SP 20

National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: July 11, 1986
In reply refer to: A-86-54 through A-86-60

Log 1855

Honorable Donald D. Engen
Administrator
Federal Aviation Administration
Washington, D.C. 20591

In 1985 the National Transportation Safety Board investigated the nine reported accidents involving the loss of engine power in Viking Model 17-30 and 17-31 series airplanes manufactured by the Bellanca Aircraft Corporation (Bellanca). Three of the accidents resulted from fuel mismanagement, three occurred when heat or fire from cracked or broken mufflers damaged the engines' magneto electrical wiring, one stemmed from water in the fuel, one was caused by a broken piston connecting rod, and one was precipitated by a malfunctioning engine-driven fuel pump. (See attachment for dates and locations of the accidents and brief reports of eight of the accidents).

A review of the Safety Board's aviation accident data base indicated that from 1967 through 1985 these airplanes (including the Super Viking 17-30A and 17-31A), which are all powered by fuel-injected engines, were involved in 127 accidents in which there was a loss of engine power; these accidents comprised about 38 percent of the airplanes' total accidents during that period. By way of comparison, during the same period, only 21 percent of the accidents involving airplanes manufactured by the Beech Aircraft Corporation, the Piper Aircraft Corporation, and the Cessna Aircraft Company resulted from loss of engine power. Additionally, the Federal Aviation Administration's (FAA) incident data base indicates that from January 1, 1980, to October 1, 1985, there were 22 incidents in which Bellanca Viking or Super Viking airplanes experienced loss of engine power, some of which resulted from fuel mismanagement, cracked or broken mufflers, and water in the fuel.

Fuel Mismanagement

Fuel mismanagement was the prevalent single causal factor in accidents in which Bellanca Viking/Super Viking airplanes experienced a loss of engine power. From 1967 through 1985, fuel mismanagement was involved in 63 such accidents and accounted for 50 percent of all loss-of-engine-power accidents involving Bellanca Viking/Super Viking airplanes during that period. Moreover, it is possible that the number of these accidents may be understated because the cause of 22 of the engine failure accidents involving these airplanes during this period was "undetermined."

There is reason to believe that fuel mismanagement in these airplanes may, in some cases, be a result of the airplane's fuel system design. For example, approximately 75 percent of the Bellanca Viking/Super Viking airplanes involved in accidents resulting from loss of engine power were 1967 through 1972 models. (The number of these models manufactured is approximately 47 percent of the total Bellanca Viking/Super Viking production.) Many of these early models are configured with relatively small main and

auxiliary fuel tanks in the wings and a fuel control system that requires the manipulation of two separate fuel selectors. Moreover, the auxiliary tanks are usable in level flight only, and the fuel gauge indicates fuel quantity only for the particular tank selected. Such fuel system features complicate the management of fuel resources, particularly during extended, long-range flight operations.

Subsequently, Bellanca discontinued the use of wing auxiliary tanks, and all Bellanca Viking/Super Viking airplanes manufactured after the 1972 model are equipped with larger main fuel tanks in the wings. The usable fuel capacity of each of the new main tanks is 30 gallons (compared to the former main fuel tank capacity of 15.5 gallons), approximately the combined fuel capacity of the older wing main and auxiliary fuel tanks. More importantly, this improved fuel system incorporates only one fuel selector, and the usable quantity of fuel remaining in each individual tank is displayed continuously. Illumination of a green status light below the respective fuel quantity gauge indicates the selected fuel tank. The relative simplicity of the improved fuel system is reflected in the following excerpt taken from a Bellanca Super Viking Operations Manual:

FUEL SYSTEM

> Fuel is contained in two main tanks, one in each wing, with each containing 30 gal. of usable fuel. A 15 gal. auxiliary tank [optional] is located in the fuselage, aft of the rear seat. Fuel selection is determined by positioning the selector valve to the desired tank. Usable fuel quantity remaining in the tank is registered by a float gauging system for the mains and the auxiliary tank.

An excerpt from the fuel controls section of an earlier Super Viking 17-30A Owners Manual outlines, in part, the operation of the older, more complicated fuel system with wing auxiliary tanks:

FUEL CONTROLS

1. One tank selector valve controls the flow of fuel from the two wing tanks and from the auxiliary tank. The auxiliary tank is to be used in level flight only. This valve also controls the flow of the fuel return lines to the fuel tank ~~that is being~~ used.

   Note: In the event a fuel tank has been run dry and is refueled with fuel selector valve OFF, or set on other than noted tank, it is possible to have air in the lines. This should be eliminated by running up engine on noted tank or tanks before TAKE-OFF.

2. On Standard Vikings with extra wing aux tanks an additional valve is on the floor. On these models the fuel selector valve between the seats is set to Aux position. Then on valve on floor either wing Aux or Fuselage Aux is selected.

3. On Super Viking models the floor valve controls fuel from either right or left wing Aux tanks. There is no fuselage Aux tank on the Super Viking.

In addition to the added complexity of this older fuel system and the accompanying potential for design-induced pilot error, the owners manuals for the older airplanes do not provide specific information regarding management of available fuel, procedures for proper fuel tank sequencing, or precautionary information that could help to avoid fuel mismanagement, particularly fuel starvation. Moreover, description of the fuel system and its operation is fragmented throughout the manuals.

The majority of fuel mismangement accidents in Bellanca Viking and Super Viking airplanes result from fuel starvation; that is, the lack of fuel flow to the engine because one fuel tank is dry despite the existence of ample fuel in other fuel tanks aboard the airplane. For example, on March 30, 1985, Bellanca Super Viking 17-30A, N8233R (a 1972 model), crashed at Roanoke, Virginia, after fuel in the left main fuel tank was exhausted. More often than not, the pilots involved in these accidents have reported, as did the pilot of N8233R, that they had selected another fuel tank with ample fuel and attempted in vain to restart the engine in flight. The Safety Board believes that some of these abortive attempts to restart the engine may have resulted from, among other things, improper use of the auxiliary fuel pump.

The owners manuals for the airplanes with the older fuel systems (pre-1973 models) contain neither a separate emergency procedures section nor any specific information on how to restart the engine in flight, as is available in Bellanca Viking/Super Viking Owners/Operations Manuals for newer airplanes. Engine air restart procedures are outlined in other documents, such as an older Bellanca publication entitled "Pilots Check List" and in FAA-approved flight manuals. However, the Bellanca publication may no longer be accessible or available, and the details of the restart procedure differ among the revisions of the FAA manuals and from those provided in both the "Pilots Check List" and the current Bellanca Viking/Super Viking Operations Manuals.

The Safety Board believes that the frequency of accidents involving the loss of engine power in Bellanca Viking/Super Viking airplanes warrants review by the FAA of the engineering design of the fuel system (wing auxiliary tanks) installed in 1967 through 1972 Bellanca Viking/Super Viking Model airplanes and a revision of the Bellanca flight manuals applicable to these models. The flight manual revision should include a unified, improved description of the operation of the fuel system, specific operating information regarding management of available fuel resources, and the most effective emergency procedures to restart the engine in flight. Bellanca also should issue to all owners and operators of 1967 through 1972 Bellanca Viking/Super Viking Models a Safety Advisory that provides information on the fuel system in these airplanes and warns of the high potential for loss of engine power from fuel mismanagement. The advisory also should present techniques that may be used to avoid power loss and operational procedures to restart the engine in flight in the event of inadvertent fuel starvation.

Exhaust System Failures

In 1976 the FAA issued Airworthiness Directive (AD) 76-23-03, applicable to Bellanca Viking Models 17-30 and 17-31, and Super Viking Models 17-30A and 17-31A, to prevent exhaust system failures, which could allow heat or flames to enter the engine compartment of these airplanes. The AD requires the muffler and tailpipe assemblies to be inspected for cracks and for freedom of movement at the ball joints at intervals of 100 flight hours. (If the tailpipe assemblies are not free to move at the ball joints, the bending stress created by the tailpipe and resonator can break the welded muffler outlet.) However, some of these Bellanca airplanes are flown infrequently, and the

interval between such inspections may span several years. For example, on September 24, 1985, a Bellanca Model 17-30A Super Viking, N6627V, crashed at Burlington, Washington, following a loss of engine power after the left exhaust muffler failed at the outlet. The failure permitted heat and flames to burn the engine's magneto wiring (electrical P leads). AD 76-23-03 had been complied with on August 18, 1982, but the airplane had been operated for only 50 flight hours since that date, and no subsequent, comparable inspection of the exhaust system had been accomplished. This accident might have been prevented if compliance with AD 76-23-03 had been required at each annual inspection of the airplane.

Recent Service Difficulty Reports (SDR) and incident reports reflect similar problems of broken tailpipe-muffler outlets in the exhaust systems of the Bellanca Viking/Super Viking airplanes. For example, between July 1981 and March 1984, seven such occurrences were noted (four SDRs and three incidents). Remarks from reports of these occurrences typically include: "Exhaust pipe broke, exhaust burned magneto leads, engine stopped;" "Smoke in cockpit, engine quit, forced landing, exhaust tail pipe broken, heat scorched wires, vapor locked fuel line;" "Smoke in cockpit due to both tailpipes broken at muffler;" "Inflight fire due to muffler breaking at the tail pipe segment;" and "Found muffler outlet broken off, tailpipe hanging loose, burned engine mount."

As a result of the foregoing, the Safety Board believes that compliance with AD 76-23-03 should be required at each 100 hours time in service or at each annual inspection, whichever occurs first. It also would be beneficial to publish in FAA Advisory Circular (AC) No. 43-16, General Aviation Airworthiness Alerts, pertinent maintenance aspects relating to recent accidents and incidents in which Bellanca Viking/Super Viking Airplanes experienced a loss of engine power as a result of broken exhaust tailpipe assemblies.

Water in Fuel

Since 1967, Bellanca Viking airplanes have been involved in four accidents and several incidents in which their engines lost power because of water in the fuel. Water in the fuel also may have been responsible for some of the 22 previously mentioned accidents involving loss of engine power for undetermined reasons. The most recent accident involving water in the fuel of these airplanes occurred on June 21, 1985, when the engine of a Bellanca Viking Model 17-30, N93533, stopped during takeoff at College Park, Maryland. Although a substantial quantity of water was found in the airplane's fuel system during the investigation of the accident, the pilot stated that he found no evidence of water in samples taken from the gascolator during his preflight inspection. Although the interconnected wing fuel tank design of the Bellanca Viking/Super Viking airplanes affords the potential for entrapping a considerable amount of water in the wing tanks, the pilot was unable to take fuel samples directly from the wing fuel tanks of his airplane since they were not equipped with drain valves. Such valves are easily installed, and service kits were made available by Bellanca on July 31, 1979, when it issued Service Letter B-102A in which it provided instructions for their installation on this and other Bellanca Airplanes. Compliance with the service letter, of course, was at the owner's discretion. The accident at College Park demonstrates that there is not uniform compliance with the service letter. Compliance with this service letter should be required by the FAA so that fuel samples may be obtained easily from the wing fuel tanks during preflight inspection of the airplane.

Additionally, the fuel in the wing tanks of Bellanca Viking/Super Viking airplanes can, under certain conditions, become contaminated with water because of the design of the recessed wing fuel tank filler well and the adjustable fuel filler caps (easily loosened or tightened). If the small drain tube in the fuel filler well becomes plugged, a substantial amount of water may accumulate in the well and leak around defective or loose-fitting fuel caps into the fuel tanks. To prevent this means of water contamination of the fuel, an inspection should be performed at each annual inspection to ensure that the fuel filler well drain is open and that the fuel filler caps are sealing properly.

Therefore, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Conduct an engineering design review of the fuel system (wing auxiliary tank design) installed in 1967 through 1972 Bellanca Viking (Models 17-30 and -31) and Super Viking (Models 17-30A and -31A) airplanes and require retrofit or modification of these airplanes and/or the incorporation of new or revised fuel system markings, placards, or operating limitations to correct any deficiencies. (Class II, Priority Action) (A-86-54)

Require the Bellanca Aircraft Corporation to revise the airplane flight manuals of 1967 through 1972 Bellanca Viking (Models 17-30 and -31) and Super Viking (Models 17-30A and -31A) airplanes to include a unified, improved description of the operation of the fuel system, specific operating information about management of available fuel resources, and the most effective emergency procedures to restart the engine in flight. (Class II, Priority Action) (A-86-55)

Require the Bellanca Aircraft Corporation to prepare and disseminate to all owners and operators of 1967 through 1972 Bellanca Viking (Models 17-30 and -31) and Super Viking (Models 17-30A and -31A) models a Safety Advisory that provides information on the fuel system in these airplanes, warns of the high potential for loss of engine power due to fuel mismanagement, emphasizes fuel resource management techniques to avoid power loss, and lists operational procedures to restart the engine in flight in the event of inadvertent fuel starvation. (Class II, Priority Action) (A-86-56)

Revise Airworthiness Directive 76-23-03, applicable to the Bellanca Viking (Models 17-30 and -31) and Super Viking (Models 17-30A and -31A) airplanes, to require inspection of the exhaust system on these airplanes for cracks and for freedom of movement at the ball joints at each 100 hours time in service or annual inspection, whichever occurs first. (Class II, Priority Action) (A-86-57)

Publish in Federal Aviation Administration Advisory Circular No. 43-16, General Aviation Airworthiness Alerts, details of recent accidents and incidents in which Bellanca Viking (Models 17-30 and -31) and Super Viking (Models 17-30A and -31A) airplanes have experienced engine power loss as a result of broken exhaust tailpipe assemblies, and emphasize the importance of proper maintenance and inspection of the exhaust system of these airplanes. (Class II, Priority Action) (A-86-58)

Issue an Airworthiness Directive to require, at the next annual inspection, the installation of fuel quick-drain valves in the wing fuel tanks of Bellanca Viking (Models 17-30 and -31) and Super Viking (Models 17-30A and -31A) airplanes in accordance with Bellanca Service Letter No. B-102A. (Class II, Priority Action) (A-86-59)

Issue an Airworthiness Directive to require, at each annual inspection of Bellanca Viking (Models 17-30 and -31) and Super Viking (Models 17-30A and 31A) airplanes, an inspection of the wing fuel filler well drain to ascertain that it is open and an inspection of the fuel filler caps to ascertain that they are sealing properly. (Class II, Priority Action) (A-86-60)

GOLDMAN, Acting Chairman, and BURNETT, LAUBER, and NALL, Members, concurred in these recommendations.

By: Patricia A. Goldman
Acting Chairman

ATTACHMENT

BELLANCA VIKING/SUPER VIKING AIRPLANE ACCIDENTS IN 1985
INVOLVING LOSS OF ENGINE POWER

Date	Location	Registration No.	Model
March 30	Roanoke, VA	8233R	17-30A
June 2	El Paso, TX	39854	17-30A
June 21	College Park, MD	93533	17-30A
July 20	San Andreas, CA	7305V	17-30
July 21	Sheboygan, WI	7315V	17-30
July 28	Cozad, NE	6598V	17-31A
July 30	Camden, SC	6707V	17-30A
August 21	Coushatta, LA*	4026B	17-30A
September 24	Burlington, WA	6627V	17-30A

*Brief of Accident not available.

National Transportation Safety Board
Washington, D.C. 20594

Brief of Accident

File No. - 2417 3/30/85 ROANOKE,VA A/C Reg. No. N8233R Time (Lcl) - 2002 EST

----Basic Information----

Type Operating Certificate-NONE (GENERAL AVIATION)

Type of Operation -BUSINESS
Flight Conducted Under -14 CFR 91
Accident Occurred During -LANDING

Aircraft Damage
SUBSTANTIAL
Fire
NONE

	Injuries			
	Fatal	Serious	Minor	None
Crew	0	1	0	0
Pass	0	0	0	0
Other	0	0	0	3

----Aircraft Information----

Make/Model - BELLANCA 17-30A
Landing Gear - TRICYCLE-RETRACTABLE
Max Gross Wt - 3325
No. of Seats - 4

Eng Make/Model - CONTINENTAL IO-520-K
Number Engines - 1
Engine Type - RECIP-FUEL INJECTED
Rated Power - 300 HP

ELT Installed/Activated - YES-UNK/NR
Stall Warning System - YES

----Environment/Operations Information----

Weather Data
Wx Briefing - FSS
Method - TELEPHONE
Completeness - WEATHER NOT PERTINENT
Basic Weather - VMC
Wind Dir/Speed- 150/012 KTS
Visibility - 15.0 SM
Lowest Sky/Clouds - 4000 FT SCATTERED
Lowest Ceiling - 25000 FT BROKEN
Obstructions to Vision- NONE
Precipitation - NONE
Condition of Light - NIGHT(DARK)

Itinerary
Last Departure Point
RICHMOND,VA
Destination
BLACKSBURG,VA

ATC/Airspace
Type of Flight Plan - IFR
Type of Clearance - IFR
Type Apch/Lnds - FORCED LANDING

Airport Proximity
OFF AIRPORT/STRIP

Airport Data
ROANOKE MUNI
Runway Ident - N/A
Runway Lth/Wid - N/A
Runway Surface - N/A
Runway Status - N/A

----Personnel Information----

Pilot-In-Command
Certificate(s)/Rating(s)
PRIVATE
SE LAND

Age - 55
Biennial Flight Review
Current - UNK/NR
Months Since - UNK/NR
Aircraft Type - UNK/NR

Medical Certificate - VALID MEDICAL-WAIVERS/LIMIT

Flight Time (Hours)

Total -	1018	Last 24 Hrs -	1
Make/Model-	180	Last 30 Days-	UNK/NR
Instrument-	247	Last 90 Days-	UNK/NR
Multi-Eng -	UNK/NR	Rotorcraft -	UNK/NR

Instrument Rating(s) - AIRPLANE

----Narrative----

THE PLT REPORTED HE RAN A FUEL TANK DRY DURING FLT AT 6000 FT. HE SWITCHED FUEL TANKS, TURNED ON THE BOOST PUMP & MANIPULATED THE ENG CONTROLS, BUT WAS UNABLE TO RESTART THE ENG. DURING A FORCED LANDING ON I-581, THE ACFT STRUCK A PICKUP TRUCK (TRAVELING IN THE SAME DRCTN), THEN VEERED INTO AN EMBANKMENT. NONE OF THE OCCUPANTS IN THE TRUCK WERE INJURED. AN EXAM REVEALED ALL FUEL TANKS CONTAINED FUEL EXCEPT THE L MAIN TANK. THE BOOST PUMP SW WAS FND IN THE "PRIME" POSITION, A CONDITION WHICH COULD CAUSE FLOODING OF THE ENG. DETAILS OF AIR RESTART PROCEDURE & BOOST PUMP POSITION NOMENCLATURE DIFFER BETWEEN MANUALS/ACFT MARKINGS. FUEL MANAGEMENT FOR THE 4 TANKS REQUIRED POSITIONING 2 SELECTOR VALVES THRU 6 POSSIBLE POSITIONS. TWO FUEL GAGES WERE INSTALLED; 1 WAS FOR THE 2 MAIN TANKS, THE OTHER WAS FOR THE 2 AUX TANKS. THE GAGES INDICATED ONLY THE QUANTITY OF FUEL IN THE SELECTED TANK. THE OTHER GAGE READ EMPTY WHEN NEITHER OF ITS RESPECTIVE TANKS WAS SELECTED. FLT MANUAL PROVIDED ONLY LIMITED INFO ON FUEL SYS. PLT'S FACE INJURED, NO SHOULDER HARNESS INSTLD.

File No. - 2417 3/30/85 ROANOKE,VA A/C Reg. No. N8233R Time (Lcl) - 2002 EST

Occurrence #1 LOSS OF POWER(TOTAL) - NON-MECHANICAL
Phase of Operation CRUISE - NORMAL

Finding(s)
1. FLUID,FUEL - STARVATION
2. FUEL TANK SELECTOR POSITION - IMPROPER - PILOT IN COMMAND
3. IMPROPER USE OF EQUIPMENT/AIRCRAFT,INFORMATION INSUFFICIENT - MANUFACTURER
4. EMERGENCY PROCEDURE - ATTEMPTED - PILOT IN COMMAND
5. FUEL SYSTEM - INADEQUATE
6. AIRCRAFT/EQUIPMENT,INADEQUATE DESIGN - MANUFACTURER
7. AIRCRAFT/EQUIPMENT,INADEQUATE DESIGN(STANDARD/REQUIREMENT),INSTRUMENT LOCATION - MANUFACTURER
8. STARTING PROCEDURE - IMPROPER - PILOT IN COMMAND
9. IMPROPER USE OF PROCEDURE,INFORMATION UNCLEAR - MANUFACTURER

Occurrence #2 FORCED LANDING
Phase of Operation DESCENT - UNCONTROLLED

Occurrence #3 IN FLIGHT COLLISION WITH OBJECT
Phase of Operation LANDING - FLARE/TOUCHDOWN

Finding(s)
10. LIGHT CONDITION - DARK NIGHT
11. OBJECT - VEHICLE

Occurrence #4 ON GROUND COLLISION WITH TERRAIN
Phase of Operation LANDING

Finding(s)
12. TERRAIN CONDITION - DIRT BANK
13. MISC EQPT/FURNISHINGS,SHOULDER HARNESS - LACK OF

----Probable Cause----

The National Transportation Safety Board determines that the Probable Cause(s) of this accident is/are finding(s) 1,2,8

Factor(s) relating to this accident is/are finding(s) 3,5,6,7,9,10,11,12,13

National Transportation Safety Board
Washington, D.C. 20594

Brief of Accident

File No. - 1714 6/02/85 EL PASO,TX A/C Reg. No. N39854 Time (Lcl) - 1100 MDT

----Basic Information----
Type Operating Certificate-NONE (GENERAL AVIATION)
Type of Operation -PERSONAL
Flight Conducted Under -14 CFR 91
Accident Occurred During -LANDING

Aircraft Damage: SUBSTANTIAL
Fire: IN FLIGHT

Injuries	Fatal	Serious	Minor	None
Crew	0	0	0	1
Pass	0	0	0	1

----Aircraft Information----
Make/Model - BELLANCA 17-30A
Landing Gear - TRICYCLE-RETRACTABLE
Max Gross Wt - 3325
No. of Seats - 4
Eng Make/Model - CONTINENTAL IO-520-K
Number Engines - 1
Engine Type - RECIP-FUEL INJECTED
Rated Power - 300 HP
ELT Installed/Activated - YES/NO
Stall Warning System - YES

----Environment/Operations Information----
Weather Data
Wx Briefing - NO RECORD OF BRIEFING
Method - N/A
Completeness - N/A
Basic Weather - VMC
Wind Dir/Speed- CALM
Visibility - 50.0 SM
Lowest Sky/Clouds - 25000 FT THIN BKN
Lowest Ceiling - NONE
Obstructions to Vision- NONE
Precipitation - NONE
Condition of Light - DAYLIGHT

Itinerary
Last Departure Point
SAME AS ACC/INC
Destination
ALAMOGORDO,NM

ATC/Airspace
Type of Flight Plan - VFR
Type of Clearance - VFR
Type Apch/Lnds - FORCED LANDING

Airport Proximity
ON AIRPORT

Airport Data
EL PASO INTL
Runway Ident - 26L
Runway Lth/Wid - 9008/ 150
Runway Surface - ASPHALT
Runway Status - DRY

----Personnel Information----
Pilot-In-Command
Certificate(s)/Rating(s)
PRIVATE
SE LAND

Age - 36
Biennial Flight Review
Current - UNK/NR
Months Since - UNK/NR
Aircraft Type - UNK/NR

Medical Certificate - NON-VALID MEDICAL
Flight Time (Hours)

Total	174	Last 24 Hrs	1
Make/Model	15	Last 30 Days	UNK/NR
Instrument	UNK/NR	Last 90 Days	17
Multi-Eng	UNK/NR	Rotorcraft	UNK/NR

Instrument Rating(s) - NONE

----Narrative----
SHORTLY AFTER LIFTOFF, THE PLT FIRST SMELLED, THEN OBSERVED SMOKE COMING INTO THE COCKPIT FROM UNDER THE INSTRUMENT PANEL. SHORTLY THEREAFTER, THE ENG QUIT COMPLETELY. THE PLT MADE A FORCED LANDING IN AN OPEN AREA OFF THE RWY. DURING THE LANDING ROLL, THE ACFT STRUCK AN EMBANKMENT & THE LANDING GEAR COLLAPSED. AN INVESTIGATION REVEALED THAT THE MUFFLER ON THE LEFT SIDE, WHICH HAD BEEN OVERHAULED & INSTALLED ON 7/25/83, HAD FAILED NEAR THE OUTLET, ALLOWING HOT EXHAUST GASES TO ENTER THE ENG COMPARTMENT & BURN A WIRE BUNDLE CONTAINING THE MAGNETO WIRING (P-LEADS). A LARGE SECTION WAS MISSING FROM THE REAR HALF OF THE MUFFLER.

File No. - 1714 6/02/85 EL PASO,TX A/C Reg. No. N39854 Time (Lcl) - 1100 MDT

Occurrence #1 FIRE
Phase of Operation TAKEOFF - INITIAL CLIMB

Finding(s)
1. EXHAUST SYSTEM,MUFFLER - DETERIORATED
2. MAINTENANCE,INSPECTION OF AIRCRAFT - INADEQUATE -
3. EXHAUST SYSTEM,MUFFLER - FAILURE,TOTAL
4. EXHAUST SYSTEM - LEAK
5. ELECTRICAL SYSTEM,ELECTRIC WIRING - BURNED
6. IGNITION SYSTEM,MAGNETO - INOPERATIVE

Occurrence #2 LOSS OF POWER(TOTAL) - MECH FAILURE/MALFUNCTION
Phase of Operation TAKEOFF - INITIAL CLIMB

Occurrence #3 FORCED LANDING
Phase of Operation DESCENT - EMERGENCY

Occurrence #4 ON GROUND COLLISION WITH TERRAIN
Phase of Operation LANDING - ROLL

Finding(s)
7. TERRAIN CONDITION - DIRT BANK

Occurrence #5 COMPLETE GEAR COLLAPSED
Phase of Operation LANDING - ROLL

Finding(s)
8. LANDING GEAR - OVERLOAD

----Probable Cause----

The National Transportation Safety Board determines that the Probable Cause(s) of this accident is/are finding(s) 1,3,4,5,6

Factor(s) relating to this accident is/are finding(s) 2,7

National Transportation Safety Board
Washington, D.C. 20594

Brief of Accident

File No. - 2416 6/21/85 COLLEGE PARK,MD A/C Reg. No. N93533 Time (Lcl) - 2048 EDT

----Basic Information----

Type Operating Certificate-NONE (GENERAL AVIATION)
Type of Operation -PERSONAL
Flight Conducted Under -14 CFR 91
Accident Occurred During -DESCENT

Aircraft Damage: DESTROYED
Fire: NONE

	Injuries			
	Fatal	Serious	Minor	None
Crew	0	0	1	0
Pass	0	0	1	0

----Aircraft Information----

Make/Model - BELLANCA 17-30A
Landing Gear - TRICYCLE-RETRACTABLE
Max Gross Wt - 3325
No. of Seats - 4
Eng Make/Model - CONTINENTAL IO-520-K
Number Engines - 1
Engine Type - RECIP-FUEL INJECTED
Rated Power - 300 HP
ELT Installed/Activated - YES/NO
Stall Warning System - YES

----Environment/Operations Information----

Weather Data
Wx Briefing - NO RECORD OF BRIEFING
Method - N/A
Completeness - N/A
Basic Weather - VMC
Wind Dir/Speed- 180/004 KTS
Visibility - 12.0 SM
Lowest Sky/Clouds - 25000 FT SCATTERED
Lowest Ceiling - NONE
Obstructions to Vision- NONE
Precipitation - NONE
Condition of Light - NIGHT(DARK)

Itinerary
Last Departure Point
SAME AS ACC/INC
Destination
LOCAL

ATC/Airspace
Type of Flight Plan - NONE
Type of Clearance - NONE
Type Arch/Lnds - NONE

Airport Proximity
OFF AIRPORT/STRIP

Airport Data
COLLEGE PARK
Runway Ident - 33
Runway Lth/Wid - 2740/ 40
Runway Surface - ASPHALT
Runway Status - DRY

----Personnel Information----

Pilot-In-Command
Certificate(s)/Rating(s)
PRIVATE
SE LAND

Age - 41
Biennial Flight Review
Current - YES
Months Since - 20
Aircraft Type - 17-30A

Medical Certificate - VALID MEDICAL-NO WAIVERS/LIMIT

Flight Time (Hours)

Total -	3187	Last 24 Hrs -	1
Make/Model-	468	Last 30 Days-	UNK/NR
Instrument-	10	Last 90 Days-	18
Multi-Eng -	UNK/NR	Rotorcraft -	UNK/NR

Instrument Rating(s) - NONE

----Narrative----

BFR FLT, THE PLT OBTAINED FUEL SAMPLES THRU THE REMOTELY OPERATED GASCOLATOR, BUT DETECTED NO WATER. NO SAMPLES COULD BE DRAWN DIRECTLY FM THE WING OR FUSELAGE TANKS SINCE THEY HAD NO QUICK DRAINS INSTALLED. A PWR LOSS OCCURRED DRG TAKEOFF AT 50 TO 100 FT AGL. THE PLT SWITCHED FUEL TANKS (FROM L TO R MAIN) & ENGAGED THE BOOST PUMP. ENG PWR RETURNED AS THE ACFT STRUCK UTILITY LINES NEAR THE END OF THE RWY. THE ACFT THEN CRASHED & HIT A FENCE BFR COMING TO REST. A SIMILAR PWR LOSS OCCURRED APRX 3 WKS EARLIER. MAINT PSNL FOUND A LOOSE L TANK FUEL CAP WHICH COULD HAVE ALLOWED WATER TO LEAK INTO THIS TANK. A MECHANIC ADJUSTED THE FUEL CAP FOR A TIGHT FIT. THE ACFT WAS THEN FLOWN TWICE, PRIOR TO THE ACDNT, WITH NO EVIDENCE OF WATER IN THE FUEL OR OTHER DISCREPANCIES. HOWEVER, AFTER THE ACDNT, DIRECT ACCESS TO THE L MAIN TANK REVEALED THE PRESENCE OF WATER WHICH WAS COLORED PINK. PINK STAINS WERE ALSO PRESENT ON THE TANK WALL ABOVE THE AFT FUEL OU[illegible] PORT. THE OUTLET PORTS OF THE INTERCONNECTED MAIN TANK CELLS WERE 3/8 TO 1/2 INCH ABOVE THE TANK BOTTOMS.

File No. - 2416 6/21/85 COLLEGE PARK,MD A/C Reg. No. N93533 Time (Lcl) - 2048 EDT

Occurrence #1 LOSS OF POWER(TOTAL) - NON-MECHANICAL
Phase of Operation TAKEOFF - INITIAL CLIMB

Finding(s)
1. FUEL SYSTEM,CAP - LOOSE
2. FLUID,FUEL - CONTAMINATION
3. FLUID,FUEL - WATER
4. FUEL SYSTEM,DRAIN - INADEQUATE
5. AIRCRAFT PREFLIGHT - PERFORMED - PILOT IN COMMAND
6. AIRCRAFT/EQUIPMENT,INADEQUATE DESIGN(STANDARD/REQUIREMENT),AIRCRAFT COMPONENT - MANUFACTURER

Occurrence #2 FORCED LANDING
Phase of Operation DESCENT - EMERGENCY

Finding(s)
7. EMERGENCY PROCEDURE - PERFORMED - PILOT IN COMMAND

Occurrence #3 IN FLIGHT COLLISION WITH OBJECT
Phase of Operation DESCENT - EMERGENCY

Finding(s)
8. LIGHT CONDITION - DARK NIGHT
9. OBJECT - WIRE,TRANSMISSION

Occurrence #4 IN FLIGHT COLLISION WITH TERRAIN
Phase of Operation DESCENT - UNCONTROLLED

Finding(s)
10. TERRAIN CONDITION - OPEN FIELD

Occurrence #5 ON GROUND COLLISION WITH OBJECT
Phase of Operation OTHER

Finding(s)
11. OBJECT - FENCE

----Probable Cause----

The National Transportation Safety Board determines that the Probable Cause(s) of this accident is/are finding(s) 1,2,3,4

Factor(s) relating to this accident is/are finding(s) 6,8,9,11

National Transportation Safety Board
Washington, D.C. 20594

Brief of Accident

File No. - 1999 7/20/85 SAN ANDREAS,CA A/C Reg. No. N7305V Time (Lcl) - 1233 PDT

----Basic Information----
Type Operating Certificate-NONE (GENERAL AVIATION)
Type of Operation -PERSONAL
Flight Conducted Under -14 CFR 91
Accident Occurred During -LANDING

Aircraft Damage
SUBSTANTIAL
Fire
NONE

Injuries	Fatal	Serious	Minor	None
Crew	0	1	0	0
Pass	0	0	0	3

----Aircraft Information----
Make/Model - BELLANCA 17-30
Landing Gear - TRICYCLE-RETRACTABLE
Max Gross Wt - 3025
No. of Seats - 4
Eng Make/Model - CONTINENTAL IO-520-D
Number Engines - 1
Engine Type - RECIP-FUEL INJECTED
Rated Power - 300 HP
ELT Installed/Activated - YES/NO
Stall Warning System - UNK/NR

----Environment/Operations Information----
Weather Data
Wx Briefing - NO RECORD OF BRIEFING
Method - N/A
Completeness - N/A
Basic Weather - VMC
Wind Dir/Speed- CALM
Visibility - 30.0 SM
Lowest Sky/Clouds - 6500 FT
Lowest Ceiling - 6500 FT OVERCAST
Obstructions to Vision- NONE
Precipitation - NONE
Condition of Light - DAYLIGHT

Itinerary
Last Departure Point
PACOIMA,CA
Destination
COLUMBIA,CA

ATC/Airspace
Type of Flight Plan - NONE
Type of Clearance - NONE
Type Apch/Lnds - FORCED LANDING

Airport Proximity
OFF AIRPORT/STRIP

Airport Data
Runway Ident - N/A
Runway Lth/Wid - N/A
Runway Surface - N/A
Runway Status - N/A

----Personnel Information----
Pilot-In-Command
Certificate(s)/Rating(s)
PRIVATE
SE LAND

Age - 42
Biennial Flight Review
Current - YES
Months Since - 11
Aircraft Type - VIKING

Medical Certificate - VALID MEDICAL-NO WAIVERS/LIMIT

Flight Time (Hours)			
Total -	230	Last 24 Hrs -	2
Make/Model-	89	Last 30 Days-	15
Instrument-	0	Last 90 Days-	27

Instrument Rating(s) - NONE

----Narrative----
THE PLT TOOK OFF ON A 2 HR FLT WITH ABOUT 6 HRS OF FUEL ON BOARD. ON SEVERAL OCCASIONS DURING THE FLT, HE REPOSITIONED THE FUEL SELECTOR HANDLE. HE STATED THAT WHEN HE MADE A VERY SHALLOW TURN TO THE RIGHT, NEAR HIS DESTINATION, THE ENG SUDDENLY LOST POWER. HE ATTEMPTED TO RESTART THE ENG BY SWITCHING THE FUEL SELECTOR TO VARIOUS POSITIONS, BUT POWER WAS NOT RESTORED. THE PLT ATTEMPTED TO GLIDE TO THE NEAREST ARPT, BUT HAD INSUFFICIENT ALT. SUBSEQUENTLY, HE LANDED THE ACFT IN A FIELD WITH THE GEAR RETRACTED. AN EXAM OF THE ACFT REVEALED NO PREIMPACT PART FAILURE OR MALFUNCTION THAT WOULD HAVE PREVENTED NORMAL OPERATION OF THE ENG. APRX 37 GAL OF FUEL WAS FOUND IN THE FOUR FUEL TANKS. THE LEFT MAIN FUEL TANK WAS FOUND TO BE EMPTY, BUT FUEL WAS FOUND IN THE OTHER TANKS. ONE TANK WAS VIRTUALLY FULL; ONE WAS ABOUT 1/2 FULL; THE OTHER WAS ABOUT 10% FULL.

File No. - 1999 7/20/85 SAN ANDREAS,CA A/C Reg. No. N7305V Time (Lcl) - 1233 PDT

Occurrence #1 LOSS OF POWER(TOTAL) - NON-MECHANICAL
Phase of Operation CRUISE - NORMAL

Finding(s)
1. FUEL SYSTEM - INADEQUATE
2. AIRCRAFT/EQUIPMENT,INADEQUATE DESIGN - MANUFACTURER
3. FLUID,FUEL - STARVATION
4. EMERGENCY PROCEDURE - PERFORMED - PILOT IN COMMAND
5. REMEDIAL ACTION - NOT ATTAINED -

Occurrence #2 FORCED LANDING
Phase of Operation DESCENT - EMERGENCY

Occurrence #3 IN FLIGHT COLLISION WITH TERRAIN
Phase of Operation LANDING - FLARE/TOUCHDOWN

Finding(s)
6. TERRAIN CONDITION - OPEN FIELD
7. WHEELS UP LANDING - PERFORMED - PILOT IN COMMAND

----Probable Cause----

The National Transportation Safety Board determines that the Probable Cause(s) of this accident is/are finding(s) 3

Factor(s) relating to this accident is/are finding(s) 1,2,6

National Transportation Safety Board
Washington, D.C. 20594

Brief of Accident

File No. - 1581 7/21/85 SHEBOYGAN,WI A/C Reg. No. N7315V Time (Lcl) - 1420 CDT

----Basic Information----
Type Operating Certificate-NONE (GENERAL AVIATION)
Type of Operation -PERSONAL
Flight Conducted Under -14 CFR 91
Accident Occurred During -LANDING

Aircraft Damage
SUBSTANTIAL
Fire
NONE

	Injuries			
	Fatal	Serious	Minor	None
Crew	0	0	0	1
Pass	0	0	0	3

----Aircraft Information----
Make/Model - BELLANCA 17-30
Landing Gear - TRICYCLE-RETRACTABLE
Max Gross Wt - 3325
No. of Seats - 4
Eng Make/Model - CONTINENTAL IO-520-D
Number Engines - 1
Engine Type - RECIP-FUEL INJECTED
Rated Power - 300 HP
ELT Installed/Activated - UNK/NR
Stall Warning System - UNK/NR

----Environment/Operations Information----
Weather Data
Wx Briefing - UNK/NR
Method - UNK/NR
Completeness - UNK/NR
Basic Weather - VMC
Wind Dir/Speed- 290/015 KTS
Visibility - 20.0 SM
Lowest Sky/Clouds - 15000 FT SCATTERED
Lowest Ceiling - NONE
Obstructions to Vision- NONE
Precipitation - NONE
Condition of Light - DAYLIGHT

Itinerary
Last Departure Point
WASHINGTON IS,WI
Destination
SHEBOYGAN,WI

ATC/Airspace
Type of Flight Plan - NONE
Type of Clearance - NONE
Type Apch/Lnds - FORCED LANDING

Airport Proximity
OFF AIRPORT/STRIP

Airport Data
Runway Ident - N/A
Runway Lth/Wid - N/A
Runway Surface - N/A
Runway Status - N/A

----Personnel Information----
Pilot-In-Command
Certificate(s)/Rating(s)
PRIVATE
SE LAND

Age - 43
Biennial Flight Review
Current - UNK/NR
Months Since - UNK/NR
Aircraft Type - UNK/NR

Medical Certificate - VALID MEDICAL-NO WAIVERS/LIMIT
Flight Time (Hours)
Total - UNK/NR
Make/Model- UNK/NR
Instrument- UNK/NR
Multi-Eng - UNK/NR
Last 24 Hrs - UNK/NR
Last 30 Days- UNK/NR
Last 90 Days- UNK/NR
Rotorcraft - UNK/NR

Instrument Rating(s) - NONE

----Narrative----
THE ACFT COLLIDED WITH A DITCH DURING A FORCED LANDING FOLLOWING A LOSS OF POWER IN CRUISE FLT. THE PLT REPORTED HE SWITCHED THE FUEL SELECTOR FROM THE LEFT TO THE RIGHT TANK, & AFTER APRX 3 MINUTES, A TOTAL LOSS OF POWER WAS EXPERIENCED. HE STATED THAT REPEATED ATTEMPTS TO RESTART THE ENGINE WERE FUTILE. HE NOTED THAT AFTER THE POWER LOSS, THE FUEL PRESSURE DROPPED OFF. WHEN HE TURNED ON THE AUX FUEL PUMP, THERE WAS NO FUEL PRESSURE INDICATION. A POST ACCIDENT INSPECTION OF THE ACFT DISCLOSED NO MECHANICAL FAILURE/MALFUNCTION. THE RIGHT MAIN FUEL TANK CONTAINED 6 1/2 INCHES OF FUEL & THE LEFT MAIN TANK CONTAINED 1 1/4 INCHES OF FUEL (MAIN TANKS PLACARDED 19 GAL CAPACITY). BOTH THE LEFT & RIGHT AUX TANKS WERE EMPTY.

File No. - 1581 7/21/85 SHEBOYGAN,WI A/C Reg. No. N7315V Time (Lcl) - 1420 CDT

Occurrence #1 LOSS OF POWER(TOTAL) - NON-MECHANICAL
Phase of Operation CRUISE - NORMAL

Finding(s)
1. FUEL SYSTEM - INADEQUATE
2. AIRCRAFT/EQUIPMENT,INADEQUATE DESIGN - MANUFACTURER
3. FLUID,FUEL - STARVATION
4. EMERGENCY PROCEDURE - ATTEMPTED - PILOT IN COMMAND

Occurrence #2 FORCED LANDING
Phase of Operation DESCENT - EMERGENCY

Occurrence #3 ON GROUND COLLISION WITH TERRAIN
Phase of Operation LANDING - ROLL

Finding(s)
5. TERRAIN CONDITION - DITCH

----Probable Cause----

The National Transportation Safety Board determines that the Probable Cause(s) of this accident is/are finding(s) 3

Factor(s) relating to this accident is/are finding(s) 1,2,5

National Transportation Safety Board
Washington, D.C. 20594

Brief of Accident

File No. - 1058 7/28/85 COZAD,NE A/C Reg. No. N6598V Time (Lcl) - 1006 CDT

----Basic Information----

Type Operating Certificate-NONE (GENERAL AVIATION)

Type of Operation -PERSONAL
Flight Conducted Under -14 CFR 91
Accident Occurred During -LANDING

Aircraft Damage
SUBSTANTIAL
Fire
NONE

Injuries	Fatal	Serious	Minor	None
Crew	0	0	1	0
Pass	0	0	0	2

----Aircraft Information----

Make/Model - BELLANCA 17-31A
Landing Gear - TRICYCLE-RETRACTABLE
Max Gross Wt - 3000
No. of Seats - 4

Eng Make/Model - LYCOMING IO-540
Number Engines - 1
Engine Type - RECIP-FUEL INJECTED
Rated Power - 290 HP

ELT Installed/Activated - YES/YES
Stall Warning System - YES

----Environment/Operations Information----

Weather Data
Wx Briefing - NO RECORD OF BRIEFING
Method - N/A
Completeness - N/A
Basic Weather - VMC
Wind Dir/Speed- 050/018 KTS
Visibility - 15.0 SM
Lowest Sky/Clouds - CLEAR
Lowest Ceiling - NONE
Obstructions to Vision- NONE
Precipitation - NONE
Condition of Light - DAYLIGHT

Itinerary
Last Departure Point
SPEARFISH,SD
Destination
KEARNEY,NE

ATC/Airspace
Type of Flight Plan - VFR
Type of Clearance - NONE
Type Apch/Lnds - FORCED LANDING

Airport Proximity
OFF AIRPORT/STRIP

Airport Data
Runway Ident - N/A
Runway Lth/Wid - N/A
Runway Surface - N/A
Runway Status - N/A

----Personnel Information----

Pilot-In-Command
Certificate(s)/Rating(s)
COMMERCIAL
SE LAND

Age - 43
Biennial Flight Review
Current - YES
Months Since - 5
Aircraft Type - 17-31A

Medical Certificate - VALID MEDICAL-NO WAIVERS/LIMIT

Flight Time (Hours)

Total	- UNK/NR	Last 24 Hrs	- 2
Make/Model	- UNK/NR	Last 30 Days	- UNK/NR
Instrument	- UNK/NR	Last 90 Days	- 30
Multi-Eng	- UNK/NR	Rotorcraft	- UNK/NR

Instrument Rating(s) - AIRPLANE

----Narrative----

THE PLT REPORTED THAT DURING A DESCENT TO LAND AT KEARNEY, NE, THE ENG LOST POWER & OIL OOZED OUT OF THE COWLING & COVERED MOST OF THE WINDSHIELD. DURING A FORCED LANDING APCH, HE RELEASED HIS SEAT BELT SO HE COULD SEE THRU A SMALL SECTION OF THE WINDSHIELD. AT ABOUT 100 FT AGL, THE PLT NOTED POWER LINES DIRECTLY AHEAD. HE DOVE THE ACFT TO AVOID THE POWER LINES. THE ACFT TOUCHED DOWN HARD, BOUNCED & CAME TO REST IN A SOYBEAN FIELD ABOUT 200 FT BEYOND THE INITIAL IMPACT POINT. AN EXAM OF THE ENG REVEALED THAT A #2 CONNECTING ROD BOLT & THE RESPECTIVE ROD CAP HAD FAILED. THE #2 ROD HAD THEN PUNCTURED THE ENG CASE WHICH ALLOWED ENG OIL TO ESCAPE.

File No. - 1058 7/28/85 COZAD,NE A/C Reg. No. N6598V Time (Lcl) - 1006 CDT

Occurrence #1 LOSS OF POWER(TOTAL) - MECH FAILURE/MALFUNCTION
Phase of Operation DESCENT - NORMAL

Finding(s)
1. ENGINE ASSEMBLY,CONNECTING ROD - FAILURE,TOTAL
2. ENGINE ASSEMBLY,CRANKCASE - OVERLOAD
3. FLUID,OIL - LEAK
4. WINDOW,FLIGHT COMPARTMENT WINDOW/WINDSHIELD - OTHER

Occurrence #2 FORCED LANDING
Phase of Operation DESCENT - EMERGENCY

Occurrence #3 IN FLIGHT COLLISION WITH TERRAIN
Phase of Operation LANDING - FLARE/TOUCHDOWN

Finding(s)
5. OBJECT - WIRE,TRANSMISSION
6. MANEUVER - PERFORMED - PILOT IN COMMAND

----Probable Cause----

The National Transportation Safety Board determines that the Probable Cause(s) of this accident is/are finding(s) 1

Factor(s) relating to this accident is/are finding(s) 3,4,5

National Transportation Safety Board
Washington, D.C. 20594

Brief of Accident

File No. - 2016 7/30/85 CAMDEN,SC A/C Reg. No. N6707V Time (Lcl) - 1910 EDT

----Basic Information----

Type Operating Certificate-NONE (GENERAL AVIATION)

Type of Operation -INSTRUCTIONAL
Flight Conducted Under -14 CFR 91
Accident Occurred During -LANDING

Aircraft Damage
SUBSTANTIAL
Fire
IN FLIGHT

Injuries	Fatal	Serious	Minor	None
Crew	0	0	0	2
Pass	0	0	0	0

----Aircraft Information----

Make/Model - BELLANCA 17-30A
Landing Gear - TRICYCLE-RETRACTABLE
Max Gross Wt - 3325
No. of Seats - 4

Eng Make/Model - CONTINENTAL IO-520-K1A
Number Engines - 1
Engine Type - RECIP-FUEL INJECTED
Rated Power - 300 HP

ELT Installed/Activated - YES/NO
Stall Warning System - YES

----Environment/Operations Information----

Weather Data
Wx Briefing - NO RECORD OF BRIEFING
Method - N/A
Completeness - N/A
Basic Weather - VMC
Wind Dir/Speed- VARIABLE
Visibility - 10.0 SM
Lowest Sky/Clouds - CLEAR
Lowest Ceiling - NONE
Obstructions to Vision- NONE
Precipitation - NONE
Condition of Light - DAYLIGHT

Itinerary
Last Departure Point
CAMDEN,SC
Destination
LOCAL

ATC/Airspace
Type of Flight Plan - NONE
Type of Clearance - NONE
Type Apch/Lnds - FORCED LANDING

Airport Proximity
OFF AIRPORT/STRIP

Airport Data
Runway Ident - N/A
Runway Lth/Wid - N/A
Runway Surface - N/A
Runway Status - N/A

----Personnel Information----

Pilot-In-Command
Certificate(s)/Rating(s)
PRIVATE
SE LAND

Age - 42
Biennial Flight Review
Current - YES
Months Since - 23
Aircraft Type - UNK/NR

Medical Certificate - VALID MEDICAL-NO WAIVERS/LIMIT

Flight Time (Hours)

Total -	278	Last 24 Hrs -	0
Make/Model-	168	Last 30 Days-	UNK/NR
Instrument-	62	Last 90 Days-	6
Multi-Eng -	2		

Instrument Rating(s) - AIRPLANE

----Narrative----

WHILE THE ACFT WAS FLYING OVER WOODED TERRAIN, THE ENG LOST POWER. THE PLT SAW A PLOWED FIELD APRX 3 MI AWAY & BEGAN AN EMERG APCH TO THE FIELD. THE ACFT STRUCK THE TOPS OF TREES ON FINAL APCH, BUT CONTINUED FLYING UNTIL THE PLT MADE A GEAR UP LANDING. AN EXAM REVEALED THAT THE EXHAUST MUFFLER HAD FAILED AT A WELD WHERE A BALL JOINT WAS CONNECTED. THIS ALLOWED HOT EXHAUST GASES TO ENTER THE ENG COMPARTMENT, BURN THE MAGNETO WIRES & RENDER THE MAGNETOS INOPERATIVE. AN AIRWORTHINESS DIRECTIVE, AD 76-23-03, WHICH REQUIRED AN INSPECTION OF THE EXHAUST SYS EACH 100 HRS, HAD BEEN COMPLIED WITH ON 10/7/83, BUT HAD NOT BEEN PERFORMED DURING THE LAST ANNUAL INSPECTION ON 12/7/84. THE ACFT HAD ACCUMULATED 68 HRS OF FLT TIME SINCE COMPLIANCE WITH AD 76-23-03.

File No. - 2016 7/30/85 CAMDEN,SC A/C Reg. No. N6707V Time (Lcl) - 1910 EDT

Occurrence #1 FIRE
Phase of Operation CRUISE - NORMAL

Finding(s)
1. EXHAUST SYSTEM,MUFFLER - FAILURE,TOTAL
2. EXHAUST SYSTEM - LEAK
3. ELECTRICAL SYSTEM,ELECTRIC WIRING - BURNED
4. IGNITION SYSTEM,MAGNETO - INOPERATIVE

Occurrence #2 LOSS OF POWER(TOTAL) - MECH FAILURE/MALFUNCTION
Phase of Operation CRUISE - NORMAL

Occurrence #3 FORCED LANDING
Phase of Operation DESCENT - EMERGENCY

Occurrence #4 IN FLIGHT COLLISION WITH OBJECT
Phase of Operation APPROACH

Finding(s)
5. OBJECT - TREE(S)

Occurrence #5 IN FLIGHT COLLISION WITH TERRAIN
Phase of Operation LANDING - FLARE/TOUCHDOWN

Finding(s)
6. WHEELS UP LANDING - PERFORMED - PILOT IN COMMAND
7. TERRAIN CONDITION - OPEN FIELD
8. TERRAIN CONDITION - SOFT

----Probable Cause----

The National Transportation Safety Board determines that the Probable Cause(s) of this accident is/are finding(s) 1,2,3,4

Factor(s) relating to this accident is/are finding(s) 5,7,8

National Transportation Safety Board
Washington, D.C. 20594

Brief of Accident

File No. - 1359 9/24/85 BURLINGTON,WA A/C Reg. No. N6627V Time (Lcl) - 1635 PDT

----Basic Information----

Type Operating Certificate-NONE (GENERAL AVIATION)

Type of Operation -PERSONAL
Flight Conducted Under -14 CFR 91
Accident Occurred During -LANDING

Aircraft Damage
SUBSTANTIAL
Fire
IN FLIGHT

Injuries	Fatal	Serious	Minor	None
Crew	0	1	0	0
Pass	0	0	0	2

----Aircraft Information----

Make/Model - BELLANCA 17-30A
Landing Gear - TRICYCLE-RETRACTABLE
Max Gross Wt - 3325
No. of Seats - 4

Eng Make/Model - CONTINENTAL IO-520-K
Number Engines - 1
Engine Type - RECIP-FUEL INJECTED
Rated Power - 300 HP

ELT Installed/Activated - YES/NO
Stall Warning System - YES

----Environment/Operations Information----

Weather Data
Wx Briefing - NO RECORD OF BRIEFING
Method - N/A
Completeness - N/A
Basic Weather - VMC
Wind Dir/Speed- 270/008 KTS
Visibility - 10.0 SM
Lowest Sky/Clouds - CLEAR
Lowest Ceiling - NONE
Obstructions to Vision- NONE
Precipitation - NONE
Condition of Light - DAYLIGHT

Itinerary
Last Departure Point
SAME AS ACC/INC
Destination
EAST SOUND,WA

ATC/Airspace
Type of Flight Plan - NONE
Type of Clearance - NONE
Type Apch/Lnds - FORCED LANDING

Airport Proximity
OFF AIRPORT/STRIP

Airport Data
SKAGIT REGIONAL/BAY VIEW
Runway Ident - 28
Runway Lth/Wid - 5364/ 150
Runway Surface - ASPHALT
Runway Status - DRY

----Personnel Information----

Pilot-In-Command
Certificate(s)/Rating(s)
ATP
SE LAND,ME LAND

Age - 46
Biennial Flight Review
Current - YES
Months Since - 2
Aircraft Type - UNK/NR

Medical Certificate - VALID MEDICAL-WAIVERS/LIMIT

Flight Time (Hours)

Total	14325	Last 24 Hrs	0
Make/Model	110	Last 30 Days	UNK/NR
Instrument	2267	Last 90 Days	223
Multi-Eng	UNK/NR	Rotorcraft	UNK/NR

Instrument Rating(s) - AIRPLANE

----Narrative----

DURING INITIAL CLIMB, THE PLT SMELLED SMOKE & HEARD A BACKFIRE, THEN THE ENG LOST POWER. A FORCED LANDING WAS MADE IN A FIELD ON ROUGH/UNEVEN TERRAIN. DURING THE LANDING ROLL, THE ACFT STRUCK A DITCH & WAS DAMAGED. A VISUAL INSPECTION REVEALED THAT THE LEFT EXHAUST MUFFLER HAD FAILED AT ITS OUTLET. THIS ALLOWED HOT EXHAUST GASES TO ENTER THE ENG COMPARTMENT & DAMAGE THE VOLTAGE REGULATOR, ALTERNATOR & MAGNETO WIRING (P-LEADS). WITH P-LEAD FAILURE, THE MAGNETOS WOULD HAVE BEEN INOPERATIVE. AN AIRWORTHINESS DIRECTIVE, AD 76-23-03, WHICH REQUIRED AN INSPECTION OF THE EXHAUST SYS EACH 100 HRS, HAD LAST BEEN COMPLIED WITH ON 8/18/82. HOWEVER THE ACFT HAD BEEN OPERATED FOR ONLY 50 FLT HRS SINCE THAT DATE.

File No. - 1359 9/24/85 BURLINGTON,WA A/C Reg. No. N6627V Time (Lcl) - 1635 PDT

Occurrence #1 FIRE
Phase of Operation TAKEOFF - INITIAL CLIMB

Finding(s)
1. EXHAUST SYSTEM,MUFFLER - FAILURE,TOTAL
2. EXHAUST SYSTEM - LEAK
3. ELECTRICAL SYSTEM,ELECTRIC WIRING - BURNED
4. IGNITION SYSTEM,MAGNETO - INOPERATIVE

Occurrence #2 LOSS OF POWER(TOTAL) - MECH FAILURE/MALFUNCTION
Phase of Operation TAKEOFF - INITIAL CLIMB

Occurrence #3 FORCED LANDING
Phase of Operation DESCENT - EMERGENCY

Occurrence #4 ON GROUND COLLISION WITH TERRAIN
Phase of Operation LANDING - ROLL

Finding(s)
5. TERRAIN CONDITION - NONE SUITABLE
6. TERRAIN CONDITION - DITCH

----Probable Cause----

The National Transportation Safety Board determines that the Probable Cause(s) of this accident is/are finding(s) 1,2,3,4

Factor(s) relating to this accident is/are finding(s) 5,6