# Aviation Investigation Final Report

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| **Location:** | Haslet, Texas | **Accident Number:** | FTW01LA068 |
| **Date & Time:** | February 17, 2001, 12:35 Local | **Registration:** | N8355L |
| **Aircraft:** | Piper PA32-R-301T | **Aircraft Damage:** | Substantial |
| **Defining Event:** | | **Injuries:** | 1 Serious, 3 Minor |
| **Flight Conducted Under:** | Part 91: General aviation - Personal | | |

## Analysis

The airplane was approximately 40 minutes into the flight and 4 miles south of the destination airport in a normal descent when the propeller increased to maximum RPM. Shortly thereafter, the oil pressure light illuminated, and the pilot noticed the oil pressure gauge was indicating zero. Subsequently, the engine lost power, and the pilot elected to land in a field approximately 2 miles south of the runway threshold. The airplane touched down on soft ground, separating its landing gear. A post-accident examination of the engine revealed that there was no oil remaining in the engine, the oil filter internal element was collapsed inward, the oil filter converter plate gasket was found separated from the plate and broken in half, and the oil filter bypass valve was found installed improperly. The collapsed oil filter element and blown converter plate gasket are indicative of a cold weather and/or a high RPM start. With cold oil, the oil pressure became excessive due to the faulty bypass valve resulting in collapse of the filter and failure of the oil filter converter plate gasket.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the improper installation of the oil filter bypass valve by an unknown person, which resulted in the loss of engine oil and subsequent loss of total power during a normal descent. A contributing factor to the accident was the lack of suitable terrain for the forced landing.

## Findings

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

Findings
1. (C) LUBRICATING SYSTEM,OIL REGULATOR - BLOCKED(TOTAL)
2. (C) MAINTENANCE,INSTALLATION - IMPROPER - UNKNOWN
3. (C) LUBRICATING SYSTEM - PRESSURE EXCESSIVE
4. LUBRICATING SYSTEM,OIL FILTER/SCREEN - COLLAPSED
5. (C) LUBRICATING SYSTEM,OIL GASKET - LEAK
6. FLUID,OIL - LOSS,TOTAL
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Occurrence #2: FORCED LANDING
Phase of Operation: DESCENT - EMERGENCY
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Occurrence #3: COMPLETE GEAR COLLAPSED
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings
7. (F) TERRAIN CONDITION - NONE SUITABLE
8. TERRAIN CONDITION - SOFT

## Factual Information

On February 17, 2001, at 1235 central standard time, a Piper PA32-R-301T single-engine airplane, N8355L, was substantially damaged during a forced landing following a loss of engine power near Haslet, Texas. The airplane was registered to a private individual and operated by Hest Aviation of Temple, Texas. The commercial flight instructor and pilot-rated passenger were seriously injured, and one passenger sustained minor injuries. Visual meteorological conditions prevailed, and a flight plan was not filed for the 14 Code of Federal Regulations Part 91 personal flight. The flight originated from Killeen, Texas, at 1145, and was destined for the Fort Worth Alliance Airport, Fort Worth, Texas.

According to the pilot's written statement, the airplane was approximately 40 minutes into the flight and 4 miles south of the destination airport, when the "propeller increased to maximum RPM. Shortly thereafter, the oil pressure light illuminated." The pilot added that he noticed the oil pressure gauge was indicating "zero." The pilot performed the emergency checklist and notified air traffic control of the emergency. Subsequently, the engine "seized," and the pilot elected to land in a field approximately 2 miles south of the runway 34L threshold. The airplane touched down on the soft ground, separating its landing gear. The airplane came to rest upright.

Examination of the airplane by the FAA inspector, who responded to the accident site, revealed that the fuselage was buckled and both wings were damaged. The engine was checked for oil and none was found. The wreckage was taken to Air Salvage of Dallas, Lancaster, Texas, for further examination.

On April 26, 2001, the NTSB investigator-in-charge and an engine manufacturer representative examined the Lycoming TIO-540-S1AD engine (serial number L-7631-61A). During the examination of the engine, it was noted that the engine oil dipstick did not indicate an oil quantity and the propeller could not be rotated. The oil filter and the oil filter converter plate were removed, and it was noted that the oil filter's interior element was collapsed inward, and the oil filter converter plate gasket was found separated from the plate and broken in half. The oil filter, oil filter converter plate, and the oil filter converter plate gasket were sent to the engine manufacturer's facility for further examination.

According to the engine manufacturer, the oil converter plate gasket part number could not be determined; however, their materials laboratory determined that the rubber gasket material was "non-conforming." It was also noted that the gasket "had not been glued to the surface of the oil filter converter plate." According to Textron Lycoming Service Instruction (SI) 1453, dated May 9, 1991, the oil filter converter plate gasket must be bonded to the converter plate using 3M Scratch Grip Industrial Adhesive No. 847. The manufacturer reported that it was possible that the collapsed oil filter element could have occurred "due to a sticking oil filter

bypass valve."

On July 11, 2001, an NTSB investigator and an engine manufacturer representative examined the engine's oil filter bypass valve. The valve was removed and examined. It was noted that the valve was installed incorrectly. According to Textron Lycoming SI 1442, the oil filter bypass valve is composed of 5 pieces; a spacer (part number 55K21022), a spring (part number 55C21021), a seat (part number 76539), a sleeve (part number LW-10320), and a ring (part number MS16625-1100), installed in that order. During the examination, the seat was found located in front of the spacer, which according to Lycoming, would have prevented the proper operation of the oil filter bypass valve. According to Textron Lycoming, if the oil filter bypass valve fails to operate, the oil filter element could collapse during a cold weather and/or high RPM start with cold oil.

According to the aircraft maintenance records, the engine was field overhauled and re-installed on the accident airplane on June 25, 1992, at a tachometer time of 1,317.2 hours. On February 3, 1997, the oil filter converter plate gasket was replaced at a tachometer time of 2,017.0 hours (699.8 hours since the 1992 overhaul). At the time of the accident, the engine had accumulated approximately 981 hours since its last overhaul.

## Pilot Information

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| **Certificate:** | Commercial; Flight instructor | **Age:** | 32,Male |
| **Airplane Rating(s):** | Single-engine land; Multi-engine land | **Seat Occupied:** | Right |
| **Other Aircraft Rating(s):** | Helicopter | **Restraint Used:** | |
| **Instrument Rating(s):** | Airplane; Helicopter | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | Airplane multi-engine; Airplane single-engine | **Toxicology Performed:** | No |
| **Medical Certification:** | Class 2 Valid Medical--no waivers/lim. | **Last FAA Medical Exam:** | February 14, 2001 |
| **Occupational Pilot:** | Yes | **Last Flight Review or Equivalent:** | September 30, 2000 |
| **Flight Time:** | 2100 hours (Total, all aircraft), 100 hours (Total, this make and model), 1400 hours (Pilot In Command, all aircraft), 34 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft) | | |

## Co-pilot Information

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| **Certificate:** | Commercial; Military; Private | **Age:** | 31,Male |
| **Airplane Rating(s):** | Single-engine land | **Seat Occupied:** | Left |
| **Other Aircraft Rating(s):** | Helicopter | **Restraint Used:** | |
| **Instrument Rating(s):** | Helicopter | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | None | **Toxicology Performed:** | No |
| **Medical Certification:** | Class 2 Valid Medical--no waivers/lim. | **Last FAA Medical Exam:** | December 20, 2000 |
| **Occupational Pilot:** | UNK | **Last Flight Review or Equivalent:** | June 30, 2000 |
| **Flight Time:** | 1101 hours (Total, all aircraft) | | |

## Aircraft and Owner/Operator Information

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| **Aircraft Make:** | Piper | **Registration:** | N8355L |
| **Model/Series:** | PA32-R-301T | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | | **Amateur Built:** | |
| **Airworthiness Certificate:** | Normal | **Serial Number:** | 32R-8129051 |
| **Landing Gear Type:** | Retractable - Tricycle | **Seats:** | 6 |
| **Date/Type of Last Inspection:** | May 31, 2000 Annual | **Certified Max Gross Wt.:** | 3600 lbs |
| **Time Since Last Inspection:** | 58.6 Hrs | **Engines:** | 1 Reciprocating |
| **Airframe Total Time:** | 2239.4 Hrs as of last inspection | **Engine Manufacturer:** | Lycoming |
| **ELT:** | Installed, activated, did not aid in locating accident | **Engine Model/Series:** | TIO-540-S1AD |
| **Registered Owner:** | Larry Herrera | **Rated Power:** | 300 Horsepower |
| **Operator:** | Hest Aviation | **Operating Certificate(s) Held:** | None |

## Meteorological Information and Flight Plan

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| **Conditions at Accident Site:** | Visual (VMC) | **Condition of Light:** | Day |
| **Observation Facility, Elevation:** | | **Distance from Accident Site:** | |
| **Observation Time:** | | **Direction from Accident Site:** | |
| **Lowest Cloud Condition:** | Clear | **Visibility** | 6 miles |
| **Lowest Ceiling:** | None | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | 17 knots / 23 knots | **Turbulence Type Forecast/Actual:** | / |
| **Wind Direction:** | 360° | **Turbulence Severity Forecast/Actual:** | / |
| **Altimeter Setting:** | | **Temperature/Dew Point:** | 7°C |
| **Precipitation and Obscuration:** | No Obscuration; No Precipitation | | |
| **Departure Point:** | Killeen, TX (ILE ) | **Type of Flight Plan Filed:** | None |
| **Destination:** | Haslet, TX (AFW ) | **Type of Clearance:** | VFR |
| **Departure Time:** | 11:45 Local | **Type of Airspace:** | Class D |

## Airport Information

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| **Airport:** | FORT WORTH ALLIANCE AFW | **Runway Surface Type:** | |
| **Airport Elevation:** | 700 ft msl | **Runway Surface Condition:** | Unknown |
| **Runway Used:** | 34L | **IFR Approach:** | None |
| **Runway Length/Width:** | | **VFR Approach/Landing:** | Forced landing |

## Wreckage and Impact Information

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| **Crew Injuries:** | 1 Serious, 1 Minor | **Aircraft Damage:** | Substantial |
| **Passenger Injuries:** | 2 Minor | **Aircraft Fire:** | None |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | None |
| **Total Injuries:** | 1 Serious, 3 Minor | **Latitude, Longitude:** | 32.94984,-97.330986(est) |

## Administrative Information

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| **Investigator In Charge (IIC):** | Wigington, Douglas |
| **Additional Participating Persons:** | Louis E Vargo; FAA FSDO; Fort Worth, TX<br>John Butler; Textron Lycoming; Williamsport, PA |
| **Original Publish Date:** | February 5, 2002 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class |
| **Note:** | The NTSB traveled to the scene of this accident. |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=51757 |