



National Transportation Safety Board Aviation Accident Final Report

Location:	Pembroke Pines, FL	Accident Number:	MIA05FA020
Date & Time:	11/02/2004, 1216 EST	Registration:	N2706D
Aircraft:	Rawdon Bros. Aircraft T1	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General Aviation - Other Work Use		

Analysis

Witnesses stated that they saw the accident airplane initiate a normal takeoff from runway 09, and while at a low altitude during initial climb, they saw it make what appeared to be a left turn from going west, toward the north, and it suddenly descended nose down in a steep left turn and impacted the runway. The controller at the North Perry Airport control tower stated that after the airplane took off from runway 09R, and while it was climbing out at an altitude of about 100 feet he received a radio communications call from the pilot stating that he had an engine problem. The controller replied stating, "anything you want," and this was the last radio communication he had with the accident airplane. The controller stated that he observed the airplane in a left descending turn, and the airplane impacted the ground. A mechanic employed with the operator stated that the pilot had made an earlier flight, and when he landed, he exited the airplane, entered the hangar, and spoke with the maintenance manager about an engine problem he had experienced. The mechanic said that the accident airplane had a history of engine problems, and when the pilot returned there were two problems. One problem was smoke oil leaning on the windshield, and the second problem was the engine missing/sputtering and occasionally ceasing to operate in flight. He said he overheard the discussion between the pilot and the maintenance manager, and it pertained to the operation of the fuel system. During examination of the accident airplane debris was found in the carburetor bowl and in the carburetor float chamber. An electric fuel pump was found to contain a large quantity of debris in the fuel pump chamber.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Improper maintenance by company maintenance personnel, and the pilot-in-command's operating the airplane with known deficiencies, which resulted in the loss of engine power due to fuel system contamination, and a loss of control while maneuvering to return to the airport.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

1. FUEL SYSTEM - CONTAMINATION
2. (C) MAINTENANCE - IMPROPER - COMPANY MAINTENANCE PERSONNEL
3. (C) OPERATION WITH KNOWN DEFICIENCIES IN EQUIPMENT - ATTEMPTED - PILOT IN COMMAND

Occurrence #2: FORCED LANDING
Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

Occurrence #3: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

Findings

4. AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
5. STALL - INADVERTENT - PILOT IN COMMAND

Occurrence #4: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings

6. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF THE FLIGHT

On November 2, 2004, about 1216 eastern standard time, a Rawdon T-1, N2706D, registered to and operated by Van Wagner Aerial Media LLC, as a title 14 CFR Part 91 aerial advertising flight, crashed while departing from North Perry Airport, Pembroke Pines, Florida. Visual meteorological conditions prevailed, and no flight plan was filed. The commercial-rated pilot received fatal injuries, and the airplane incurred substantial damage. The flight was originating at the time of the accident.

Witnesses stated that they saw the accident airplane initiate a normal takeoff from runway 09R, and while at a low altitude during initial climb, they saw it make what appeared to be a left turn from going east, toward the north. The witnesses further stated that as the airplane turned, it suddenly descended nose down, in a steep left turn toward runway 09L/27R. It impacted the runway in a left, turning, steep nose-down attitude.

The controller at the North Perry Airport control tower stated that after the airplane took off from runway 09R, and while it was climbing out at an altitude of about 100 feet he received a radio communications call from the pilot stating that he had an engine problem. The controller replied stating, "anything you want," and this was his last radio communication with the accident airplane. The controller stated that he observed the airplane in a left descending turn, and it impacted the ground. It came to rest nose down, about 100 yards from the approach end of runway 27R.

The general manager of Van Wagner Aerial Media LLC stated that the accident airplane had recently completed a flight prior to the accident flight, and during the accident flight, the pilot was departing on his second aerial advertising flight of the day, with the intention of displaying the message "VOTE." He further stated that the airplane was carrying about 20 gallons of fuel in the left tank, 20 gallons in the right tank, and 15 gallons of fuel in the auxiliary tank.

A mechanic employed with the operator stated that the pilot had made an earlier flight, and when he landed, he exited the airplane, entered the hangar, and spoke with the maintenance manager about an engine problem he had experienced. The mechanic said that the accident airplane had a history of engine problems. He said that when the pilot had returned there were two problems. One problem was smoke oil leaning on the windshield, and the second problem was the engine missing/sputtering and occasionally ceasing to operate in flight. The mechanic said that while he was working on a smoke oil leakage problem he was within earshot and overheard the discussion between the pilot and the maintenance manager. He said the discussion pertained to the operation of the fuel system, and the maintenance manager told the pilot that based on how the fuel tanks are connected, neither the right main tank or the auxiliary tank can be allowed to run out of fuel, because air would be brought into the system, and the engine would cease operating. The mechanic further stated that after the discussion with the maintenance manager the pilot then added fuel and departed on the accident flight.

PERSONNEL INFORMATION

The pilot held an FAA commercial pilot certificate, with airplane single and multiengine land ratings. He also held an FAA second-class medical certificate, issued on June 29, 2004, with no stated waivers/limitations.

The pilot's logbook was not provided to the NTSB, but according to information obtained from the company, he had accumulated 9,650 total flight hours, of which 7,650 total flight hours had been logged in single engine airplanes. In the past 90 days he had flown the accident airplane about 20 hours. He had flown 10 hours in the last 30 days, and about 2 hours during the past 24 hours. He had accumulated a total of about 32 hours as pilot-in-command in the accident airplane.

AIRPLANE INFORMATION

N2706D is a Rawdon model T-1 airplane, serial number T1-26, and it was manufactured in 1957. The accident airplane had originally been a two-seat agricultural duster/sprayer airplane, and it had been altered to carry smoke oil, for use in sky writing/aerial advertising, and was certified in the restricted category.

At the time of the accident, the airplane had accumulated about 4,516 total flight hours on the airframe. The airplane was equipped with a Lycoming O-540-A1D5 reciprocating engine, which produces 250 horsepower, and a McCauley two-bladed propeller, model IA200/FA9044. The propeller was last overhauled on April 3, 2003.

Maintenance records showed the airplane was last inspected on February 11, 2004, and at that time it had received an annual inspection. At the time of the accident, it had accumulated approximately 51 flight hours since the last annual inspection. Its static system, altimeter, and transponder had last been tested on January 20, 2003.

METEOROLOGICAL INFORMATION

Visual meteorological conditions prevailed, and the North Perry Airport 1225, surface weather observation was, wind from 140 degrees at 13 knots, visibility 10 statute miles, sky condition, 3,600 feet scattered, 5,500 feet broken, temperature 29 degrees Celsius, dew point temperature 21 degrees Celsius, altimeter setting 30.10 inHg.

WRECKAGE AND IMPACT INFORMATION

The airplane wreckage was located on the North Perry Airport property, and had come to rest north of the centerline of the runway, about 524 feet from the beginning of runway 27R. Witnesses had stated that the airplane had initially impacted the ground in a left wing low, nose low attitude. During the impact sequence the airplane made a series of gouges in the grass, and pieces of airframe were found in the vicinity of each gouge. The gouges/debris field had continued from the initial impact point, across the runway, and was oriented along an azimuth of about 340 degrees magnetic. The debris path from the initial impact point to the main wreckage was about 107 feet long.

At the accident scene the airplane was observed outfitted with a tank for smoke oil and aft of this was an auxiliary fuel tank, both of which were mounted aft of the single pilot compartment. As the airplane was positioned vertically, the tail had partially separated due to impact forces, and had folded just aft of the auxiliary fuel tank. The aft fuselage then dangled down on the right side, partially held by the aircraft skin.

All components of the airplane necessary for flight were located in the vicinity of the wreckage. There was no evidence of fire having occurred at the scene, and the main wreckage of the airplane was positioned vertically, with both wings even with the surface of the asphalt runway, and both fixed main landing gear structures providing support to maintain it vertically. The airplane rested on its nose, with the top/canopy oriented to the south. The impact had

separated the engine from the airframe, and had crushed the pilot compartment. The engine lay slightly to the left of the longitudinal axis, and forward of the vertical main wreckage.

After the initial impact mark in the grass as viewed along the azimuth of the debris field, there was a single propeller slash in the grass, perpendicular to the debris path, and following the single slash mark, there was a large shallow crater into which the propeller had been deposited. The propeller had detached at the hub, and the fracture surface displayed signs consistent with overload. As the propeller lay in the crater, it was positioned upside down and oriented length-wise along the azimuth of the debris field, with one tip closer to the start of the debris field being imbedded in the dirt, and angled under the grass. One blade had a slight length-wise bend that was angled upward and in addition that same blade displayed s-type bending, and span-wise as well as chordwise scratching/burnishment on the forward flat portion of the propeller. The other blade was relatively straight, and only possessed slight s-type bending.

Control continuity was established for roll, pitch and yaw, and the control cables associated with the rudder and elevator had separated in the area where the aft fuselage, aft of the auxiliary fuel tank, had separated and all were consistent with overload, aft of the auxiliary tank. The flaps of both wings, as well as both ailerons had remained attached to their respective wing, and all had incurred some damage.

The cockpit had been crushed, and portions of the instrument panel and its instruments that had become detached/damaged, or separated, and lay in the general path of the debris field. Remnants of the throttle, mixture, and carburetor heat control linkages were identified and all were found to be detached and/or had jammed. Of the recovered instruments, the altimeter displayed about 100 feet. The tachometer displayed 2093.10 hours.

Fuel was found leaking from the airplane at the scene. The right and left main fuel tanks as well as the auxiliary tanks/fuel lines had been breached. The outboard half of the right wing had incurred leading edge crushing had remained relatively intact. The outer section of the left wing had detached, and the left wing displayed accordion type upward crushing from the outer section of the remaining portion of the left wing, inward for about a third of the remaining length of the wing. The detached outer portion of left wing lay about 30 feet away and slightly to the east, along the general path of the debris field.

The two-fixed main conventional landing gear had incurred damage but they, along with the fixed tail-wheel had remained affixed to the fuselage. The horizontal stabilizer and elevator had been undamaged, and the vertical stabilizer and rudder had incurred punctures to the skin.

Examination of the engine assembly revealed no evidence of any pre-crash anomalies. The examination showed that the engine rotated normally, and there was continuity of the crankshaft, camshaft, valve train, and accessory drives. Each cylinder produced normal compression. The lubrication system displayed no pre-impact anomalies. The oil filter adapter had incurred damage, and the oil was leaking, consistent with the impact.

Carbon-like deposits were noted in the oil filter and the oil suction screen. The left magneto had incurred impact damaged and had separated from the accessory drive and it had also split ejecting the impulse coupling which lay separate in the debris field. The right magneto had remained affixed to the engine and it incurred no damage, and when it was removed and field-tested a spark was observed on all terminals. The spark plugs were examined and were found to not be the recommended spark plugs for the engine, and they exhibited characteristics

consistent with those associated with normal wear.

There was fuel in the carburetor, and debris was found in the carburetor bowl. The filter was clean, and the carburetor float chamber also contained debris. The airplane was configured with an initial/common electric fuel pump as viewed from aft, moving forward. This initial/common fuel pump was followed by the gascolator, which was then followed by a firewall mounted electric fuel pump, which was followed by an engine driven fuel pump, all which were connected in series. The initial/common fuel pump receives fuel from the left main fuel tank, and from the right and the auxiliary fuel tanks that are both being connected together. Fuel is routed to a common fuel pump, and from the common fuel pump it is routed to the gascolator, then to the electric fuel pump mounted on the firewall, and finally to the engine-driven fuel pump.

During the examination of the fuel system, the first/common fuel pump was found to contain a large quantity of debris in the pump chamber. The debris included material with a thick "glob-like" consistency, unidentified sediment, and large flakes of rust, consistent with the rust that was present on the interior wall of the pump body. All the debris/rust/sediment were suspended in a rust colored liquid mixture, and the mixture possessed a smell consistent with that of fuel.

The accident airplane's fuel system was configured with the left valve controlling the left main fuel tank, and the right valve controlling both the right main fuel tank and the auxiliary fuel tank. Both valves were found in the "on" position.

Examination of each successive item in the series connected fuel flow circuit that followed the initial/common pump, to include the gascolator, firewall mounted electric pump, and engine-driven pump, all had correspondingly less contamination.

MEDICAL AND PATHOLOGICAL INFORMATION

Postmortem examination of the pilot was performed by the Medical Examiner's Office, District 17, Fort Lauderdale, Florida. The cause of death was attributed to multiple traumatic injuries. No findings which could be considered causal were reported.

The FAA Toxicological Laboratory, Oklahoma City, Oklahoma, conducted tests on specimens obtained from the pilot. Tests were conducted for the presence of carbon monoxide, cyanide, volatiles, and drugs. None were found to be present.

TESTS AND RESEARCH

Title 14 CFR Part 43, Maintenance, Preventive Maintenance, Rebuilding, and Alteration. Part 43 sets forth rules governing the maintenance, preventive maintenance, rebuilding, and alteration of aircraft having a U.S. airworthiness certificate, certain foreign-registered aircraft, and airframes, aircraft engines, propellers, appliances, and component parts of these aircraft.

In addition, Advisory Circular 43.13-1B Acceptable Methods, Techniques, and Practices - Aircraft Inspection and Repair, Chapter 8 Section 2, Fuel Systems, Fuel Filters, Strainers, and Drains, Paragraph 36 specifies how aircraft fuel systems should be maintained.

ADDITIONAL INFORMATION

On November 4, 2004, the NTSB released the wreckage of N2706D to Mr. Steve McCullers, General Manager, Van Wagner Media Inc., LLC.

Pilot Information

Certificate:	Commercial	Age:	54, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Front
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
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:	06/29/2004
Occupational Pilot:		Last Flight Review or Equivalent:	01/04/2003
Flight Time:	9650 hours (Total, all aircraft), 100 hours (Total, this make and model), 9500 hours (Pilot In Command, all aircraft), 200 hours (Last 90 days, all aircraft), 40 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Rawdon Bros. Aircraft	Registration:	N2706D
Model/Series:	T1	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Restricted	Serial Number:	T1-26
Landing Gear Type:	Tailwheel	Seats:	1
Date/Type of Last Inspection:	02/11/2004, Annual	Certified Max Gross Wt.:	3600 lbs
Time Since Last Inspection:	51 Hours	Engines:	1 Reciprocating
Airframe Total Time:	4516 Hours at time of accident	Engine Manufacturer:	Lycoming
ELT:	Not installed	Engine Model/Series:	O-540-A1B5
Registered Owner:	Van Wagner Aerial Media, LLC	Rated Power:	250 hp
Operator:	Van Wagner Aerial Media, LLC	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	HWO, 9 ft msl	Distance from Accident Site:	
Observation Time:	1225 EST	Direction from Accident Site:	
Lowest Cloud Condition:	Scattered / 3600 ft agl	Visibility	10 Miles
Lowest Ceiling:	Broken / 5500 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	13 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	140°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.1 inches Hg	Temperature/Dew Point:	29° C / 21° C
Precipitation and Obscuration:			
Departure Point:	Pembroke Pines, FL (HWO)	Type of Flight Plan Filed:	None
Destination:	(HWO)	Type of Clearance:	None
Departure Time:	1216 EST	Type of Airspace:	Class D

Airport Information

Airport:	North Perry Airport (HWO)	Runway Surface Type:	Asphalt
Airport Elevation:	9 ft	Runway Surface Condition:	Dry
Runway Used:	09R	IFR Approach:	None
Runway Length/Width:	3210 ft / 100 ft	VFR Approach/Landing:	Forced Landing

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	26.001389, -80.240556

Administrative Information

Investigator In Charge (IIC):	John W Lovell	Report Date:	06/08/2005
Additional Participating Persons:	Steven Petrussian; FAA FSDO; Fort Lauderdale, FL		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).