



# Aviation Investigation Final Report

<b>Location:</b>	Agoura Hills, California	<b>Accident Number:</b>	WPR19LA014
<b>Date &amp; Time:</b>	October 23, 2018, 13:44 Local	<b>Registration:</b>	N7969C
<b>Aircraft:</b>	North American SNJ	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>	Loss of engine power (total)	<b>Injuries:</b>	1 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

## Analysis

The pilot reported that, shortly after departure, he heard two loud bangs followed by total loss of engine power. The pilot performed a forced landing to a highway, during which the airplane swerved to the left, the left wing impacted a concrete center divider, and a postimpact fire ensued.

Initial examination of the engine found that the No. 2 cylinder was cracked, and the No. 1 cylinder and the base between the Nos. 4 and 5 cylinders displayed damage. Disassembly of the engine revealed the piston-end master rod piece from the No. 5 cylinder fractured through the I-beam shaft. Microscopic examination of the fracture surface showed evidence of fatigue. The initiation point of the fatigue fracture was damaged due to mechanical contact during the failure sequence.

The accident is consistent with a total loss of engine power following the failure of the No. 5 master rod end. The initiating point and cause of the fatigue failure could not be identified based on the available evidence.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The failure of the No. 5 piston rod end due to fatigue, which resulted in a total loss of engine power.

## Findings

<b>Aircraft</b>	Recip engine power section - Fatigue/wear/corrosion
<b>Aircraft</b>	Recip engine power section - Failure

# Factual Information

## History of Flight

Enroute	Loss of engine power (total) (Defining event)
Landing	Off-field or emergency landing

On October 23, 2018, about 1344 Pacific daylight time, a North American SNJ-5 airplane, N7969C, was destroyed when it was involved in an accident near Agoura Hills, California. The pilot was not injured. The airplane was operated as a Title 14 *Code of Federal Regulations (CFR)* Part 91 personal flight.

The pilot reported that, shortly after departure, he heard two loud bangs, followed by total loss of engine power, and he performed a forced landing to a highway. After touchdown, the airplane swerved to the left, the left wing impacted a concrete divider, and a postimpact fire ensued.

The airplane was equipped with an R-1340-AN1 nine-cylinder, radial engine. Examination of the engine showed that the No. 2 cylinder was cracked between the 10th and 11th (from bottom of head) cylinder head cooling fin. Another crack on the No. 2 cylinder extended from the sparkplug to the base of the head. Additional damage was noted at the base between the Nos. 4 and 5 cylinders, and on the No. 1 cylinder. Disassembly showed that the No. 5 master cylinder rod end had failed on the piston side. Examination of the master rod end by the NTSB Materials Laboratory showed a fracture initiation region on the I-beam shaft, based on fine chevron and river pattern markings. The fracture surface in the immediate origin region was damaged due to mechanical contact during the failure sequence. A higher magnification image of the fracture surface adjacent to the origin region exhibited striation features typical of fatigue crack growth in hardened steel.

## Pilot Information

<b>Certificate:</b>	Airline transport; Commercial; Flight instructor	<b>Age:</b>	43,Male
<b>Airplane Rating(s):</b>	Single-engine sea; Multi-engine land	<b>Seat Occupied:</b>	Front
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	Airplane multi-engine; Instrument airplane	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 2 Without waivers/limitations	<b>Last FAA Medical Exam:</b>	April 12, 2018
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	11764 hours (Total, all aircraft), 382 hours (Total, this make and model)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	North American	<b>Registration:</b>	N7969C
<b>Model/Series:</b>	SNJ 5	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1958	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	43974
<b>Landing Gear Type:</b>	Retractable - Tailwheel	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	July 18, 2018 Annual	<b>Certified Max Gross Wt.:</b>	4982 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	6841 Hrs at time of accident	<b>Engine Manufacturer:</b>	Pratt & Whitney
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	R1340 AN1
<b>Registered Owner:</b>		<b>Rated Power:</b>	600 Horsepower
<b>Operator:</b>		<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>	KVNY, 770 ft msl	<b>Distance from Accident Site:</b>	12 Nautical Miles
<b>Observation Time:</b>	20:51 Local	<b>Direction from Accident Site:</b>	70°
<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>	6 knots /	<b>Turbulence Type Forecast/Actual:</b>	None / None
<b>Wind Direction:</b>	130°	<b>Turbulence Severity Forecast/Actual:</b>	N/A / N/A
<b>Altimeter Setting:</b>	29.84 inches Hg	<b>Temperature/Dew Point:</b>	29°C / 13°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Van Nuys, CA (VNY )	<b>Type of Flight Plan Filed:</b>	
<b>Destination:</b>	Van Nuys, CA (VNY )	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	13:36 Local	<b>Type of Airspace:</b>	Class G

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Destroyed
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	On-ground
<b>Ground Injuries:</b>		<b>Aircraft Explosion:</b>	Unknown
<b>Total Injuries:</b>	1 None	<b>Latitude, Longitude:</b>	34.138053, -118.724441 (est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Vanover, Jackie		
<b>Additional Participating Persons:</b>	Curtis Calabresy; FAA; Van Nuys, CA		
<b>Original Publish Date:</b>	September 16, 2021	<b>Investigation Class:</b>	3
<b>Note:</b>	The NTSB did not travel to the scene of this accident.		
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=98532">https://data.nts.gov/Docket?ProjectID=98532</a>		

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