# Aviation Investigation Final Report

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| **Location:** | Finley, Tennessee | **Accident Number:** | MIA01LA166 |
| **Date & Time:** | June 18, 2001, 20:25 Local | **Registration:** | N23672 |
| **Aircraft:** | Air Tractor AT-301 | **Aircraft Damage:** | Destroyed |
| **Defining Event:** | | **Injuries:** | 1 Fatal |
| **Flight Conducted Under:** | Part 137: Agricultural | | |

## Analysis

Witnesses stated that the agricultural sprayer aircraft approached the landing strip from the north, turned westward, and then southward , apparently entering the landing pattern. At about the midfield position at about 350 feet agl, on a downwind leg, the aircraft pitched up an additional 200 to 300 feet with no increase of power, although the engine sounded steady and normal. At the top of the climb, the aircraft went into a bank, the nose dropped through vertically toward the ground, and the aircraft impacted the terrain in a steep diving attitude. FAA inspectors reported the engine, it's controls, and all components appeared operational, precrash. Flight control continuity could only be confirmed from each control surface to a point 3 feet behind the cockpit because of impact damage. No part of the airframe was missing at the crash site. Eradication Foundation reports revealed the aircraft and pilot flew 6 trips for a total of 7.6 hours, applying 183 gallons of malathion on 2131 acres prior to the accident. Autopsy and toxicological findings revealed nothing causal.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:
The failure of the pilot to maintain aircraft altitude control while on downwind leg of the landing pattern, resulting in an uncontrolled descent and in-flight collision with the terrain.

### Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: APPROACH - VFR PATTERN - DOWNWIND

Findings
1. (C) ALTITUDE/CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND
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Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
2. TERRAIN CONDITION - OPEN FIELD

## Factual Information

On June 18, 2001, about 2025 central daylight time, an Air Tractor AT-301, N23672, registered to H and H Flying Service, operating as a Title 14 CFR Part 137 aerial application flight, crashed while in the landing pattern in the vicinity of Finley, Tennessee. Visual meteorological conditions prevailed and no flight plan was filed. The aircraft was destroyed and the commercially rated pilot, the sole occupant received fatal injuries. The flight originated at 1835.

According to the field unit supervisor at H and H Flying Service and an eyewitness to the accident, the aircraft first appeared approaching the landing strip from a northwesterly direction, and that was puzzling since the last field sprayed was to the southeast of the landing strip. The aircraft next proceeded in a southerly direction at about 350 feet agl, turned an upwind crossleg to the west, turned south into a downwind leg, apparently setting up for a landing in a northerly direction, when, "... he observed the aircraft go almost straight up, roll right, and come down nose first into the ground." Three additional eyewitness statements generally corroborate the first statement, and are included in the FAA inspector's report. The four statements do differ in what direction the aircraft was observed banking as the pitch changed from nose up to nose down. Two statements said it rolled right, and two statements said it rolled left. All witnesses stated that the engine sounded steady and smooth throughout the maneuvering, and that once the nose was pointed upward, there was no addition of power noted. The field unit supervisor stated that after the first flight of the day, the pilot reported an elevator trim "creeping" problem, and that the pilot, himself, tightened a bolt/nut connection on the trim actuator rod that corrected the problem. The inspectors examined the pitch trim components, postcrash, and found no malfunctions at the flight surface. The aircraft was equipped with long range fuel tanks, and the FAA inspectors determined that the field unit supervisor topped off the fuel tanks to full capacity prior to the last flight, and 1.9 hours were flown since the fueling. All persons who had contact with the pilot on the day of the accident attested to his normal physical and mental demeanor.

According to FAA inspectors, terrain impact was in a dirt field west of and adjacent to the grass runway, and the wreckage revealed precrash aircraft attitude was at least 45 degrees from the horizon into the terrain. The radial engine was totally buried in the dirt, the firewall and remnants of the chemical hopper were crushed against the instrument panel, and the airframe up to a point behind the cockpit was heavily crushed. Photographs supplied by the FAA revealed that accordion type crushing of the fuselage along the airframe's longitudinal axis occurred up to a point about 10 inches forward of the empennage. The vertical stabilizer, rudder, and left horizontal stabilizer/elevator retained their general shape and relative location, although skin buckling was evident. The wings remained attached, but revealed heavy downward and forward crushing. Wing skin joints and seams had sheared their respective fasteners, revealing the wing inner structure. There was evidence of fuel spillage in the dirt. All

flight controls were still attached and flight control continuity was confirmed in all three axes from the flight surfaces to a point 3 feet behind the seat, where aircraft damage precluded further examination. All airframe and engine components were located in the immediate area. A readout of the GPS data card indicated that the GPS unit had been switched off while the aircraft was on downwind leg for landing.

Flight records supplied by the FAA revealed that the Southeastern Boll Weevil Eradication Foundation, Inc. was the agency contracting the aerial application flight. Additional records revealed the foundation reported that about 12 gallons of malathion were still aboard at the time of the crash and the incident was duly reported to the National Response Center as NRC incident report #569997. An emergency response team checked the site and declared it secured. Southeastern Boll Weevil Eradication Foundation, Inc., records reveal that the pilot flew six flights for a total flight time of 7.6 hours on the day of the accident. The flights included the application of about 183 gallons of malathion to about 2,131 acres. The FAA inspectors stated they thought the accident could have involved "pilot incapacitation".

According to the owner and operator of H and H Flying Service, also an agricultural pilot, 7.6 hours of flight time, although a good day's work, is not overly exhausting. Although the pilot's log book contained lapses in entries, records showed the pilot had total flight time of about 2,700 hours of which 1,600 hours were agriculture/spraying flight time, and 500 hours in the Air Tractor type aircraft. The owner/operator stated, taken from eyewitness accounts, that the aircraft was at about 250 feet agl, about midfield heading south, when it entered a steady, but not abrupt, climb of 200 to 300 feet. There was no addition of power although the engine sounded steady. At the top of the climb, the aircraft went into a bank which continued until the aircraft departed from normal flight, dropped the nose into a steep dive, and impacted the terrain. He added that the nose high maneuver on downwind leg preceding the accident could have been an effort by the pilot to bleed off excessive airspeed in preparation for his left turn to final approach while configuring the aircraft for landing in a northerly direction. The Boll Weevil Eradication Foundation, as contractor paying by the hour, has strict rules that the aircraft's GPS will be kept on until landing so that contract aircraft can be monitored for pay/use purposes. The GPS of the accident aircraft was found turned off, and that could have been an indication that the pilot may have been "riding around" prior to landing. This could also account for the flight's northerly approach to the landing strip. He added that had the pitch trim tab resumed its "creeping" problem as had occurred after the first flight of the day, the elevators were large enough for the pilot to overpower the flight control forces induced.

The METAR for the Dyersburg, Tennessee, area for the time of the accident, was reporting ceilings as 100 feet overcast and 10 statue miles visibility. The FAA inspector stated the FAA Flight Service Station had propagated a NOTAM on 6/18/01 advising that the AWOS was unreliable due to dust and that actual conditions at the landing strip were clear, with an ambient temperature of 90 degrees, F. The U. S. Naval Observatory time for official sunset for Dyersburg, Tennessee, for June 18, 2001, was 2017, central daylight time. Both records are an attachment to this report.

Postmortem examination of the pilot was conducted by Dr. Theresa Campbell, M.D., and Dr. Cynthia Gardner, M.D., Pathologists, at the Regional Forensic Center, University of Tennessee, Memphis. Cause of death is reported as multiple injuries sustained in a airplane accident. Toxicological tests of specimens from the pilot, conducted by the Federal Aviation Administration Research Laboratory, Oklahoma City, Oklahoma, and the University of Tennessee were negative for alcohol or drugs.

## Pilot Information

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| **Certificate:** | Commercial | **Age:** | 28,Male |
| **Airplane Rating(s):** | Single-engine land | **Seat Occupied:** | Single |
| **Other Aircraft Rating(s):** | None | **Restraint Used:** | |
| **Instrument Rating(s):** | None | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | None | **Toxicology Performed:** | Yes |
| **Medical Certification:** | Class 2 Valid Medical--no waivers/lim. | **Last FAA Medical Exam:** | April 6, 2001 |
| **Occupational Pilot:** | Yes | **Last Flight Review or Equivalent:** | June 24, 2000 |
| **Flight Time:** | 2700 hours (Total, all aircraft), 500 hours (Total, this make and model) | | |

## Aircraft and Owner/Operator Information

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|---|---|---|---|
| **Aircraft Make:** | Air Tractor | **Registration:** | N23672 |
| **Model/Series:** | AT-301 | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | | **Amateur Built:** | |
| **Airworthiness Certificate:** | Restricted (Special) | **Serial Number:** | 301-0413 |
| **Landing Gear Type:** | Tailwheel | **Seats:** | 1 |
| **Date/Type of Last Inspection:** | November 20, 2000 Annual | **Certified Max Gross Wt.:** | 5000 lbs |
| **Time Since Last Inspection:** | 8 Hrs | **Engines:** | 1 Reciprocating |
| **Airframe Total Time:** | 4639 Hrs at time of accident | **Engine Manufacturer:** | P&W |
| **ELT:** | Not installed | **Engine Model/Series:** | R1340 |
| **Registered Owner:** | H and H Flying Co. | **Rated Power:** | 600 Horsepower |
| **Operator:** | | **Operating Certificate(s) Held:** | |

## Meteorological Information and Flight Plan

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| **Conditions at Accident Site:** | Instrument (IMC) | **Condition of Light:** | Dusk |
| **Observation Facility, Elevation:** | DYR,338 ft msl | **Distance from Accident Site:** | 10 Nautical Miles |
| **Observation Time:** | 20:35 Local | **Direction from Accident Site:** | 75° |
| **Lowest Cloud Condition:** | Clear | **Visibility** | 10 miles |
| **Lowest Ceiling:** | Overcast / 100 ft AGL | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | 3 knots / | **Turbulence Type Forecast/Actual:** | / |
| **Wind Direction:** | 140° | **Turbulence Severity Forecast/Actual:** | / |
| **Altimeter Setting:** | 30.1 inches Hg | **Temperature/Dew Point:** | 29°C / 17°C |
| **Precipitation and Obscuration:** | | | |
| **Departure Point:** | Finley, TN | **Type of Flight Plan Filed:** | None |
| **Destination:** | | **Type of Clearance:** | VFR |
| **Departure Time:** | | **Type of Airspace:** | Class G |

## Airport Information

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| **Airport:** | H&H Flying Services Airstrip | **Runway Surface Type:** | Grass/turf |
| **Airport Elevation:** | | **Runway Surface Condition:** | Dry;Soft |
| **Runway Used:** | 36 | **IFR Approach:** | None |
| **Runway Length/Width:** | 4000 ft | **VFR Approach/Landing:** | Traffic pattern |

## Wreckage and Impact Information

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| **Crew Injuries:** | 1 Fatal | **Aircraft Damage:** | Destroyed |
| **Passenger Injuries:** | | **Aircraft Fire:** | None |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | None |
| **Total Injuries:** | 1 Fatal | **Latitude, Longitude:** | 35.979705,-89.579696(est) |

## Administrative Information

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| **Investigator In Charge (IIC):** | Stone, A. C. |
| **Additional Participating Persons:** | Charles Peters; FAA FSDO; Memphis, TN |
| **Original Publish Date:** | December 4, 2001 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class |
| **Note:** | The NTSB traveled to the scene of this accident. |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=52512 |