



# Aviation Investigation Final Report

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<b>Location:</b>	GRAND HAVEN, Michigan	<b>Accident Number:</b>	CHI88DEM08
<b>Date &amp; Time:</b>	August 13, 1988, 14:10 Local	<b>Registration:</b>	N5124T
<b>Aircraft:</b>	CHAMPION                      7KCAB	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	1 None
<b>Flight Conducted Under:</b>	Part 91: General aviation		

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## Analysis

THE PILOT STATED THAT HE WAS TOWING BANNERS ON THE DAY OF THE ACCIDENT. AFTER TOWING THE THIRD BANNER FOR AN ESTIMATED 1 1/4 HOURS, HE WAS RETURNING TO THE DEPARTURE AIRPORT WHEN THE AIRCRAFT'S ENGINE FAILED COMPLETELY. HE SELECTED THE 'CLOSEST FIELD THAT LOOKED THE BEST...' AND EXECUTED A FORCED LANDING ON AN AREA OF ROUGH SAND DUNES. THE PILOT HAD A COMMERCIAL PILOT'S CERTIFICATE WITH APPROXIMATELY 633 HOURS TOTAL FLIGHT TIME, OF WHICH 72 HOURS WERE IN THE ACCIDENT MAKE AND MODEL AIRCRAFT. THE PILOT REPORTED THAT HE HAD BEEN TOWING BANNERS FOR 'TWO SEASONS' AND 'ALWAYS TIMED...FUEL BURN TO LEAVE 1 HOUR RESERVE.' HE STATED THAT HE JUDGED HIS FUEL QUANTITY BY THE CUMULATIVE HOURS THE AIRCRAFT HAD FLOWN SINCE THE AIRCRAFT HAD NO ELECTRIC FUEL QUANTITY INDICATOR. HE STATED THAT HE ESTIMATED THAT HE HAD ONE HOUR OF FUEL REMAINING WHEN THE ENGINE QUIT.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: THE PILOT'S INATTENTIVE FUEL SYSTEM MONITORING, AND THE RESULTANT TOTAL FAILURE OF THE AIRCRAFT'S POWERPLANT DUE TO FUEL EXHAUSTION. A FORCED LANDING WAS EXECUTED ON A STRETCH OF BEACH WITH SAND DUNES, AND THE AIRCRAFT WAS SUBSTANTIALLY DAMAGED DURING THE ROUGH TOUCHDOWN AND LANDING ROLL. THE PILOT EXPECTED TO HAVE AT LEAST ANOTHER HOUR OF FUEL, BASED ON PREVIOUS EXPERIENCE. FUEL QUANTITY WAS BEING JUDGED BY TIMING THE DURATION OF ACCUMULATED FLIGHTS; NO ELECTRIC FUEL QUANTITY INDICATOR WAS INSTALLED.

## Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL

Phase of Operation: CRUISE

### Findings

1. (C) FLUID,FUEL - EXHAUSTION
2. (C) FUEL CONSUMPTION CALCULATIONS - INACCURATE - PILOT IN COMMAND
3. (C) FUEL SUPPLY - MISJUDGED - PILOT IN COMMAND

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Occurrence #2: FORCED LANDING

Phase of Operation: DESCENT - EMERGENCY

### Findings

4. (F) UNSUITABLE TERRAIN OR TAKEOFF/LANDING/TAXI AREA - ENCOUNTERED - PILOT IN COMMAND

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Occurrence #3: LOSS OF CONTROL - ON GROUND/WATER

Phase of Operation: LANDING - ROLL

### Findings

5. (F) GROUND LOOP/SWERVE - ENCOUNTERED - PILOT IN COMMAND
6. TERRAIN CONDITION - SAND BAR

## Factual Information

### Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	29, Male
<b>Airplane Rating(s):</b>	Single-engine land; 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>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 2 Valid Medical--no waivers/lim.	<b>Last FAA Medical Exam:</b>	July 1, 1988
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	633 hours (Total, all aircraft), 72 hours (Total, this make and model), 605 hours (Pilot In Command, all aircraft), 110 hours (Last 90 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	CHAMPION	<b>Registration:</b>	N5124T
<b>Model/Series:</b>	7KCAB 7KCAB	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Aerobatic; Normal; Utility	<b>Serial Number:</b>	23
<b>Landing Gear Type:</b>	Tailwheel	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	September 10, 1987 Annual	<b>Certified Max Gross Wt.:</b>	1650 lbs
<b>Time Since Last Inspection:</b>	90 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>		<b>Engine Manufacturer:</b>	LYCOMING
<b>ELT:</b>	Not installed	<b>Engine Model/Series:</b>	IO-320
<b>Registered Owner:</b>	C. J. BLACK & C. A. TUINSTR	<b>Rated Power:</b>	150 Horsepower
<b>Operator:</b>		<b>Operating Certificate(s) Held:</b>	None
<b>Operator Does Business As:</b>	WEST MICHIGAN AERIAL ADVERT.	<b>Operator Designator Code:</b>	

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	MKG ,628 ft msl	<b>Distance from Accident Site:</b>	4 Nautical Miles
<b>Observation Time:</b>	14:10 Local	<b>Direction from Accident Site:</b>	360°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	4 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	15 knots / 20 knots	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	210°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30 inches Hg	<b>Temperature/Dew Point:</b>	31°C / 23°C
<b>Precipitation and Obscuration:</b>	N/A - None - Haze		
<b>Departure Point:</b>	GRAND HAVEN , MI (3GM )	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>		<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	13:10 Local	<b>Type of Airspace:</b>	Class E

## Airport Information

<b>Airport:</b>		<b>Runway Surface Type:</b>	
<b>Airport Elevation:</b>	0 ft msl	<b>Runway Surface Condition:</b>	
<b>Runway Used:</b>	0	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	0 ft / 0 ft	<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>	43.05035,-86.220748(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Nodorft, Dale
<b>Additional Participating Persons:</b>	ROLAND STANDRING; GRAND RAPIDS , MI
<b>Original Publish Date:</b>	October 16, 1990
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	
<b>Investigation Docket:</b>	<a href="https://data.ntsb.gov/Docket?ProjectID=13870">https://data.ntsb.gov/Docket?ProjectID=13870</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.

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](#).