



# Aviation Investigation Final Report

|                                |                            |                         |             |
|--------------------------------|----------------------------|-------------------------|-------------|
| <b>Location:</b>               | SOUR LAKE, Texas           | <b>Accident Number:</b> | FTW99TA194  |
| <b>Date &amp; Time:</b>        | July 17, 1999, 16:30 Local | <b>Registration:</b>    | N4002G      |
| <b>Aircraft:</b>               | Bell 47G-3B-1              | <b>Aircraft Damage:</b> | Substantial |
| <b>Defining Event:</b>         |                            | <b>Injuries:</b>        | 1 None      |
| <b>Flight Conducted Under:</b> | Part 137: Agricultural     |                         |             |

## Analysis

The helicopter lost engine power during takeoff due to contaminated fuel. The commercial helicopter pilot stated that the night before the accident flight, the fueling truck, which contained three tanks (one each for water, chemicals, and fuel), was checked. The pilot stated that the fuel appeared 'normal' that night. The following day, prior to the accident flight, the helicopter was 'refueled without sumping the tanks.' The pilot added that during takeoff, the engine lost power about 50 feet above the ground, at 30 miles per hour. He executed an autorotation to the ground where the main rotor blades impacted the tail boom and the tail rotor blades contacted the ground. The pilot stated that he found 20 gallons of water in the helicopter's fuel tank after the accident. He added that he discovered the fuel truck had a crack in between the water and fuel tanks. Approximately 80 gallons of water had leaked into the truck's fuel tank. The fuel truck was 'supposed to have an aqua stop filter installed that will not pump if water is present but the wrong filter was installed.'

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to adequately preflight the helicopter's fuel system resulting in the total loss of engine power as a result of water contamination. Factors were the incorrect filter installed on the fueling truck and the pilot's improper touchdown technique.

## Findings

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Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL  
Phase of Operation: TAKEOFF - INITIAL CLIMB

### Findings

1. (F) AIRPORT FACILITIES, REFUELING TRUCK/EQUIPMENT - OTHER
  2. (C) AIRCRAFT PREFLIGHT - INADEQUATE - PILOT IN COMMAND
  3. (C) FUEL SYSTEM, TANK - CONTAMINATION, WATER
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Occurrence #2: FORCED LANDING  
Phase of Operation: DESCENT - EMERGENCY

### Findings

4. AUTOROTATION - INITIATED - PILOT IN COMMAND
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Occurrence #3: HARD LANDING  
Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

### Findings

5. (F) TOUCHDOWN - IMPROPER - PILOT IN COMMAND
6. MISC ROTORCRAFT, TAIL BOOM - SEPARATION

## Factual Information

On July 17, 1999, at 1630 central daylight time, a Bell 47G-3B-1 agricultural helicopter, N4002G, was substantially damaged during a forced landing following a loss of power during takeoff climb near Sour Lake, Texas. The commercial helicopter pilot, sole occupant, was not injured. The helicopter was owned and operated by Precision Air Services, Inc., of Selma, Alabama. Visual meteorological conditions prevailed and a flight plan was not filed for the 14 Code of Federal Regulations Part 137 aerial application flight. The helicopter was departing for a local flight at the time of the accident.

During a telephone interview conducted by the NTSB investigator-in-charge, the pilot reported that the night before the accident flight, he checked the fueling truck, which contained three tanks: one each for water, chemicals, and fuel. The pilot stated that the fuel appeared "normal" that night. The following day, prior to the accident flight, the helicopter was "refueled without sumping the tanks." The pilot stated that during takeoff, the engine lost power about 50 feet above the ground, at 30 miles per hour. He executed an autorotation to the ground where the main rotor blades impacted the tail boom and the tail rotor blades contacted the ground. The pilot reported that the main rotor blades were damaged, the tail rotor blades were "destroyed", and the tail boom was severed.

The pilot added that he found about "20 gallons of water in the helicopter's fuel tank" after the accident. The pilot examined the truck's tanks and found a crack between the water and fuel tanks. The pilot estimated that "80 gallons of water had leaked into the truck's fuel tank." In the enclosed Pilot/Operator Aircraft Accident Report (NTSB Form 6120.1/2), the pilot added that the fueling truck was supposed to have an "aqua stop filter installed that will not pump if water is present but the wrong filter was installed."

## Pilot Information

|                                  |   |  |                   |
|----------------------------------|---|--|-------------------|
| <b>Certificate:</b>              | Commercial; Flight instructor   | <b>Age:</b>                              | 52, Male          |
| <b>Airplane Rating(s):</b>       | Single-engine land; Single-engine sea; Multi-engine land  | <b>Seat Occupied:</b>                    | Left              |
| <b>Other Aircraft Rating(s):</b> | Helicopter  | <b>Restraint Used:</b>                   |                   |
| <b>Instrument Rating(s):</b>     | Airplane  | <b>Second Pilot Present:</b>             | No                |
| <b>Instructor Rating(s):</b>     | Airplane single-engine; Helicopter  | <b>Toxicology Performed:</b>             | No                |
| <b>Medical Certification:</b>    | Class 3 Valid Medical-w/ waivers/lim  | <b>Last FAA Medical Exam:</b>            | December 14, 1998 |
| <b>Occupational Pilot:</b>       | Yes   | <b>Last Flight Review or Equivalent:</b> |                   |
| <b>Flight Time:</b>              | 11549 hours (Total, all aircraft), 500 hours (Total, this make and model), 11349 hours (Pilot In Command, all aircraft), 170 hours (Last 90 days, all aircraft), 85 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft) |  |                   |

## Aircraft and Owner/Operator Information

|                                      |                              |                                       |                |
|--------------------------------------|------------------------------|---------------------------------------|----------------|
| <b>Aircraft Make:</b>                | Bell                         | <b>Registration:</b>                  | N4002G         |
| <b>Model/Series:</b>                 | 47G-3B-1 47G-3B-1            | <b>Aircraft Category:</b>             | Helicopter     |
| <b>Year of Manufacture:</b>          |                              | <b>Amateur Built:</b>                 |                |
| <b>Airworthiness Certificate:</b>    | Restricted (Special)         | <b>Serial Number:</b>                 | 6529           |
| <b>Landing Gear Type:</b>            | Skid                         | <b>Seats:</b>                         | 1              |
| <b>Date/Type of Last Inspection:</b> | March 20, 1999 Annual        | <b>Certified Max Gross Wt.:</b>       | 3200 lbs       |
| <b>Time Since Last Inspection:</b>   | 155 Hrs                      | <b>Engines:</b>                       | 1 Turbo shaft  |
| <b>Airframe Total Time:</b>          | 10013 Hrs                    | <b>Engine Manufacturer:</b>           | Allison        |
| <b>ELT:</b>                          | Not installed                | <b>Engine Model/Series:</b>           | T63-A700       |
| <b>Registered Owner:</b>             | PRECISION AIR SERVICES, INC. | <b>Rated Power:</b>                   | 317 Horsepower |
| <b>Operator:</b>                     |                              | <b>Operating Certificate(s) Held:</b> |                |
| <b>Operator Does Business As:</b>    | PRECISION AIR SERVICES, INC. | <b>Operator Designator Code:</b>      | ZIOG           |

## Meteorological Information and Flight Plan

|   |                                  |   |                   |
|---|----------------------------------|---|-------------------|
| <b>Conditions at Accident Site:</b>     | Visual (VMC)                     | <b>Condition of Light:</b>                  | Day               |
| <b>Observation Facility, Elevation:</b> | BPT ,16 ft msl                   | <b>Distance from Accident Site:</b>         | 22 Nautical Miles |
| <b>Observation Time:</b>                | 16:53 Local                      | <b>Direction from Accident Site:</b>        | 122°              |
| <b>Lowest Cloud Condition:</b>          | Scattered / 3000 ft AGL          | <b>Visibility</b>                           | 10 miles          |
| <b>Lowest Ceiling:</b>                  | None                             | <b>Visibility (RVR):</b>                    |                   |
| <b>Wind Speed/Gusts:</b>                | 5 knots /                        | <b>Turbulence Type Forecast/Actual:</b>     | /                 |
| <b>Wind Direction:</b>                  | 140°                             | <b>Turbulence Severity Forecast/Actual:</b> | /                 |
| <b>Altimeter Setting:</b>               |                                  | <b>Temperature/Dew Point:</b>               | 29°C / 24°C       |
| <b>Precipitation and Obscuration:</b>   | No Obscuration; No Precipitation |   |                   |
| <b>Departure Point:</b>                 | (NONE)                           | <b>Type of Flight Plan Filed:</b>           | None              |
| <b>Destination:</b>                     |                                  | <b>Type of Clearance:</b>                   | None              |
| <b>Departure Time:</b>                  | 16:29 Local                      | <b>Type of Airspace:</b>                    | Class G           |

## Airport Information

|                             |   |                                  |                |
|-----------------------------|---|----------------------------------|----------------|
| <b>Airport:</b>             |   | <b>Runway Surface Type:</b>      |                |
| <b>Airport Elevation:</b>   |   | <b>Runway Surface Condition:</b> |                |
| <b>Runway Used:</b>         | 0 | <b>IFR Approach:</b>             |                |
| <b>Runway Length/Width:</b> |   | <b>VFR Approach/Landing:</b>     | Forced landing |

## Wreckage and Impact Information

|                            |        |                             |                           |
|----------------------------|--------|-----------------------------|---------------------------|
| <b>Crew Injuries:</b>      | 1 None | <b>Aircraft Damage:</b>     | Substantial               |
| <b>Passenger Injuries:</b> |        | <b>Aircraft Fire:</b>       | None                      |
| <b>Ground Injuries:</b>    | N/A    | <b>Aircraft Explosion:</b>  | None                      |
| <b>Total Injuries:</b>     | 1 None | <b>Latitude, Longitude:</b> | 30.130115,-94.400825(est) |

## Administrative Information

|  |   |
|--|---|
| <b>Investigator In Charge (IIC):</b>     | Lupino, Nicole  |
| <b>Additional Participating Persons:</b> | JACOB D JOHNSON; HOUSTON , TX   |
| <b>Original Publish Date:</b>            | November 30, 2000   |
| <b>Last Revision Date:</b>               |   |
| <b>Investigation Class:</b>              | <a href="#">Class</a>   |
| <b>Note:</b>                             |   |
| <b>Investigation Docket:</b>             | <a href="https://data.nts.gov/Docket?ProjectID=46855">https://data.nts.gov/Docket?ProjectID=46855</a> |

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).