view of the evidence available, it is felt that the metal airframe would have inhibited the proper propagation of the emergency signal.

3.4 The battery life is a function of temperature and power consumption rate. The life of a battery is greatly reduced when ambient temperatures are lowered. It would be expected that after some 22 days of continuous transmission, the battery power remaining would be much lower than necessary to operate the transmitter. However, there seems to be an anomaly in the evidence presented in the request for technical investigation. It is stated that the ELT functioned when set to "test" after recovery. On this unit, the "test" function does not cause a signal to be transmitted. The selection of the "test" position will either; indicate the condition of the batteries when the unit is not transmitting or indicate that the unit is transmitting if the inertia switch has been activated. Therefore, it can only be concluded that either the transmitter was jarred sufficiently during handling to trigger it and subsequently the signal was received or the unit had in fact been operating continuously for the duration of the search.

4.0 CONCLUSION

4.1 The emergency locator transmitter is capable of transmitting a signal on both 121.5 Mhz and 243 Mhz when activated by the inertia switch.

4.2 The output on both frequencies is below that required in the current standard for these devices.

4.3 The inertia switch is capable of functioning as designed.

4.4 The metal airframe of the aircraft would provide an effective shield that could eliminate or greatly reduce the normal radiation characteristics of the transmitter.

4.5 Although not generally accepted as possible, evidence indicates that the power supply was adequate to provide continuous transmission for the duration of the search.

4.6 The antenna connection was found to produce an intermittent interruption in the transmitted signal.

4.7 When the unit was hand-held, the signal strength was 50% of the signal strength from the unit when standing alone on the ground.

Photos C-3166, CF-BZV

Photo #1	Aerial view of wreckage, visible in the centre of the photo.
Photos 2 through 6	General views of the wreckage.
Photo #7	Watch stopped at 11.43.
Photo #8	Engine instruments - note oil temp. in middle of normal running range.
Photo #9	Aircraft clock seized at 11:43 - 11:44
Photo #10	Gyro horizon impact seized in a position corresponding to impact position of the aircraft.
Photo #11	Propellor control and throttle control settings.
Photo #12	Photo of same controls in an identical aircraft taken for identity purposes.

TO / À: CARO - Standards Subsection
Attention: D.K. Lynch.

FROM / DE: CAIE/AV

SECURITY CLASSIFICATION / DE SÉCURITÉ:

OUR FILE - N/REFERENCE: PA 5002-C30166 (CAIE)

YOUR FILE - V/RÉFÉRENCE:

DATE: 12 March 1974

SUBJECT / OBJET: Re: Emergency Locator Transmitter
Cessna 185, CF-BZV
CAIE Laboratory Report LP 10/74

1. Please find enclosed one copy of Aircraft Accident Investigation Engineering Laboratory Report LP 10/74. This report deals with the examination and testing of a Radair Dart II emergency locator transmitter.

2. The ELT concerned was on board an aircraft involved in an accident in which all occupants were fatally injured. The wreckage was located after a 22 day search during which transmissions from the transmitter were not received.

3. The findings presented in this report may be of interest to you. In particular, the finding that field strength appears to be significantly reduced when the transmitter is hand-held.

P.L. Battrum
Avionics Specialist
Acc. Inv. Eng. Lab.

000048

MEMORANDUM

CLASSIFICATION

TO / A: C.C.A.I. - Winnipeg

YOUR FILE No. / Votre dossier:

OUR FILE No. / Notre dossier: PA 5002-C30166 (CAIE)

FROM / De: C.A.I.E. Ottawa

DATE: 12 March 1974

OLD

SUBJECT / Sujet: Re: Emergency Locator Transmitter, Cessna 185, CF-BZV
CAIE Laboratory Report LP 10/74

1. Enclosed please find two copies of the above referenced Engineering Report. Please acknowledge receipt of this report on the attached copy of this memo and return to C.A.I.E.

M.D. Ducharme

M.D. Ducharme
for Chief, Aircraft Accident Investigation Division.

Encl.

Pages 50 to / à 52

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MEMORANDUM NOTE DE SERVICE

TO / À: Sr. Consultant, CAM, Ottawa.

Reg. Supt., CCAI. ✓

FROM / DE: A/RAMO, Winnipeg.

SECURITY - CLASSIFICATION - DE SÉCURITÉ: Confidential

OUR FILE - N/RÉFÉRENCE: CF-BZV (CCAM)

YOUR FILE - V/RÉFÉRENCE:

DATE: February 7/74.

SUBJECT / OBJET: Human Factors Report on Aircraft Accident CF-BZV .

Introduction

On December 12th, 1973 at 1142 hours CST, a Cessna 185 aircraft with wheel skis, CF-BZV crashed in the north Saskatchewan bush 30 miles west of Cumberland House. The four occupants of the aircraft, Paul J. John, age 22, pilot, and passengers Lionel Deschambeault, age 33, Clifford John Stanley, age 31, and Roderick Edward Morrison, age 28, were all killed on impact.

Crash Sequence

The flight originated at 10:30 hours CST at Lac La Ronge, Saskatchewan, and was to be a routine flight from Lac La Ronge to Cumberland House, approximately 125 miles to the southeast. The passengers were employed by the Saskatchewan Government, and this was to be a routine familiarization flight to acquaint them with the area. After leaving Lac La Ronge, there was no further communication from the aircraft. When the aircraft failed to arrive in Cumberland House in reasonable time, a search was instituted which as time went on became extremely intensive and highly publicized.

On January 3, 1974, (21 days after the accident) aircraft wreckage was spotted approximately 30 miles west of Cumberland House, and approximately three miles south of track from Lac La Ronge to Cumberland House. On January 4th, the aircraft accident investigation team was flown to the crash site by a Search and Rescue helicopter. On arrival at the site, it was confirmed that the aircraft was a Cessna 185, CF-BZV. The aircraft had impacted with the ground at a high angle, and in an inverted position. Because the ground had not

frozen solid at the time of the accident, the aircraft buried itself into the ground to the level of the fire wall. The four occupants were found in the aircraft and all four were obviously killed on impact.

The technical advisors on the accident investigation team have ascertained that the engine was running at time of impact, and it is estimated that the aircraft impacted with the ground at a velocity of 125 to 132 miles per hour.

It was necessary to cut the airplane open to remove the frozen bodies, which were then shipped via Cumberland House to Saskatoon for autopsy.

Calculations indicate that the aircraft should have reached a point on track adjacent to the crash site, approximately five minutes prior to the time of the accident. There would therefore appear to be five minutes of flight time unaccounted for in considering a straight cross-country flight from Lac La Ronge to the crash site enroute to Cumberland House. Information has also been received that the brother of Lionel Deschambeault was expected to be hunting in the vicinity of the crash site. Information has also come to light that Lionel Deschambeault was hoping to do some"moose spotting" on this flight so that he could go out by snowmobile and shoot a big moose for Christmas.

One further observation which is felt to be significant is that the AMO, a veteran moose hunter himself, has never seen so many moose in his life as in the area of the crash site. On the trip by helicopter from Cumberland House to the crash site one could spot as many as 50 moose just looking out the windows on one side of the helicopter. As many as 9 and 10 moose could be seen in some groups.

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Pages 57 to / à 58

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Pilot History

Past History -

Mr. John is estimated to have had 1400 hours total time, and 70 hours on this type of aircraft. Information as to the pilot's previous performance has come from two separate sources to indicate that he was apparently a poor navigator. He is known on at least two occasions to have lost his way to the extent that his passengers would not consider travelling with him again. No other information is available as to his ability as a pilot.

Psychological History -

The pilot was married four days prior to the accident. He and his wife apparently had a honeymoon lasting two days, and the pilot resumed work the day prior to the accident. On this day, the pilot took off, but because of engine trouble had to land again almost immediately and spent the rest of the day working on the aircraft. Therefore, the day of the accident was his first flight since his marriage. A telephone conversation with the pilot's wife indicates that the pilot was in a relaxed and happy frame of mind on the day of the accident. He had no particular worries and as far as she knew his mind was at rest. He was a non-smoker and practically a non-drinker, taking only a very occasional social drink. On the evening prior to the accident, the pilot played hockey, returning home at approximately 11 P.M. He had a bath and went to bed shortly thereafter, arising at 7:30 A.M. He ate a substantial breakfast and was on the job by 8:30 as was his custom. There is no evidence that the pilot was on any type of medication, and as far as is known he was in perfect health.

Company History

The aircraft was owned by the Government of Saskatchewan, and was being maintained by Norcanair in Lac La Ronge. It is therefore reasonable to assume that the aircraft was being adequately maintained.

Conclusions

Emergency Response -

A search was initiated very shortly after this aircraft was reported missing on December 12th, 1973. However, it took 21 days to locate the aircraft. During this time, many hours of flying were involved in such an extensive search. One point of note is that the aircraft was equipped with a "Dart Two" emergency locator transmitter which was in the "armed" position. Since no signal was picked up by the searching aircraft, one must assume that this "ELT" failed. It has been sent to the laboratory in Ottawa for examination.

One would conclude then that the emergency response was adequate except for the failure of an emergency locator transmitter.

Causes of Death -

The cause of death in all four occupants of the aircraft was massive corporeal trauma due to an aircraft impacting with the ground at high speed.

Human Factors -

It has previously been observed that the area of the accident was abounding in game. It has also been noted that the brother of one of the passengers was hunting in roughly the area of the accident, and that this same passenger was interested in doing a little "moose-spotting" during the course of the flight. A third observation is that there would appear to be approximately five minutes of elapsed time unaccounted for if one were to consider a direct flight from Lac la Ronge to Cumberland House. Although it is conjecture, it is reasonable to assume that the pilot deviated from track in order to spot moose. It would appear that approximately five minutes had been spent moose spotting at the time the accident occurred. From the attitude of the aircraft in a high angle relatively inverted position to the right, it is felt that a fairly steep turn was being executed to the left. It is highly probable that the pilot steepened the turn in order to keep game in sight, and in so doing produced a high-speed stall, causing the aircraft to flip over to the right into an inverted spin and so impact with the ground. This aircraft is noted to react in such a fashion to a high-speed stall, and such a maneuvre

explain the position of the aircraft on impact. The fact that the engine was recovered and was found to have been under considerable power at time of impact reinforces this theory.

Survivability

The angle of impact and the estimated speed of 125 to 132 miles per hour indicate that this was in no way a survivable accident.

Safety Equipment

Seat belts were installed in the aircraft, and all occupants were using them at the time of impact. There were no shoulder harnesses, and no crash helmets.

Recommendations

Here again, as in many accidents previously investigated, it would appear that an accident has been precipitated because the pilot has placed the aircraft in a steep turn at low altitude, while his attention was being absorbed by something on the ground. In this case, it is felt that an inverted spin was produced because of a high-speed stall at too low an altitude for recovery to be possible. Since pilots persist in low-level flying, perhaps it should be part of the curriculum to train all pilots in the"do's and dont's" of low-level flying in an attempt to minimize this type of accident. In this instance, one would have thought that a 1400-hour commercial pilot would not have been caught off-guard precipitating such a maneuvre.

R. T. Hewson, M. D.,
A/Regional Aviation Medical Officer.

/ds

c.c. A/Regional Director, Medical Services, Manitoba Region.

Pages 62 to / à 65

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5002-C-3166

CF-BZV

Equipment List on Board

The following items were carried on board the aircraft at time of crash:

3 - Sleeping bags, disposable & 1 standard bag.

1 - Snowshoes

1 - Blowpot

1 - Engine tent

1 - Rations - food for one man for 6 days.

1 - Battery, automotive contained in a wooden box with cables to plug in for starting.

1 - Bundle of flares.

1 - Axe

1 - 22 calibre rifle

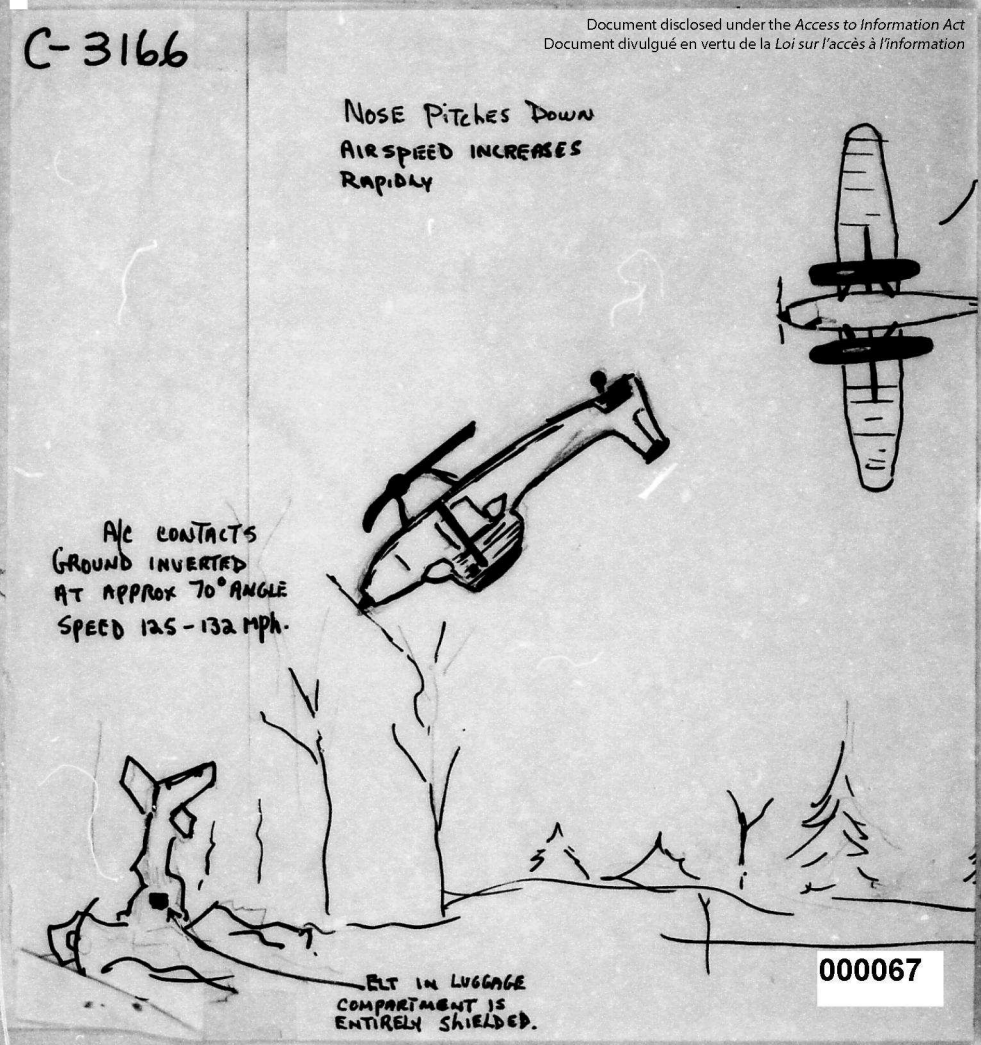
1 - Shovel

1 - First Aid Kit

1 - Fish gillnet

1 - Tin alcohol (approx. 1 qt. size)

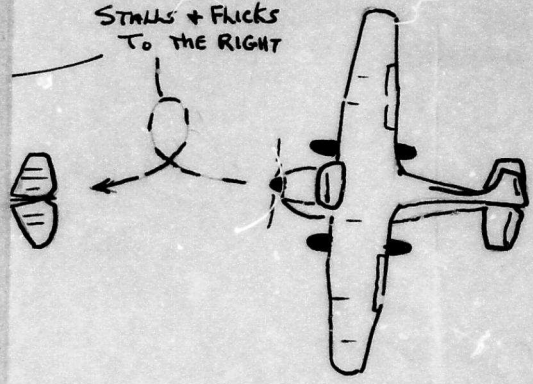
C-3166

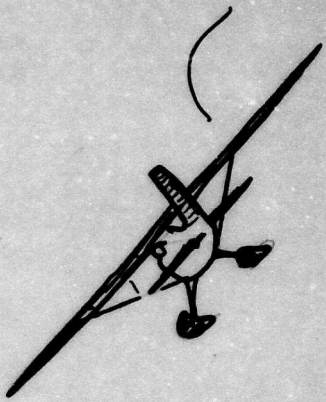


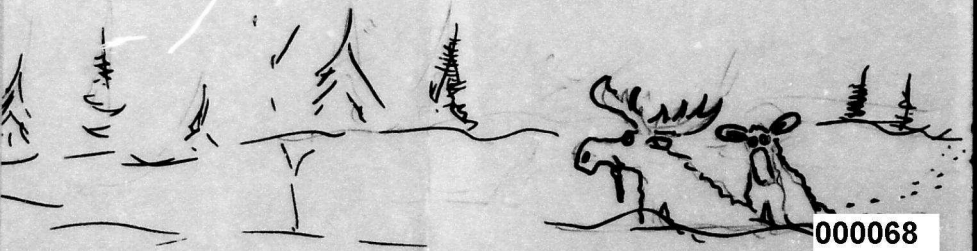
INCREASES RATE OF TURN
(STALL SPEED APPROX 100 MPH)

ENTERS LEFT TURN
APPROX 125 MPH.

STALLS + FLICKS
TO THE RIGHT







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AIRCRAFT ACCIDENT INVESTIGATION DIVISION

ACCIDENT REPORT C-3166
JOB NUMBER (CAIE) 10/74

REQUEST FOR TECHNICAL INVESTIGATION

This request refers to items listed on the Disposition of Wreckage form – a copy of which is attached.

AIRCRAFT MAKE AND MODEL	REGISTRATION	SERIAL NUMBER	TOTAL A/C HOURS
Cessna 185	CF-BZV	02023	780

PLACE OF OCCURRENCE	DATE	LOCALE
Cumberland House, Manitoba	12 Dec 73	

BRIEF DESCRIPTION OF OCCURRENCE

Aircraft struck ground at a steep angle killing all occupants instantly. ELT was armed and affixed on wall of luggage compartment. No signals were received throughout search of 22 days. On discovery, ELT was held in the open and signal was picked up by aircraft.

STATEMENT OF REQUIREMENT(S)

This refers to item(s) on the attached Disposition of Wreckage form.

DART II ELT

(a) Is the ELT in working order?

(b) Did the inertia switch function as designed?

(c) Would the ELT have transmitted as designed had it not been completely shielded in the luggage compartment of this all metal aircraft?

(d) The ELT functioned when set to "test" after recovery. Could the batteries conceivably be of sufficient power to maintain a signal for so long a period?

(e) Any other relevant information that examination may reveal.

(Dart II already received at Lab)

SUBMITTED BY [signature] CCAI

DATE 14/1/74

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23-0030

(See Manual for instructions on proper preparation of this form.)

DEPARTMENT OF TRANSPORT

FILE NO. 5002-C30166

MESSAGE FORM

DATE 8 January 1974

COMPLETE THIS SECTION FOR COMMERCIAL MESSAGES ONLY

CHARGE DGCA 175 416115

TELEX

CCAI - WINNIPEG

CAIO 52 - RE CCAI 5 IN VIEW OF PUBLIC INTEREST MAY WE HAVE PAGES 1 & 2 AS SOON AS POSSIBLE.

J.H. Nyhuus,
for Chief, Accident Investigation Division

JHN/ay

38-0014
9-63

FILE COPY

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5002-C30166

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CAI OTTAWA

CCAI5 AMPLIFYING REPORT TO OUR CCAI262 IS AS FOLLOWS: F-5405N 102 59
W

G1 PAUL JOHN

G2 THREE

H. AIRCRAFT APPEARED TO HAVE CONTACTED GROUND IN A NEAR VERTICAL
ATTITUDE PENETRATING TO LEADING EDGE OF WINGS. EVIDENCE SUGGESTS
AIRCRAFT INVERTED PRIOR TO IMPACT

CCAI WINNIPEG

Transport Canada / Transports Canada

ACTION SLIP – *FICHE DE SERVICE*

AIRCRAFT ACCIDENT INVESTIGATION DIVISION
DIVISION DES ENQUÊTES SUR LES ACCIDENTS D'AVIATION

AIRCRAFT ACCIDENT MESSAGE – *MESSAGE D'ACCIDENT D'AVIATION*

▶ **ANNOTATE FILE COVER – *ANNOTER LA COUVERTURE DU DOSSIER*** ◀

FILE NO. / *DOSSIER N°* 5002-C30164

SUBJECT / *SUJET* **AIRCRAFT / *AÉRONEF*** Cat. I

SUB-SUBJECT / *SOUS-SUJET* **AVIATION SAFETY INVESTIGATION / *ENQUÊTE DE LA SÉCURITÉ AÉRONAUTIQUE***

FILE TITLE / *TITRE DU DOSSIER* ▶ **AIRCRAFT ACCIDENT – *ACCIDENT D'AVIATION*** ◀ CF-BZV

12 Dec 73

MAKE / *FAIRE* ▶ 3

PHOTOCOPIES, AND SEND COPY TO:
PHOTOCOPIES, ET ENVOYER UNE COPIE À:

2 copies mailed 15/1/73

	CAM	
X	CARL	AIRCRAFT LICENSING / *PERMIS D'AÉRONEFS*
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NOTE

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CCAI 262

(A) ACCIDENT 5002/C/3166, CESSNA A185E CF DASH BRAVO ZULU VICTOR CF-BZV

(B) #6778 PROV. OF SASK CENTRAL VEHICLES AGENCY, LEGISLATIVE BLDG. REGINA SASK

FOUR OCCUPANTS

(C) PAUL JOHN, LA RONGE SASKATCHEWAN LICENCE WGC 8974

(D) DEC 12/73 DEPARTED LA RONGE 1000 CST

(E) LAC LA RONGE SASK CUMBERLAND HOUSE AND CREIGHTON SASK

(F) UNKNOWN -

(G1) UNKNOWN

(G2) UNKNOWN

(H) AIRCRAFT MISSING SEARCH AND RESCUE IN PROGRESS

CCAI WINNIPEG

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