



# Aviation Investigation Final Report

<b>Location:</b>	Stockton, California	<b>Accident Number:</b>	LAX00LA288
<b>Date &amp; Time:</b>	August 4, 2000, 17:24 Local	<b>Registration:</b>	N39KH
<b>Aircraft:</b>	Bell 47D	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	1 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

## Analysis

The commercial pilot performed an autorotative landing to an open field following a loss of engine power while in cruise flight. The skids contacted a berm on touchdown, and the helicopter began rocking. As the helicopter pitched fore and aft, the main rotor blades and tail rotor blades contacted the ground. The single engine helicopter utilized a single-tank fuel system capable of containing 29 gallons of fuel. The pilot anticipated a 16 g.p.h. fuel-flow, and determined he had an endurance of 1 hour 48 minutes. The helicopter engine run time was 1 hour 35 minutes prior to losing power. The pilot's post accident inspection of the aircraft revealed that the fuel load had been exhausted. He indicated in the accident report, under the section titled "Recommendation (How Could This Accident Have Been Prevented)," that he could have conducted "more planning on cross-country flights."

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's inadequate planning by which he miscalculated fuel consumption which resulted in fuel exhaustion.

### Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL  
Phase of Operation: CRUISE

Findings

1. (C) FLUID,FUEL - EXHAUSTION
2. PLANNING/DECISION - INADEQUATE - PILOT IN COMMAND
3. (C) FUEL CONSUMPTION CALCULATIONS - INADEQUATE - PILOT IN COMMAND

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Occurrence #2: FORCED LANDING

Phase of Operation: EMERGENCY DESCENT/LANDING

Findings

4. AUTOROTATION - PERFORMED - PILOT IN COMMAND

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Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: EMERGENCY LANDING

Findings

5. TERRAIN CONDITION - BERM

## Factual Information

On August 4, 2000, at 1724 Pacific daylight time, a Bell 47D helicopter, N39KH, was substantially damaged during an autorotative forced landing near Stockton, California. The forced landing was precipitated by a loss of engine power during cruise flight. The commercial pilot, the sole occupant, was not injured. The helicopter was registered to a private individual, and was operated by the pilot as a personal flight under 14 CFR Part 91 when the accident occurred. The flight originated from Fresno, California, at 1549, and was destined for Stockton. Visual meteorological conditions prevailed at the time of the accident, and a flight plan had not been filed.

The pilot reported he had topped off the helicopter's fuel tank prior to departure. The total fuel capacity of the single-tank helicopter is 29 gallons. The pilot anticipated a fuel consumption of 16 g.p.h., and estimated he had approximately 1 hour 48 minutes of flight endurance available.

After 1 hour 35 minutes of engine run time, the engine lost power while 2 miles from the destination airport. The pilot performed an autorotative landing to an open field. The skids contacted a berm on touchdown, and the helicopter began rocking. As the helicopter pitched fore and aft, the main rotor blades and tail rotor blades contacted the ground.

The pilot reported that his post accident inspection of the aircraft revealed that the fuel load had been exhausted. Surface temperatures along the route of flight were above 90 degrees Fahrenheit. He indicated in the Pilot/Operator Aircraft Accident Report (NTSB Form 6120.1/2), under the section titled "Recommendation (How Could This Accident Have Been Prevented)," that he could have conducted "more planning on cross-country flights."

The commercial pilot reported having had accumulated approximately 600 total rotorcraft flight hours, of which 40 hours were accumulated in the same make and model as the accident helicopter.

## Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	35, Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 2 Valid Medical--no waivers/lim.	<b>Last FAA Medical Exam:</b>	October 27, 1999
<b>Occupational Pilot:</b>	UNK	<b>Last Flight Review or Equivalent:</b>	March 10, 2000
<b>Flight Time:</b>	1600 hours (Total, all aircraft), 40 hours (Total, this make and model)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Bell	<b>Registration:</b>	N39KH
<b>Model/Series:</b>	47D 47D	<b>Aircraft Category:</b>	Helicopter
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	39
<b>Landing Gear Type:</b>	Skid	<b>Seats:</b>	3
<b>Date/Type of Last Inspection:</b>	April 20, 2000 Annual	<b>Certified Max Gross Wt.:</b>	2200 lbs
<b>Time Since Last Inspection:</b>	19 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	3007 Hrs at time of accident	<b>Engine Manufacturer:</b>	Franklin
<b>ELT:</b>	Not installed	<b>Engine Model/Series:</b>	644-178-B32
<b>Registered Owner:</b>	Keith Harvey	<b>Rated Power:</b>	178 Horsepower
<b>Operator:</b>	Pablo M. Ejarque	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	SCK,30 ft msl	<b>Distance from Accident Site:</b>	2 Nautical Miles
<b>Observation Time:</b>	16:56 Local	<b>Direction from Accident Site:</b>	45°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	11 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	340°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	29 inches Hg	<b>Temperature/Dew Point:</b>	34°C / 15°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Fresno, CA (FAT )	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Stockton Metro, CA (SCK )	<b>Type of Clearance:</b>	VFR
<b>Departure Time:</b>	16:05 Local	<b>Type of Airspace:</b>	Class D

## Airport Information

<b>Airport:</b>	Stockton Metropolitan SCK	<b>Runway Surface Type:</b>	
<b>Airport Elevation:</b>	30 ft msl	<b>Runway Surface Condition:</b>	Unknown
<b>Runway Used:</b>		<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>		<b>VFR Approach/Landing:</b>	Forced landing

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 None	<b>Latitude, Longitude:</b>	37.894443,-121.238609

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Crispin, Robert
<b>Additional Participating Persons:</b>	Timothy L Jarrard; Federal Aviation Administration; Oakland, CA
<b>Original Publish Date:</b>	November 25, 2003
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	The NTSB traveled to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.ntsb.gov/Docket?ProjectID=49932">https://data.ntsb.gov/Docket?ProjectID=49932</a>

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The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).