# Aviation Investigation Final Report

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| **Location:** | NAPLES, Florida | **Accident Number:** | MIA93LA088 |
| **Date & Time:** | March 21, 1993, 11:42 Local | **Registration:** | N218MC |
| **Aircraft:** | Christen Industries PITTS S1-T | **Aircraft Damage:** | Substantial |
| **Defining Event:** | | **Injuries:** | 1 Minor |
| **Flight Conducted Under:** | Part 91: General aviation - Personal | | |

## Analysis

THE PILOT, WHO DOES NOT HOLD AN AIRFRAME OR POWERPLANT MECHANIC'S LICENSE STATED HE INSTALLED A STRAIGHT AIR INTAKE TUBE ON HIS AIRCRAFT. THIS TUBE DID NOT HAVE ANY MEANS FOR ALTERNATE AIR OR FILTERING OF INCOMING AIR. HE FURTHER MODIFIED THE TUBE BY INSTALLING A SCREEN AND A PIECE OF AIR FILTERING MATERIAL IN THE TUBE. DURING THE FIRST TAKEOFF AFTER THE MODIFICATION THE AIRCRAFT CLIMBED TO 200 FEET, AT WHICH TIME THE MANIFOLD PRESSURE DROPPED AND THE ENGINE LOST POWER. HE WAS UNABLE TO MAINTAIN ALTITUDE AND THE AIRCRAFT TOUCHED DOWN HARD ON THE RUNWAY AND NOSED OVER INVERTED. POSTCRASH EXAMINATION AND TESTING OF THE INTAKE TUBE WAS PERFORMED BY AN FAA INSPECTOR. WHEN A VACUUM CLEANER WAS ATTACHED TO THE ENGINE SIDE OF THE INTAKE TUBE AND TURNED ON THE AIR FLOW THROUGH THE TUBE WAS NORMAL FOR SEVERAL MINUTES. AFTER THIS, MOISTURE BUILT UP ON THE AIR FILTERING MATERIAL AND THE FILTER COLLAPSED. THE VACUUM CLEANER THEN BEGAN TO STRAIN DUE TO LACK OF AIR FLOW.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: THE INSTALLATION OF AN IMPROPER DESIGNED INTAKE TUBE AND AIR FILTER BY THE NONMECHANIC RATED PILOT-IN-COMMAND, WHICH RESULTED IN MOISTURE BUILD UP AND COLLAPSE OF THE AIR FILTER, WHICH RESULTED IN BLOCKAGE OF AIR FLOW TO THE ENGINE AND LOSS OF ENGINE POWER. CONTRIBUTING TO THE ACCIDENT WAS THE FAILURE OF THE PILOT-IN-COMMAND TO MAINTAIN AIRSPEED AND FLARE PROPERLY DURING A FORCED LANDING.

## Findings

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

Findings
1. (C) INDUCTION AIR DUCTING - INADEQUATE
2. (C) MAINTENANCE,INSTALLATION - IMPROPER - UNQUALIFIED PERSON
3. (C) ACFT/EQUIP,INADEQUATE DESIGN - MANUFACTURER
4. (C) INDUCTION AIR CONTROL,AIR FILTER/SCREEN - INADEQUATE
5. (C) MAINTENANCE,INSTALLATION - IMPROPER - UNQUALIFIED PERSON
6. (F) INDUCTION AIR CONTROL,AIR FILTER/SCREEN - COLLAPSED
7. (F) INDUCTION AIR CONTROL,AIR FILTER/SCREEN - BLOCKED(PARTIAL)
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Occurrence #2: FORCED LANDING
Phase of Operation: DESCENT - EMERGENCY
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Occurrence #3: HARD LANDING
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings
8. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
9. (C) FLARE - IMPROPER - PILOT IN COMMAND
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Occurrence #4: NOSE OVER
Phase of Operation: LANDING - FLARE/TOUCHDOWN

# Factual Information

## Pilot Information

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| **Certificate:** | Airline transport; Flight instructor | **Age:** | 38,Male |
| **Airplane Rating(s):** | Single-engine land; Multi-engine land | **Seat Occupied:** | Left |
| **Other Aircraft Rating(s):** | None | **Restraint Used:** | |
| **Instrument Rating(s):** | Airplane | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | Airplane multi-engine; Airplane single-engine | **Toxicology Performed:** | No |
| **Medical Certification:** | Class 1 Valid Medical--no waivers/lim. | **Last FAA Medical Exam:** | March 27, 1992 |
| **Occupational Pilot:** | Yes | **Last Flight Review or Equivalent:** | |
| **Flight Time:** | 14000 hours (Total, all aircraft), 350 hours (Total, this make and model), 1 hours (Last 24 hours, all aircraft) | | |

## Aircraft and Owner/Operator Information

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|---|---|---|---|
| **Aircraft Make:** | Christen Industries | **Registration:** | N218MC |
| **Model/Series:** | PITTS S1-T PITTS S1-T | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | | **Amateur Built:** | |
| **Airworthiness Certificate:** | Experimental (Special) | **Serial Number:** | 1041 |
| **Landing Gear Type:** | Tailwheel | **Seats:** | 1 |
| **Date/Type of Last Inspection:** | June 20, 1992 Annual | **Certified Max Gross Wt.:** | 1100 lbs |
| **Time Since Last Inspection:** | 25 Hrs | **Engines:** | 1 Reciprocating |
| **Airframe Total Time:** | 470 Hrs | **Engine Manufacturer:** | LYCOMING |
| **ELT:** | Not installed | **Engine Model/Series:** | AEIO-360 |
| **Registered Owner:** | CUTSHAW, MICHAEL H. | **Rated Power:** | 200 Horsepower |
| **Operator:** | CUTSHAW, MICHAEL H. | **Operating Certificate(s) Held:** | None |
| **Operator Does Business As:** | | **Operator Designator Code:** | |

## Meteorological Information and Flight Plan

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| **Conditions at Accident Site:** | Visual (VMC) | **Condition of Light:** | Day |
| **Observation Facility, Elevation:** | APF ,9 ft msl | **Distance from Accident Site:** | 1 Nautical Miles |
| **Observation Time:** | 11:42 Local | **Direction from Accident Site:** | 220° |
| **Lowest Cloud Condition:** | Scattered / 3000 ft AGL | **Visibility** | 10 miles |
| **Lowest Ceiling:** | Broken / 4000 ft AGL | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | 3 knots / | **Turbulence Type Forecast/Actual:** | / |
| **Wind Direction:** | 100° | **Turbulence Severity Forecast/Actual:** | / |
| **Altimeter Setting:** | 30 inches Hg | **Temperature/Dew Point:** | 24°C / 19°C |
| **Precipitation and Obscuration:** | No Obscuration; No Precipitation | | |
| **Departure Point:** | (APF ) | **Type of Flight Plan Filed:** | None |
| **Destination:** | | **Type of Clearance:** | VFR |
| **Departure Time:** | 11:42 Local | **Type of Airspace:** | Class E |

## Airport Information

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| **Airport:** | NAPLES MUNICIPAL APF | **Runway Surface Type:** | Asphalt |
| **Airport Elevation:** | 9 ft msl | **Runway Surface Condition:** | Dry |
| **Runway Used:** | 4 | **IFR Approach:** | |
| **Runway Length/Width:** | 5000 ft / 150 ft | **VFR Approach/Landing:** | Forced landing |

## Wreckage and Impact Information

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| **Crew Injuries:** | 1 Minor | **Aircraft Damage:** | Substantial |
| **Passenger Injuries:** | | **Aircraft Fire:** | None |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | None |
| **Total Injuries:** | 1 Minor | **Latitude, Longitude:** | |

## Administrative Information

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| **Investigator In Charge (IIC):** | Kennedy, Jeffrey |
| **Additional Participating Persons:** | DAVE CARLTON; MIAMI , FL |
| **Original Publish Date:** | February 10, 1994 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class |
| **Note:** | |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=33243 |