Aviation Investigation Final Report

Location:	BAKERSFIELD, California	**Accident Number:**	LAX01LA064
Date & Time:	December 23, 2000, 14:30 Local	**Registration:**	N72970
Aircraft:	Cessna 140	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

During a forced landing precipitated by fuel starvation and a loss of engine power, the airplane collided with a fence and overturned. The engine stopped producing power about 2 miles from the airport, and the pilot thought he could make it to the airport. About 500 feet above the ground, he noticed the airport boundary fence. He felt he might strike it with the landing gear while in flight, so he decided to land short of the airport. After the airplane came to rest, the pilot saw fuel leaking from the inverted wing fuel tanks and evacuated the airplane. The pilot did not recall moving the fuel selector valve after landing. The fuel selector valve pointed to a position 20 to 30 degrees left of the right fuel tank position. It pointed to the middle of a placard that indicated right tank. However, a mechanic said he felt this position would not allow either tank to supply sufficient fuel to the engine. He observed a flexible detent that was installed to ensure proper position of the fuel selector valve when the right fuel tank was selected. The flexible detent bent down and was not useable.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's inadequate in-flight planning, fuel management, and inadequate remedial actions, which resulted in a total loss of engine power due to fuel starvation. The pilot made an off-field landing and collided with a fence.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL
Phase of Operation: APPROACH - VFR PATTERN - FINAL APPROACH

Findings
1. (F) FLUID,FUEL - STARVATION
2. (C) IN-FLIGHT PLANNING/DECISION - INADEQUATE - PILOT IN COMMAND
3. (C) FUEL MANAGEMENT - INADEQUATE - PILOT IN COMMAND
4. (C) REMEDIAL ACTION - INADEQUATE - PILOT IN COMMAND

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

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

Findings
5. (F) OBJECT - FENCE

Factual Information

On December 23, 2000, about 1430 hours Pacific standard time, a Cessna 140, N72970, sustained substantial damage when it landed short of the runway after losing engine power on final approach at Bakersfield Municipal Airport, Bakersfield, California. The airplane collided with the airport boundary fence and nosed over. The private pilot/owner was operating the airplane under the provisions of 14 CFR Part 91. The pilot and one passenger sustained minor injuries. The personal flight departed Hi Desert Airport, Joshua Tree, California, about 1330. Visual meteorological conditions prevailed. No flight plan had been filed.

The pilot stated he flew from Corcoran, California, to Joshua Tree in the morning to pick up a passenger. He departed Corcoran with full fuel tanks. He planned to refuel at Bakersfield on the return trip. Due to elevation and runway length considerations, he did not add fuel at Joshua Tree. He did a solo takeoff to evaluate the airplane's performance prior to departing with the passenger aboard.

He said he only used the left fuel tank for 5 minutes during the approach to Joshua Tree and the first 10 minutes following departure from Joshua Tree.

The pilot described the events to the Federal Aviation Administration (FAA) accident coordinator. The pilot switched to the right tank passing through 2,000 feet on departure. He utilized the right fuel tank until it ran dry during cruise.

About 1410, the pilot initiated a descent into Bakersfield. He applied carburetor heat as he reduced power to 2,200 rpm at 9,000 feet. About 5 minutes later, the engine stopped producing power. He estimated his position was 25 miles east of Bakersfield, at an altitude of 5,000 feet. He switched back to the right fuel tank and the engine started producing power.

The pilot continued to fly on a straight-in approach to runway 34. The left tank indicated over 1/4 tank. He switched back to the left tank for landing.

The engine stopped producing power again about 2 miles from the airport. The pilot thought he could make the airport. About 500 feet above the ground, he noticed the airport boundary fence. He felt he might strike it with the landing gear while in flight. He decided to land short of the airport.

The airplane touched down a couple of hundred feet prior to the airport boundary fence. The airplane collided with the fence and overturned. The pilot saw fuel leaking from the inverted wing fuel tanks. He told the passenger to get out fast if he could.

A sheriff's deputy on scene observed a small puddle of fuel under the inverted wings.

The pilot described the airplane's systems to the FAA accident coordinator. He said each wing held 12.5 gallons of fuel. He said the airplane burns approximately 5 gallons per hour. He said either tank can supply fuel, but both tanks could not be used simultaneously. The pilot did not remember changing the fuel selector valve's position after landing.

The FAA accident coordinator asked an aircraft mechanic, who is also a flight instructor, to examine the airplane. The mechanic observed fuel in the left fuel tank. A fuel sample from this tank contained a minute quantity of sediment. The sample was otherwise clear and free of contamination. He observed no fuel in the right fuel tank. He observed no contamination or blockage in the gascolator. He observed the carburetor heat in the on position.

The mechanic observed the position of the fuel selector valve. It pointed to a position 20 to 30 degrees left of the right fuel tank position. It pointed to the middle of a placard that indicated right tank. However, the mechanic said he felt this position would not allow either tank to supply sufficient fuel to the engine. He observed a flexible detent that was installed to ensure proper position of the fuel selector valve when the right fuel tank was selected. The flexible detent bent down and was not useable.

The mechanic reported that he was very experienced with Cessna 140 airplanes. He said the tanks could unport if the fuel quantity is low and the airplane is in a nose low attitude. He said that to select the right fuel tank, the selector valve should point straight forward. The off position is to the full right position. No fuel reaches the engine if the selector valve is not in the left or right position.

Pilot Information

Certificate:	Commercial	**Age:**	61,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):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	December 7, 1998
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	17000 hours (Total, all aircraft), 60 hours (Total, this make and model), 16900 hours (Pilot In Command, all aircraft), 6 hours (Last 90 days, all aircraft), 6 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N72970
Model/Series:	140 140	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	25928-6-12
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	November 18, 2000 Annual	**Certified Max Gross Wt.:**	1450 lbs
Time Since Last Inspection:	4 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	2732 Hrs	**Engine Manufacturer:**	Continental
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	C-85-12
Registered Owner:	RONALD LAWRENCE	**Rated Power:**	85 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	BFL ,688 ft msl	**Distance from Accident Site:**	8 Nautical Miles
Observation Time:	14:56 Local	**Direction from Accident Site:**	315°
Lowest Cloud Condition:	Clear	**Visibility**	6 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	333°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	57°C / 44°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	HI DESERT , CA (L80)	**Type of Flight Plan Filed:**	None
Destination:	(L45)	**Type of Clearance:**	None
Departure Time:	13:30 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	BAKERSFIELD MUNICIPAL L45	**Runway Surface Type:**	Asphalt
Airport Elevation:	376 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	34	**IFR Approach:**	None
Runway Length/Width:	4000 ft / 75 ft	**VFR Approach/Landing:**	Full stop;Straight-in

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Minor	**Latitude, Longitude:**	35.379039,-119.019119(est)

Administrative Information

Investigator In Charge (IIC):	Plagens, Howard
Additional Participating Persons:	HARLOW VOORHEES; FRESNO , CA
Original Publish Date:	November 6, 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=50831