



# Aviation Investigation Final Report

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<b>Location:</b>	CANTON, Michigan	<b>Accident Number:</b>	CHI97FA188
<b>Date &amp; Time:</b>	June 25, 1997, 22:15 Local	<b>Registration:</b>	N7031Q
<b>Aircraft:</b>	Cessna 172N	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	1 Serious, 1 Minor
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

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## Analysis

According to the pilot, he was established on final approach for a landing on runway 36 without the flaps lowered, when he realized that he was too high, and he made a decision to go around. The engine did not respond to throttle movement. The pilot knew of an open field north of the runway, but he thought it was not long enough to stop the aircraft so he executed a steep left turn to land on a nearby road that was perpendicular to the runway. During the turn, the left wing contacted the ground. Winds were reported as 180 degrees at 7 knots at Detroit Metropolitan Wayne County Airport, ten miles to the southeast. Inspection of the carburetor disclosed that the throttle arm was installed out of position such that when the throttle was pulled fully closed the arm was pointing straight back at the cable. In this position, when the throttle was advanced in the cockpit, the cable and housing would bind and could allow the throttle arm on the carburetor to move upward instead of down and forward through the normal arch.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A loss of engine power due to fuel starvation from a binding throttle/power lever cable. Also causal was the improper maintenance, installation of the throttle arm. Contributing to the accident were the dark night and unsuitable terrain for the forced landing.

## Findings

Occurrence #1: LOSS OF ENGINE POWER(PARTIAL) - MECH FAILURE/MALF  
Phase of Operation: GO-AROUND (VFR)

### Findings

1. (F) THROTTLE/POWER LEVER,CABLE - BINDING(MECHANICAL)
2. (F) MAINTENANCE,INSTALLATION - IMPROPER - OTHER MAINTENANCE PERSONNEL
3. (F) THROTTLE/POWER LEVER,CABLE - FRACTURED

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

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Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER  
Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

### Findings

4. (F) TERRAIN CONDITION - NONE SUITABLE
5. (F) LIGHT CONDITION - DARK NIGHT

## Factual Information

### HISTORY OF FLIGHT

On June 25, 1997, at 2215 eastern daylight time, a Cessna 172N, N7031Q, sustained substantial damage when it impacted terrain during an attempted VFR go-around from runway 36 at Canton, Michigan. The private rated pilot sustained minor injuries and the pilot rated passenger sustained serious injuries. The 14 CFR Part 91, personal flight originated in Grand Haven, Michigan about 2115 with a planned destination of Canton, Michigan. Visual meteorological conditions prevailed and no flight plan was filed.

According to a written statement by the pilot, "Established on final approach, I found the aircraft too high and too close; generally I didn't like the position, nor the conditions that had led up to it. After descending briefly on final approach, I made a decision to circle for another approach.

"At the approximate approach-end of Runway 36, and about 600 feet AGL, I established a no-flap glide of 80 knots, and opened the throttle. After 3 to 5 seconds, I realized the engine had not responded to my advancing the throttle control."

"As I know the terrain surrounding the airport, I knew there was a short field north of the runway, across a small highway. However, this field is only 500 feet deep, with a building and trees at the end...I made the decision that a straight-ahead landing was not feasible, and decided to risk a 90-degree turn to put the airplane down alongside, or perhaps on, Joy Road, immediately to the north of the runway end."

"Knowing that a steep turn would consume about the right amount of altitude, I banked sharply to the left. As the aircraft began to align with Joy Road, I began flattening the turn. Just before I had leveled the turn, the left wingtip struck the ground, the nose pitched down, with the impact of the nosewheel apparently tearing the engine from its mount. The front bulkhead dug into the sod, the right wingtip struck the ground, and the aircraft yawed to the left as it stopped."

The pilot sustained multiple lacerations and the passenger received serious head injuries according to a Federal Aviation Administration (FAA) inspector's report. Both were transported to St. Joseph Mercy Hospital and treated.

Witnesses to the accident stated that the aircraft was high on the approach, approximately 200 to 250 feet over the runway numbers on the south side of the airport, and 50 to 60 feet at midfield. "At end of runway wings level 30 feet above runway. Made steep banked turn to left looked like 70 degrees of bank, plane stalled...plane impacted...aircraft came to rest, tail high

attitude, facing opposite direction, 30 feet north of Joy Road. 100 feet off center line of runway."

#### PERSONNEL INFORMATION

The pilot-in-command (PIC), born November 11, 1956, was the holder of a private pilot certificate with privileges for single engine land airplanes, and held an instrument rating. Records indicate the pilot's last aviation medical examination was performed on November 20, 1995. The pilot possessed a third class medical with no limitations or waivers.

According to the pilot's flight records, he has accumulated a total of 720 hours of flight time prior to the accident flight. He had completed 485 hours in the accident aircraft make and model. In the 24 hours prior to the accident he accumulated 1.1 flight hours.

#### AIRCRAFT INFORMATION

The accident aircraft was a Cessna 172N, N7031Q, serial number 172-60331. The 172 is an all-metal, four-place, high-wing, single-engine airplane equipped with tricycle landing gear. The airplane logged 4304 hours prior to the accident flight. The last inspection was an annual inspection, completed on September 20, 1996, 96 flight hours prior to the accident flight.

#### METEOROLOGICAL INFORMATION

A weather reporting station, located at the Detroit Metropolitan Wayne County Airport, 10 miles from the accident site on a 150 magnetic heading, reported 21 minutes prior to the accident as:

Observation Time:	2154 est	Wind:	180-degrees
at 7 knots	Visibility:	5 statute miles with mist	Sky Condition:
	Scattered at 8,000 feet, Broken at 20,000 feet	Temperature:	23-degrees
centigrade	Dew Point Temperature:	22-degrees centigrade	Pressure:
	29.91 inches of Mercury.		

#### AIRPORT INFORMATION

The airport's only runway is a north-south runway with dimensions of 2,556 feet by 75 feet. Joy Road runs perpendicular to the runway and is about 30 feet north of the north end of the runway. The field on the north side of the airport where the accident occurred is approximately 500 feet in length by 400 feet in width.

#### WRECKAGE AND IMPACT INFORMATION

FAA investigators from the Detroit Flight Standards District Office (FSDO) joined a National Transportation Safety Board (NTSB) investigator on the scene of the accident.

According to a FAA inspector's report, "The airplane came to rest in a nose low tail up position. The police dispatcher (a student pilot) stated that fuel was leaking out of the airplane. He stated he turned the fuel selector to the OFF position inside the airplane. He stated it had been positioned on BOTH. He stated the Master switch was already turned off."

## TESTS AND RESEARCH

The engine was inspected and it was found that the engine would rotate freely, had continuity to all rocker arms and aft gears, had thumb compression in all cylinders, and produced sparks at all leads. Inspection of the carburetor found the throttle arm installed out of position such that when the throttle was pulled fully closed the arm was pointing straight back at the cable. In this position when the throttle was advanced in the cockpit the cable and housing would bind and could allow the throttle arm on the carburetor to move upward instead of down and forward through its normal arch. Also, the throttle arm was attached to the carburetor, but the cable separated 18 inches aft of the attachment with the throttle arm. The throttle arm appears to be mounted out of position such that at full idle setting it is pointed almost directly aft. The mixture cable is separated from the arm on the carburetor. The carburetor heat cable is intact and the valve appears on.

## ADDITIONAL INFORMATION

The wreckage was released to the airport manager on June 27, 1997.

Parties to the investigation were the FAA FSDO, Detroit, MI; Gregory Erikson, Lycoming; and Emile Lohman, Cessna.

### Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	40, Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	Glider	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 3 Valid Medical--no waivers/lim.	<b>Last FAA Medical Exam:</b>	November 20, 1995
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	720 hours (Total, all aircraft), 485 hours (Total, this make and model), 8 hours (Last 90 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Cessna	<b>Registration:</b>	N7031Q
<b>Model/Series:</b>	172N 172N	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	172-60331
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	September 20, 1996 Annual	<b>Certified Max Gross Wt.:</b>	2500 lbs
<b>Time Since Last Inspection:</b>	94 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	4399 Hrs	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>		<b>Engine Model/Series:</b>	O-360-A4M
<b>Registered Owner:</b>	GREAT LAKES AERONAUTICAL CLUB	<b>Rated Power:</b>	180 Horsepower
<b>Operator:</b>		<b>Operating Certificate(s) Held:</b>	None
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Night/dark
<b>Observation Facility, Elevation:</b>	DTW ,639 ft msl	<b>Distance from Accident Site:</b>	10 Nautical Miles
<b>Observation Time:</b>	20:54 Local	<b>Direction from Accident Site:</b>	150°
<b>Lowest Cloud Condition:</b>	Scattered / 8000 ft AGL	<b>Visibility</b>	5 miles
<b>Lowest Ceiling:</b>	Broken / 20000 ft AGL	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	7 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	180°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	29 inches Hg	<b>Temperature/Dew Point:</b>	22°C / 21°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	GRAND HAVEN , MI (3GM )	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	(1D2 )	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	21:15 Local	<b>Type of Airspace:</b>	Class G

## Airport Information

<b>Airport:</b>	CANTON-PLYMOTH-METTETAL 1D2	<b>Runway Surface Type:</b>	Asphalt
<b>Airport Elevation:</b>	696 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	36	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	2800 ft / 50 ft	<b>VFR Approach/Landing:</b>	Forced landing;Go around

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Minor	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	1 Serious	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 Serious, 1 Minor	<b>Latitude, Longitude:</b>	42.329772,-83.479949(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Robbins, Wesley
<b>Additional Participating Persons:</b>	MARTHA WINNARD; BELLEVILLE , MI
<b>Original Publish Date:</b>	September 7, 2000
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=10429">https://data.nts.gov/Docket?ProjectID=10429</a>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

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