

NATIONAL TRANSPORTATION SAFETY BOARD PILOT/OPERATOR AIRCRAFT ACCIDENT/INCIDENT REPORT

This form to be used for reporting civil and public aircraft accidents and incidents

BASIC INFORMATION

Accident/Incident Location

Nearest City/Place: WORLDANO State: WY

ZIP: 82401 Country: USA

Latitude: 44°02'43.86"N Longitude: 107°42'52.71"W

(Enter in decimal degrees or degrees:minutes:seconds)

Accident/Incident Date/Time

Date: 09-12-2017 Local Time: 14:30 APPROX
mm/dd/yyyy

Time Zone: MT

Collision with Other Aircraft: ☐ Midair ☐ On-ground ☒ None

AIRCRAFT INFORMATION

Registration Number: N1835R

Manufacturer: CESSNA

Model: R182 (182RG)

Serial Number: R18204576

Year of Manufacture: 1978

Amateur-Built: ☐ Yes ☒ No If Yes: ☐ Kit/Plans ☐ Original Design Make: _____

☒ IFR-Equipped and Certified
☐ Commercial Space Flight
☐ Unmanned Aircraft

Maximum Gross Weight: 3100 lbs

Weight at Time of Accident/Incident: 2250 lbs

Number of Seats: 4 Flight Crew Seats: 1

Cabin Crew Seats: _____ Passenger Seats: 3

Number of Engines: _____

Category of Aircraft

- ☒ Airplane
☐ Balloon
☐ Blimp/Dirigible
☐ Glider
☐ Gyroplane
☐ Helicopter
☐ Powered Lift
☐ Rocket
☐ Ultralight
☐ Unknown

Type of Airworthiness Certificate

(Check all that apply)

Standard

☒ Normal

☐ Aerobatic

☐ Balloon

☐ Commuter

☐ Transport

☐ Utility

☐ Certificate of Authorization or Waiver (COA)

☒ None

Special

☐ Restricted

☐ Limited

☐ Provisional

☐ Special Flight

☐ Experimental

☐ Special Light-Sport

☐ Experimental Light-Sport

Landing Gear

(Check all that apply)

☒ Retractable

☐ Tricycle

☐ Amphibian

☐ Emergency Float

☐ Float

☐ Hull

☐ Other Launch/Recovery System

☐ None

☐ Tailwheel

☐ High Skid

☐ Skid

☐ Ski

☐ Ski/Wheel

☐ Unknown

Engine Type (Select one)

☒ Reciprocating

☐ Turbo Shaft

☐ Turbo Prop

☐ Turbo Jet

☐ Turbo Fan

☐ Electric

☐ Liquid Rocket

☐ Solid Rocket

☐ Hybrid Rocket

☐ None

☐ Unknown

Fuel System Type (Reciprocating)

☒ Carburetor

☐ Fuel-Injected

Engine	Engine Manufacturer	Engine Model/Series	Manufacturer's Serial Number	Date of Mfg. mm dd/yyyy	Rated Power ☒ Horsepower or ☐ lbs of Thrust	Total Time (hours)	Time Since: Inspection (hours)	Overhaul (hours)
Eng. 1	<u>LYCOMING</u>	<u>D-540-J3C5D</u>	<u>L-20377-40A</u>	<u>1978</u>	<u>235</u>	<u>2083.4</u>	<u>23.7</u>	<u>N/A</u>
Eng. 2								
Eng. 3								
Eng. 4								

Last Inspection Type

- ☐ 100-Hour ☐ Continuous Airworthiness
☐ AAIP ☐ Conditional Inspection
☒ Annual ☐ Unknown

Date Last Inspection: 09-01-2017
mm/dd/yyyy

Airframe Total Time: 2083.4 hrs

hours measured at (Select one)

☐ Last Inspection ☒ Time of Accident/Incident

Type of Maintenance Program (Select one)

- ☐ Annual
☐ Conditional (Amateur-built only)
☐ Manufacturer's Inspection Program
☐ Other Approved Inspection Program (AAIP)
☐ Continuous Airworthiness
☐ Other, specify: _____

Description of Fire Extinguishing System

- ☐ None
☐ Specify: _____

Propeller 1

- ☐ Fixed Pitch
☒ Controllable Pitch
☐ Ground Adjustable

Manufacturer: McCAULEY

Model: B2D34C214 / 90 DHB-8

Propeller 2

- ☐ Fixed Pitch
☐ Controllable Pitch
☐ Ground Adjustable

Manufacturer: _____

Model: _____

ELT Installed: ☒ Yes ☐ No

If Yes:

ELT Manufacturer: DOIN AND MORGOLIN

Model or Part No.: _____

TSO No.: ☐ C91 (121.5 MHz) ☐ C91a (121.5 MHz)
☐ C126 (406 MHz)

Was ELT still mounted in aircraft? ☒ Yes ☐ No

Was ELT still connected to antenna? ☒ Yes ☐ No

Did ELT Activate? ☐ Yes ☐ No

If activated:

Did ELT Aid in Locating Aircraft: ☐ Yes ☒ No

If not activated:

- Indicate Reason: ☐ Impact Damage
☐ Fire Damage
☐ Battery Expired/Damaged
☐ Unknown

Additional Equipment (Check all that apply)

- ☐ ADS-B
☐ Airframe Parachute
☐ Angle of Attack Indicator
☐ Autopilot
☐ Data Recorder
☐ Electronic Flight Bag or Handheld Device
☐ Electronic Multifunction Display
☐ Electronic Primary Flight Display
☐ Handheld GPS
☐ Heads Up Display
☐ Onboard Weather
☐ Satellite Tracking Device
☐ Stall Warning System
☐ Video Recording Device
☐ Other, Specify: _____

"FLIGHT CREWMEMBER 1" INFORMATION																																																																																																				
"Flight Crewmember 1" Responsibilities at the Time of Accident/Incident ☒ Pilot ☐ Co-Pilot ☐ Student Pilot ☐ Flight Instructor ☐ Check Pilot ☐ Flight Engineer ☐ Other Flight Crew																																																																																																				
"Flight Crewmember 1" was pilot flying ☒ Yes ☐ No																																																																																																				
"Flight Crewmember 1" Identification First Name: <u>DAVID</u> Middle Initial: <u>S</u> Last Name: <u>ESCHERICH</u> City of Residence: <u>RED LODGE</u> State: <u>MT</u> ZIP: <u>59068</u> Country: <u>USA</u> Age at time of Accident/Incident: <u>57</u> Date of Birth: [REDACTED] mm/dd/yyyy Certificate Number: [REDACTED]																																																																																																				
Degree of Injury ☒ None ☐ Fatal ☐ Minor ☐ Unknown ☐ Serious		Seat Occupied ☒ Left ☐ Front ☐ Unknown ☐ Right ☐ Rear ☐ Center ☐ Single		Restraint Type Available ☐ None ☐ Lap only ☒ 3-point ☐ 4-point ☐ 5-point ☐ Unknown Used ☐ None ☐ Lap only ☒ 3-point ☐ 4-point ☐ 5-point ☐ Unknown			Inflatable Restraints ☐ Not Installed ☐ Installed ☐ Not Deployed ☐ Deployed ☐ Unknown																																																																																													
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Principal Occupation ☒ Pilot ☐ Other ☐ Unknown		Medical Certificate ☐ None ☐ Class 3 ☐ Class 1 ☐ Driver's License (Sport Pilot only) ☒ Class 2 ☐ Unknown			Medical Certificate Limitations <u>MUST HAVE AVAILABLE GLASSES FOR NEAR VISION</u>																																																																																															
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"FLIGHT CREWMEMBER 2" INFORMATION																																																																																																				
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"Flight Crewmember 2" was pilot flying ☐ Yes ☐ No																																																																																																				
"Flight Crewmember 2" Identification First Name: _____ Middle Initial: _____ Last Name: _____ City of Residence: _____ State: _____ ZIP: _____ Country: _____ Age at time of Accident/Incident: _____ Date of Birth: _____ <i>mm/dd/yyyy</i> Certificate Number: _____																																																																																																				
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ADDITIONAL FLIGHT CREWMEMBERS (Exclusive of cabin crew, complete the following information)									
Crew Name and Address First Name: _____ City of Residence: _____ Middle Initial: _____ State: _____ ZIP: _____ Last Name: _____ Country: _____					Seat Occupied ☐ Left ☐ Front ☐ Center ☐ Rear ☐ Right ☐ Single ☐ Unknown		Injury ☐ None ☐ Minor ☐ Serious ☐ Fatal ☐ Unknown		
Pilot Certificate(s) (Check all that apply) ☐ None ☐ Flight Instructor ☐ Private ☐ Recreational ☐ Student ☐ Sport ☐ Commercial ☐ US Military ☐ Airline Transport ☐ Foreign ☐ Flight Engineer					Restraint Type: Available ☐ None ☐ Lap Only ☐ 3-point ☐ 4-point ☐ 5-point ☐ Unknown Used ☐ None ☐ Lap Only ☐ 3-point ☐ 4-point ☐ 5-point ☐ Unknown		Inflatable Restraints ☐ Not Installed ☐ Installed ☐ Not Deployed ☐ Deployed ☐ Unknown		
Type Rating/Endorsement for Accident/Incident Aircraft? ☐ Yes ☐ No			Total Flight Time at the Time of this Accident/Incident: _____ hrs						
Crew Name and Address First Name: _____ City of Residence: _____ Middle Initial: _____ State: _____ ZIP: _____ Last Name: _____ Country: _____					Seat Occupied ☐ Left ☐ Front ☐ Center ☐ Rear ☐ Right ☐ Single ☐ Unknown		Injury ☐ None ☐ Minor ☐ Serious ☐ Fatal ☐ Unknown		
Pilot Certificate(s) (Check all that apply) ☐ None ☐ Flight Instructor ☐ Private ☐ Recreational ☐ Student ☐ Sport ☐ Commercial ☐ US Military ☐ Airline Transport ☐ Foreign ☐ Flight Engineer					Restraint Type: Available ☐ None ☐ Lap Only ☐ 3-point ☐ 4-point ☐ 5-point ☐ Unknown Used ☐ None ☐ Lap Only ☐ 3-point ☐ 4-point ☐ 5-point ☐ Unknown		Inflatable Restraints ☐ Not Installed ☐ Installed ☐ Not Deployed ☐ Deployed ☐ Unknown		
Type Rating/Endorsement for Accident/Incident Aircraft? ☐ Yes ☐ No			Total Flight Time at the Time of this Accident/Incident: _____ hrs						
PASSENGER(S) / OTHER PERSONNEL (Include cabin crew; continue on separate sheet if necessary)									
Name and Address First Name: _____ City : _____ Middle Initial: _____ State: _____ ZIP: _____ Last Name: _____ Country: _____ ☐ Crew ☐ Passenger ☐ Other			Seat ☐ Left ☐ Center ☐ Right ☐ Unknown Row: _____	Injury ☐ None ☐ Minor ☐ Serious ☐ Fatal ☐ Unknown	Restraint Type Available ☐ None ☐ Lap Only ☐ 3-point ☐ 4-point ☐ 5-point ☐ Unknown Used ☐ None ☐ Lap Only ☐ 3-point ☐ 4-point ☐ 5-point ☐ Unknown		Inflatable Restraints ☐ Not Installed ☐ Installed ☐ Not Deployed ☐ Deployed ☐ Unknown	Age ☐ Under 5 years If Under 5, ☐ Child Restraint ☐ Lap-Held ☐ Unknown	
First Name: _____ City : _____ Middle Initial: _____ State: _____ ZIP: _____ Last Name: _____ Country: _____ ☐ Crew ☐ Passenger ☐ Other			☐ Left ☐ Center ☐ Right ☐ Unknown Row: _____	☐ None ☐ Minor ☐ Serious ☐ Fatal ☐ Unknown	Available ☐ None ☐ Lap Only ☐ 3-point ☐ 4-point ☐ 5-point ☐ Unknown		Used ☐ None ☐ Lap Only ☐ 3-point ☐ 4-point ☐ 5-point ☐ Unknown	☐ Not Installed ☐ Installed ☐ Not Deployed ☐ Deployed ☐ Unknown	☐ Under 5 years If Under 5, ☐ Child Restraint ☐ Lap-Held ☐ Unknown
First Name: _____ City : _____ Middle Initial: _____ State: _____ ZIP: _____ Last Name: _____ Country: _____ ☐ Crew ☐ Passenger ☐ Other			☐ Left ☐ Center ☐ Right ☐ Unknown Row: _____	☐ None ☐ Minor ☐ Serious ☐ Fatal ☐ Unknown	Available ☐ None ☐ Lap Only ☐ 3-point ☐ 4-point ☐ 5-point ☐ Unknown		Used ☐ None ☐ Lap Only ☐ 3-point ☐ 4-point ☐ 5-point ☐ Unknown	☐ Not Installed ☐ Installed ☐ Not Deployed ☐ Deployed ☐ Unknown	☐ Under 5 years If Under 5, ☐ Child Restraint ☐ Lap-Held ☐ Unknown
First Name: _____ City : _____ Middle Initial: _____ State: _____ ZIP: _____ Last Name: _____ Country: _____ ☐ Crew ☐ Passenger ☐ Other			☐ Left ☐ Center ☐ Right ☐ Unknown Row: _____	☐ None ☐ Minor ☐ Serious ☐ Fatal ☐ Unknown	Available ☐ None ☐ Lap Only ☐ 3-point ☐ 4-point ☐ 5-point ☐ Unknown		Used ☐ None ☐ Lap Only ☐ 3-point ☐ 4-point ☐ 5-point ☐ Unknown	☐ Not Installed ☐ Installed ☐ Not Deployed ☐ Deployed ☐ Unknown	☐ Under 5 years If Under 5, ☐ Child Restraint ☐ Lap-Held ☐ Unknown

FLIGHT ITINERARY INFORMATION				
Last Departure Point Airport ID: <u>ISN</u> City: <u>WILLISTON</u> State: <u>ND</u> Country: <u>USA</u>		Time of Departure Time: _____ Time Zone: _____		Destination Airport ID: <u>NEAR - WRL</u> City: <u>WORLAND</u> State: <u>WY</u> Country: <u>USA</u>
Type Flight Plan Filed ☒ None ☐ VFR/IFR ☐ Company VFR ☐ IFR ☐ Military VFR ☐ Unknown ☐ VFR Activated? ☐ Yes ☐ No ☐ Unknown				
Type of ATC Clearance/Service (Check all that apply) ☒ None ☐ Special VFR ☐ Special IFR ☐ VFR Flight Following ☐ Cruise ☐ VFR ☐ IFR ☐ VFR On Top ☐ Traffic Advisory ☐ Unknown / NA				
Airspace where the accident/incident occurred (Check all that apply) ☐ Class A ☒ Class G ☐ Military Operations Area (MOA) ☐ Special ☐ Class B ☐ Demo Area ☐ Airport Advisory Area ☐ Air Traffic Control Area ☐ Class C ☐ Warning Area ☐ Jet Training Area ☐ Unknown ☐ Class D ☐ Prohibited Area ☐ TRSA ☐ Class E ☐ Restricted Area ☐ FAR 93				Altitude of In-Flight Occurrence: _____ ft msl
WEATHER INFORMATION AT THE ACCIDENT/INCIDENT SITE				
Source of Pilot Weather Information (Check all that apply) ☐ National Weather Service ☐ Company ☐ Flight Service Station ☐ Military ☐ TV/Radio ☒ Internet ☐ Automated Report ☐ None ☐ Commercial Weather Service (DUATS) ☐ Unknown ☐ On-Board Weather			Weather Observation Facility Facility ID: <u>WRL</u> Observation Time: <u>AS APPROACHING AREA 13:30-14:00</u> Time Zone: <u>MT</u> Distance from Accident Site: <u>11.5</u> nm Direction from Accident Site: <u>243.75</u> degrees true	
Basic Conditions ☒ VMC ☐ IMC ☐ Unknown		Light Condition ☐ Dawn ☐ Dusk ☐ Dark Night ☐ Unknown ☒ Day ☐ Night ☐ Bright Night		
Sky/Lowest Cloud Condition ☒ Clear ☐ Thin Broken ☐ Few ☐ Thin Overcast ☐ Partial Obscuration ☐ Unknown ☐ Scattered Lowest Cloud Condition Height _____ ft agl		Ceiling ☒ None (Clear) ☐ Obscured ☐ Broken ☐ Indefinite ☐ Overcast ☐ Unknown Ceiling Height _____ ft agl		Temperature: _____ (C) or _____ (F) Dew Point: _____ (C) or _____ (F) Altimeter Setting: _____ in. Hg or _____ MB
Wind Direction ☐ Variable -or- Direction: _____ degrees true	Wind Speed ☐ Calm ☐ Light and Variable -or- Speed: _____ kts	Wind Gusts ☐ Not Gusting -or- Speed: _____ kts	Visibility _____ miles RVR: _____ feet RVV: _____ miles Density Altitude: _____ ft	
Intensity of Precipitation ☐ Light ☐ Moderate ☐ Heavy ☒ N/A ☐ Unknown	Type of Precipitation (Check all that apply) ☒ None ☐ Drizzle ☐ Freezing Rain ☐ Rain ☐ Ice Pellets ☐ Snow Shower ☐ Snow ☐ Snow Pellets ☐ Ice Pellets Shower ☐ Hail ☐ Snow Grains ☐ Freezing Drizzle ☐ Rain Showers ☐ Ice Crystals		Restriction to Visibility (Check all that apply) ☒ None ☐ Fog ☐ Blowing Dust ☐ Ground Fog ☐ Blowing Sand ☐ Haze ☐ Blowing Snow ☐ Ice Fog ☐ Blowing Spray ☐ Smoke ☐ Dust ☐ Unknown	
Icing Forecast Amount ☒ None ☐ Trace ☐ Light ☐ Moderate ☐ Severe ☐ Unknown Type ☐ N/A ☐ Rime ☐ Clear ☐ Mixed ☐ Unknown		Icing Actual Amount ☒ None ☐ Trace ☐ Light ☐ Moderate ☐ Severe ☐ Unknown Type ☐ N/A ☐ Rime ☐ Clear ☐ Mixed ☐ Unknown		Turbulence Type (Check all that apply) ☒ None ☐ Clear Air ☐ Terrain-Induced ☐ Convective Turbulence Severity ☐ Light ☐ Moderate ☐ Severe ☐ Extreme
NOTAMS (D and FDC), AIRMETs, SIGMETs, PIREPs in effect at the time of the accident/incident: 				

DAMAGE TO AIRCRAFT AND OTHER PROPERTY**Aircraft Damage**

- ☐ None ☐ Substantial
☐ Minor ☐ Destroyed
 ☒ Unknown

Aircraft Fire

- ☒ None ☐ Both Ground and In-Flight
☐ In-Flight ☐ Fire at Unknown Time
☐ On-Ground ☐ Unknown

Aircraft Explosion

- ☒ None ☐ Both Ground and In-Flight
☐ In-Flight ☐ Explosion at Unknown Time
☐ On-Ground ☐ Unknown

Description of Damage to Aircraft and Other Property *(Use additional sheet if necessary)*

BOTTOM OF FUSELAGE, PROPELLER STRIKE

NARRATIVE HISTORY OF FLIGHT *(Please type or print in ink)*

Describe what occurred in chronological order, including circumstances leading to and nature of accident/incident. Describe terrain and include wreckage distribution sketch if pertinent. Attach extra sheets if needed. State departure time and and location, services obtained, and intended destination. Provide as much detail as possible.

SEE ATTACHED SHEETS

RECOMMENDATION (How could this accident/incident have been prevented?)

Operator/Owner Safety Recommendation

MAINTAIN PROPERLY WORKING (ACCURATE) FUEL GAUGES
CONTINUOUS FUEL CONSUMPTION RATE CALCULATIONS
INSTALL ENGINE ANALYZER WITH FUEL CONSUMPTION MONITORING

MECHANICAL MALFUNCTION/FAILURE (If more space is needed, continue on separate sheet)Was there Mechanical Malfunction/Failure? ☐ Yes ☒ No

(If yes, list the name of the part, manufacturer, part no., serial no., and describe the failure.)

Total Time/Cycles
On Part

_____ Hours

_____ Cycles

Time Since This Part
Inspected/Overhauled

_____ Hours

FUEL & SERVICES INFORMATION

Fuel on Board at Last Takeoff

(Convert from pounds, as necessary)

UNKNOWN

Gallons

Fuel Type

☐ 80/87☒ 100 Low Lead☐ 100/130☐ 115/145☐ Jet A☐ Jet A-1☐ Jet B☐ JP8☐ Automotive☐ Other, specify _____

Other Services, if Any, Prior to Departure

N/A

EVACUATION OF AIRCRAFTWas an emergency evacuation of the aircraft performed? ☐ Yes ☒ No

Method of Exit – Describe how the occupants exited and how many occupants evacuated each location

OTHER AIRCRAFT – COLLISION (If air or ground collision occurred, complete this section for other aircraft)

Aircraft Registration Number

Manufacturer: _____

Model: _____

Damage to Other Aircraft

☐ Destroyed☐ Minor☐ Substantial☐ None

Registered Owner of Other Aircraft

Name: _____

City: _____

State: _____ ZIP: _____

Country: _____

Pilot of Other Aircraft

Name: _____

City: _____

State: _____ ZIP: _____

Country: _____

ADDITIONAL INFORMATION (Please type or print in ink)

Use this space if additional space is needed for any answers.

I HEREBY CERTIFY THAT THE ABOVE INFORMATION IS COMPLETE AND ACCURATE TO THE BEST OF MY KNOWLEDGE

Date of this Report 09-25-2017 Name of Pilot/Operator DAVID ESCHERICH / MERIDIAN FLYING SERVICES, INC.
mm/dd/yyyy
Signature: [REDACTED]
-- or -- ☐ Check here to electronically sign this document

If a Person Other than Pilot/Operator is Filing Report

Name: _____ Title: _____
Signature: _____
-- or -- ☐ Check here to electronically sign this document

FOR NTSB USE ONLY

NTSB Accident/Incident No. CEN17LA356	Reviewed by NTSB Regional Office Central Region	Name of Investigator T. Sorensen	Date Report Received 26 September 2017
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Emergency Landing of N1835R on September 12th, 2017

Overview

On Saturday September 9th Cessna N1835R was flown from Red Lodge, MT (RED) to Sidney, MT (SDY). The purpose of the trip was to perform aerial imaging near Williston, ND (ISN). For most of 2017 the aircraft has been based at RED. If the work went as planned a flight back to RED that evening or the following morning was to take place. After the day of photographing had concluded the decision was made to do additional imaging in the same area the following day. That additional work was completed on Sunday.

The next week (week of September 10th) the aircraft was scheduled to be in the same area to perform a routine pipeline patrol. So, the decision was made to stay at SDY overnight to fly the patrol on Monday the following day. Most of the patrol was completed on Monday however two sections remained to be patrolled so another overnight stay at SDY took place with plans to finish the patrol on Tuesday the following morning.

Normally a routine pipeline patrol is also done on Mondays at a location near Worland, WY (WRL). Since the plane was going to be at SDY on Monday the WY pipeline company was contacted and arrangements were made to perform the patrol on Tuesday if the patrol work in the SDY / ISN area was completed in time. If not, it would be done on Wednesday.

Planned Flight Activities for 09-12-17

Complete the routine pipeline patrol that began on the previous day. Start by departing Sidney, MT (SDY) and fly to Williston, ND (ISN) to pick up a passenger. Two sections of pipeline gathering systems south and east of ISN were to be patrolled before landing at Stanley, ND (08D) to put on fuel. Afterwards a flight back to ISN would be done to return the passenger.

From ISN a direct flight to the other pipeline gathering system located north and east of Worland, WY (WRL) was to be initiated. On completion of that patrol a stop at Powell, WY (POY) was planned to put on fuel. From there a direct flight to Bozeman, MT (BZN) was intended where a replacement Landing Light was to be installed and it was hoped an inspection of the leaking fuel cap could be done.

Actual Flight Activities for 09-12-17

The morning went as planned. After putting on fuel at 08D the passenger was returned to ISN before starting the flight to the WY location. Normally this would be a direct flight crossing over the Big Horn Mountains. When leaving ISN a climb was started so to be at an altitude near what would be required to cross the mountains. However, smoke from forest fires to the far west created heavy layers at higher altitudes. Lower altitudes were tested until it was determined to fly at a level that ensured best ground reference. When south west of Miles City, MT (MLS) the smoke became dense to the point where a direct path to Fort Smith, MT (5U7) was initiated with plans to land if the visibility did not improve. On arriving at 5U7 the smoke began to clear and the decision was made to continue to the WY location. A turn to the south, on the west side of the Big Horn Mountains, from the Yellow Tail Dam was taken to arrive at the northeast corner of the pipeline gathering system. The patrol was started and was about halfway completed when the engine problem began and the emergency landing took place.

The Engine Failure and Emergency 09-12-17

The aircraft was traveling east along the pipeline in a remote section of the oil field. The first engine failure occurred at the approximate coordinates of 44° 06' 17.85" N 107° 44' 00" W around 14:20-14:30 MT Time. A turn to the right, to a southeast heading, was started to fly towards some oil field roads. The fuel selector was on both tanks up to this point. The propeller was wind milling and the engine stated again. It ran for a short period of time and then quit again. A second turn was made to the right to a southwest to heading to fly towards Hwy 16. This was also in the general direction of the Worland (WRL) airport. Initially I thought there was plenty of fuel on board and figured there was a delivery problem for one reason or another. If the engine would start and stay running the plan was to fly to Hwy 16 and then follow that road in to the airport. During this period the engine started and stopped three or four times.

Attempts were made to restart the engine while switching to the individual tanks then back to both as well as with the auxiliary fuel pump on. During this part of the process the aircraft was turned to stay above or in close proximity to N/S oil field road. Eventually the engine quit for the last time and an emergency landing was started. By then the aircraft was approaching the section of road just west of the field office complex where there were multiple power lines crossing the road. The glide of the aircraft was stretched to land past the power lines. By then the airspeed was very slow and the aircraft began to stall. Full Flaps were applied and the gear up landing was made on a side road that was clear of power lines. The location where the aircraft came to rest has approximate coordinates of 44° 02' 43.86" N 107° 42' 52.71" W.

Circumstances Related to the Emergency Landing

Both fuel gauges in N1835R had been proven to be unreliable. Multiple attempts were made to correct the problem (records available) however none solved the problem. It was suggested that the fuel gauges be replaced with a new design however that upgrade would also require the replacement of the other four (working) gauges in the cluster. The cost to replace the entire instrument cluster (all six gauges) was very expensive and the owner of the aircraft has not had the financial resources available to complete the upgrade.

To be able to operate with unreliable fuel gauges the practice of filling the tanks completely at each fueling was adopted. Then by keeping track and limiting of operating times safe reserve fuel quantities could be maintained. Fuel burn rates had been periodically calculated during the period from February 2017 through July 2017. Those values were used for calculating estimated fuel reserves and the maximum time for each flight.

On Sunday September 10th (I believe this was the day) while having the aircraft fueled at SDY the person fueling the plane mentioned that the fuel cap had a torn seal and it appeared that fuel had been leaking. I had mentioned that I had overfilled one of the wings (not sure which one) a few days earlier and that the stain may have been from that. On September 11th, the following morning, I contacted a FBO in Bozeman, MT (BZN) that has been used for aircraft maintenance and repairs. Prices for different parts of the fuel cap assembly were obtained but an order had not been placed yet.

On the morning of September 12th when the aircraft left SDY to fly to ISN it was assumed to have full fuel as it was filled on the evening of September 11th at SDY. The flight to ISN to pick up the passenger and the following patrol went as planned and there were no issues with the aircraft. After the patrol was complete a stop at O8D was made to put on fuel. When preparing to fuel the plane at the self-service pump the system asks the user if they want to dispense a specific Dollar or Gallon amount. Since I thought at the time that the morning flight was around three hours or less total time I chose 40 Gallon to be dispensed. I believe I filled the left wing first then started to fill the right wing. The pump dispensed 40.18 gallons then shut off. I don't remember looking to see how close to the top of the tank the fuel level was in the right wing.

Tach Time for the morning flight (SDY > ISN > O8D) was 2.7 hours. When leaving O8D I assumed full fuel (75 Useable gallons) was on board. The Tach Time from O8D to ISN was 0.7 hours. Using an estimated 13.0 GPH fuel burn rate approximately 9.1 gallons would have used. This would have left approximately 65.9 gallons or 5.0 hours remaining. A direct flight from ISN to WRL would normally take around 2.0 - 2.5 hours (depending on wind). The normal WY patrol takes right at an hour to fly. Under normal

circumstances it would have taken a maximum of 3.5 hours to fly to the pipeline work site and then complete the patrol. This should have left just under 20 gallons (19.5) reserve after the completion of the patrol, approximately 1.5 hours flight time. There would have been sufficient fuel to fly to the original planned fuel stop at POY with more than the required reserve.

However, a direct flight from ISN to WRL was not possible that day due to the smoke along the route of flight. The less direct route added approximately 43 NM (0.4 hour) to the leg. The Tach Time at the location of the emergency landing was 3.4 hours from leaving ISN. Under normal circumstances there should have been 1.6 hours flight time or (20.8 gallons) still in the tanks.

With full fuel (75 Useable gallons) when departing SDY plus 40 gallons added at O8D the total fuel used for that day's flights was 115 gallons. Total Time was 6.8 Hours ($SDY > O8D = 2.7$, $O8D > ISN = 0.7$, $ISN > END = 3.4$). This calculates to a fuel consumption rate (burned or lost) of 16.9 GPH. It is assumed that the missing fuel syphoned out of the Left-Wing gas cap due to the torn seal.

However, it should be pointed out that on each day of work in the SDY / ISN area a passenger rode in the left rear seat. On September 9th and 10th the passenger was one of the owners of the aircraft (N1835R.) who was operating a camera system. On September 11th and 12th the passenger was an observer positioned to look for anomalies during the pipeline patrol and take photos if needed. On the 9th, 10th and 11th the flights originated at SDY where the tanks were filled. On the 12th the flight with the observer started at ISN and had near full fuel (flight originated at SDY). During these flights I do not remember either passenger making comments about leaking fuel from the Left-Wing.