Aviation Investigation Final Report

Location:	Chowchilla, California	**Accident Number:**	LAX05LA303
Date & Time:	September 19, 2005, 13:15 Local	**Registration:**	N91597
Aircraft:	North American Navion A	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane collided with a pole during a forced landing on a road following a loss of engine power. Prior to departure, the pilot filled his main tanks and tip tanks and indicated that his auxiliary fuel tank had been previously filled. Normally, the pilot would fill up his auxiliary fuel tank or the tip tanks, but not both at the same time. The pilot said his habit was to rotate between using the auxiliary tank and the tip tanks about every 3 to 4 months. Because he had been using the auxiliary fuel tank for the last several months, he decided to use the wing tip tanks for this flight. The pilot did not run the engine from the tip tanks prior to departing the airport. About 40 minutes into the flight he switched from the main fuel tank to the right tip tank. Prior to selecting the tip tank, he turned on the auxiliary fuel pump. As had happened in the past when he had not used the wing tip tanks for an extended period, he expected the engine to sputter and then restart. However, on this occasion, after the engine sputtered, it did not restart. The pilot then switched the fuel selector back to the main tank and verified that he was getting fuel pressure, but the engine would not restart. On-scene examination by the Federal Aviation Administration did not reveal any mechanical anomalies. Fuel was found in all four fuel tanks. Follow-up examination of the airplane's fuel system showed that the lines and tanks were free from obstruction with no contamination evident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the loss of engine power for undetermined reasons.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: CRUISE

Findings
1. (C) REASON FOR OCCURRENCE UNDETERMINED

Occurrence #2: FORCED LANDING
Phase of Operation: DESCENT - EMERGENCY

Occurrence #3: ON GROUND/WATER COLLISION WITH OBJECT
Phase of Operation: EMERGENCY LANDING

Findings
2. OBJECT - POLE

Factual Information

On September 19, 2005, at 1315 Pacific daylight time, a North American Navion A, N91597, sustained substantial damage during a forced landing on a road approximately 3 miles east of Chowchilla, California. The forced landing was precipitated by a loss of engine power during cruise. The private pilot, who was also the registered owner of the airplane, was operating it under the provisions of 14 CFR Part 91. The pilot sustained minor injuries. The pilot departed from Calaveras County-Maury Rasmussen Field Airport, San Andreas, California, at 1220, and was destined for Ramona Airport, Ramona, California. Visual meteorological conditions prevailed for the flight, and the pilot had filed and activated a visual flight rules (VFR) flight plan.

In a written statement, the pilot reported that he fueled the airplane's main tanks and tip tanks prior to his departure, and that the auxiliary fuel tank had been previously filled. Normally, the pilot would fill up either the auxiliary fuel tank or the tip tanks, but not both. He would use the auxiliary tank for 3 to 4 months, then switch to using only the wing tip tanks for the next 3 to 4 months. Because he had been using the auxiliary fuel tank for the last several months, he decided to use the wing tip tanks for this flight. The pilot estimated that he had over 30 gallons of 100 low lead (LL) in the main fuel tanks and a total of approximately 60 gallons of 100 LL in his auxiliary and tip tanks. He visually checked the fuel prior to his departure and did not note any sediment or contamination.

The pilot reported that for takeoff and climb out the fuel selector was placed to the main fuel tank and he did not run the engine from each of the fuel tanks prior to takeoff. Once the airplane reached a cruise altitude of 7,500 feet mean sea level he leaned the fuel mixture. At 1300, he turned on the auxiliary fuel pump and switched to the right tip tank. As had happened in the past when he had not used the wing tip tanks for several months, he expected the engine to sputter and then restart. However, on this occasion, after the engine sputtered, it did not restart although the propeller continued to windmill. The pilot then switched the fuel selector back to the main tank and verified that he was getting fuel pressure after advancing the throttle and mixture controls to their full forward positions. The pilot activated the starter once during the descent while advising an air traffic controller of his emergency and transitioning to the nearest airport. When it became evident to the pilot that he would be unable to make the nearest airport, he chose to land on a dirt road. Prior to reaching the road that he had chosen to make the emergency landing, he saw a closer road. The pilot realigned the airplane on the nearer road, and set up for landing. During touchdown, the outer section of the left wing was sheared off and the airplane spun 90 degrees while skidding about 100 feet. The pilot had not reported the sputtering problem to his aviation maintenance technician (AMT).

The Federal Aviation Administration accident coordinator responded to the accident scene. The airplane came to rest on a road, next to a vineyard. During the landing sequence, the left

tip tank was torn from the wing and located about 20 feet from the main wreckage. The left tip tank contained an undetermined amount of fuel with a substantial amount in the soil near the tank. The main fuel tank had less than 5 gallons with a leak evident underneath the airplane. The auxiliary fuel tank was measured with a calibrated stick found in the airplane and contained about 30 gallons.

The right wing had a crush line parallel to the longitudinal axis of the airplane approximately mid-wing. The outboard section from this crush line appeared to be pulled aft. The lower cowling was crumpled and the propeller spinner was resting on a portion of a vineyard post. The right tip tank was breached after it was torn from the airplane and no fuel remained in the tank; there was no fuel located on the ground underneath the tank. No mechanical malfunctions were evident during the on-scene portion of the investigation.

A technical advisor for the American Navion Society described the fuel system for the airplane. The fuel system was modified with a supplemental type certificate for the tip tanks. With a four-tank fuel system utilizing an under seat auxiliary tank, the common method was to install a five position valve with the following tanks labeled: left tip, main, right tip, auxiliary, and off. All fuel at the valve feeds directly from the selected tank to the engine through the installed plumbing. In addition, he reported that if the possibility for air in the fuel lines exists, during run-up prior to takeoff, the pilot should switch to each tank and the engine allowed to run long enough on each to be certain fuel flow is not interrupted.

An AMT examined the airplane. Low-pressure air was blown through the fuel lines from the right tip tank with no obvious obstructions. The AMT also noted that the right tip tank was damaged from the accident sequence. Low-pressure air was induced into the fuel line from the engine and airflow was noted in the main tank and the auxiliary tank. The fuel tanks were inspected using a flashlight and mirror and no contaminants were observed. The fuel selector rotated with no resistance and the detents were noted in the appropriate positions. The spark plugs were removed from the Teledyne Continental E-225 engine and the spark plug electrodes were gray in color, which corresponded to normal operation according to the Champion Aviation Check-A-Plug AV-27 Chart.

Pilot Information

Certificate:	Private	**Age:**	61,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	September 1, 2004
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	April 1, 2005
Flight Time:	2200 hours (Total, all aircraft), 500 hours (Total, this make and model), 2050 hours (Pilot In Command, all aircraft), 21 hours (Last 90 days, all aircraft), 10 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	North American	**Registration:**	N91597
Model/Series:	Navion A	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	NAV-4-369
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	June 1, 2005 Annual	**Certified Max Gross Wt.:**	3100 lbs
Time Since Last Inspection:	21.09 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Continental
ELT:	Installed, activated, aided in locating accident	**Engine Model/Series:**	E-225
Registered Owner:	Dennis B. Dooley	**Rated Power:**	225 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	MCE,156 ft msl	**Distance from Accident Site:**	17 Nautical Miles
Observation Time:	12:53 Local	**Direction from Accident Site:**	320°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.95 inches Hg	**Temperature/Dew Point:**	26°C / 7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Calaveras Cty, CA (CPU)	**Type of Flight Plan Filed:**	VFR
Destination:	Ramona, CA (RNM)	**Type of Clearance:**	None
Departure Time:	12:20 Local	**Type of Airspace:**	

Wreckage and Impact Information

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:**	37.148887,-120.184722

Administrative Information

Investigator In Charge (IIC):	Dunks, Kristi
Additional Participating Persons:	Wayne Lord; Federal Aviation Aministration; Fresno, CA
Original Publish Date:	August 29, 2006
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=62513