



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Novato, CA	<b>Accident Number:</b>	WPR14FA349
<b>Date &amp; Time:</b>	08/18/2014, 2130 PDT	<b>Registration:</b>	N1160T
<b>Aircraft:</b>	BEECH V35B	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Loss of engine power (partial)	<b>Injuries:</b>	1 Fatal
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Personal		

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## Analysis

While en route to the destination airport on an instrument flight rules flight plan in dark night conditions, the instrument-rated private pilot declared an emergency, advised the air traffic controller that the engine was losing power, and stated that he needed to divert. The controller first issued instructions to an airport about 20 miles behind the airplane's position, then offered an airport about 14 miles abeam the airplane's position. The pilot initiated a turn to the first airport, then to the second airport, accordingly. During these transmissions, the controller referred to the positions of these airports as "radials" from the airplane, despite the pilot's repeated request for headings.

As the airplane maneuvered, it descended from its cruise altitude of 6,000 ft mean sea level (msl) to about 2,000 ft msl. The controller contacted the airplane and stated that it had descended below the minimum vectoring altitude for that area. About a minute later, the pilot stated that the engine had regained power, again asked for a heading to the diversion airport, then stated that he had "lost [the] compass." Over the next 3 minutes, the airplane climbed to about 3,100 ft msl before entering a gradual descent. The controller provided the pilot with vectors, and the pilot asked how far the airplane was from the airport. The controller first provided an incorrect distance of 7 miles, then corrected himself, stating the airplane was 9.7 miles from the airport. Shortly thereafter, the pilot asked whether the airport was under visual meteorological conditions, to which the controller replied, "affirmative." The pilot then stated that he was in the clouds and asked the controller if there were "any hills" between the airplane and the airport. The controller did not answer the pilot's question, but instead provided the current weather conditions at the airport. The last transmission from the accident airplane was the pilot stating, "one thousand feet," followed by a series of microphone clicks, indicating that the pilot may have been attempting to activate the airport's pilot-controlled lighting system.

The airplane impacted terrain at an elevation about 700 ft msl about 7 miles from the airport. Examination of the airplane indicated that the landing gear was extended at the time of impact. No mechanical malfunctions or anomalies were identified with the engine, airframe, or gyroscopic flight instruments that would have precluded normal operation; therefore, the

investigation was unable to identify the reason for the pilot's reported loss of engine power and "lost compass." It is likely that, following the emergency declaration, the pilot began to shed tasks and became completely dependent on the controller for providing orientation. The inaccurate and varying communications from the controller, including the use of the word "radial" rather than "heading," could have contributed to a loss of situational awareness. Further, had the controller issued a safety alert to the pilot or provided him with the elevation of terrain located between the airplane and the airport, the pilot may have been able to take action to avoid the terrain.

Given the radar track of the airplane and the evidence that the landing gear was extended at the time of impact, it is likely that the pilot had configured the airplane for landing and elected to continue the airplane's descent in an attempt to locate the airport. However, despite the automated weather observation indicating the airport was experiencing visual meteorological conditions, witness accounts and additional sources of weather data indicated the presence of heavy fog in the vicinity of the accident site about the time of the accident. It is unlikely that the pilot was able to obtain visual contact with the ground or the airport environment, and descended into terrain as he attempted to do so.

## Probable Cause and Findings

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

The instrument-rated pilot's decision to conduct a visual approach to the airport in night, instrument meteorological conditions, which resulted in controlled flight into terrain. Contributing to the accident was the pilot's loss of situational awareness, the controller's failure to provide clear and concise instructions to the pilot following his declaration of an emergency, and the controller's failure to provide adequate information to the pilot regarding the airplane's proximity to terrain.

### Findings

<b>Aircraft</b>	Altitude - Not attained/maintained (Cause) Navigation system - Not specified Engine (reciprocating) - Not specified
<b>Personnel issues</b>	Decision making/judgment - Pilot (Cause) Common phraseology - ATC personnel (Factor) Accuracy of communication - ATC personnel (Factor)
<b>Environmental issues</b>	Dark - Effect on personnel (Factor)

## Factual Information

On August 18, 2014, at about 2130 Pacific daylight time, a Beech B35, N1160T, collided with terrain while maneuvering near Novato, California. The airplane was registered to and operated by the pilot under the provisions of Title 14 Code of Federal Regulations Part 91 as a personal flight. The private pilot was fatally injured and the airplane was substantially damaged. Visual and instrument meteorological and dark night conditions prevailed in the area at the time of the accident. An instrument flight rules (IFR) flight plan was filed for the flight. The cross-country flight originated from Brookings Airport (BOK), Brookings, Oregon at 1920 with a destination of San Carlos Airport (SQL), San Carlos, California.

According to air traffic control (ATC) communications, the pilot was in contact with a SeattleRoute Traffic Control Center (ARTCC) controller and was transferred to an Oakland ARTCC controller during the southbound flight. Soon after being transferred, the pilot reported a loss of engine power. The controller initially gave the pilot vectors to Sonoma County Airport (STS), Santa Rosa, California about 27 miles to the north of (behind) the pilot's position, and followed up by issuing vectors to Gness Field (DVO) Novato, about 19 miles to the east of the airplane's position. After that discussion, during which the airplane had turned west, north, and then later east, the pilot reported that the engine power had returned. That statement was about 5 minutes after the pilot's initial notification to ATC of an engine problem. The pilot continued eastbound, and shortly thereafter there was a simultaneous loss of radar and radio contact, when the airplane was about 8 miles west of DVO.

Review of radar data provided by the Federal Aviation Administration revealed a primary target, consistent with the accident airplane, was traveling on a southbound heading at 7,200 feet indicated altitude before descending over the next 7 minutes to about 6,000 feet mean sea level (msl). The radar then depicted a right turn to a northerly heading, while continuing to descend to about 5,000 feet. The data further depicted the target enter a left 270 degree left turn followed by an easterly heading while descending down to below 2,000 feet. The target then ascended to about 3,000 feet and made several left and right turns before heading east towards the DVO area. The last 10 radar targets depicted an easterly heading while descending to about 1,000 feet. The last radar target was about 1/3 mile from the accident location.

The airplane was the subject of an Alert Notification, and the wreckage was located early the next morning, near the location of the last radar contact at an elevation of about 700 feet. About 32 acres of land was burned during the postimpact fire.

A witness located about 2 1/2 miles south-southwest of the accident site described an airplane flying at a low altitude over his house about the time of the accident. He stated the sound of the engine was loud as it passed by overhead, drowning out the sound of the TV that he was watching. The witness's brother that lives 1 1/2 miles further west of the first witnesses house, also stated that an airplane flew over his house about the time of the accident and seemed to be at a low altitude and the sound of the engine was loud. He concluded that there was heavy fog at the time and that didn't clear up until the following day.

## PERSONNEL INFORMATION

The pilot, age 51, held a private pilot certificate with an airplane single-engine land, and instrument rating. The most recent third-class FAA medical certificate was issued in June 2008, with no limitations. The pilot reported on that medical certificate application that he had accumulated 650 total flight hours and 50 hours in the last 6 months. The pilot logbooks were not obtained during the investigation.

#### AIRCRAFT INFORMATION

The four-seat, low-wing, Beechcraft V35B Bonanza, serial number (S/N) D-9928, was manufactured in 1976. It was powered by a Continental IO-520-BB (10) engine, serial number 285974, rated at 285 horse power and equipped with a McCauley model 3A32C76-SMR variable pitch propeller. Review of the maintenance logbook records showed an annual inspection was completed May 23, 2014, at a recorded tachometer reading of 2,707 hours, airframe total time of 2,707 hours and engine time since major overhaul of 852 hours. Due to post-accident thermal damage, the current tachometer and Hobbs hour-meter readings were not obtained.

On August 17, 2014, the airplane was refueled with 52 gallons of 100LL fuel at the Southwest Oregon Regional Airport, North Bend, Oregon.

#### METEOROLOGICAL INFORMATION

The closest weather reporting station to the accident site was located at DVO, which was located 9 miles east of the accident site, at an elevation of 2 feet msl. At 2115, fifteen minutes prior to the accident, the station disseminated an automated observation report; wind calm, visibility 10 statute miles, sky clear, temperature 15° C, dew point 13° C, altimeter 29.83 inches of mercury.

At DVO, weather conditions deteriorated after 2200 with a ceiling overcast of 1,100 feet agl and lower. Similar conditions were reported at Napa County Airport (APC), Napa located about 24 miles east of the accident site and Charles M Schulz - Sonoma County Airport, Santa Rosa located about 24 miles north of the accident site.

Weather satellite imagery an hour prior to the accident shows an area of low stratiform type clouds forming along the coast and inland in the vicinity of the accident, with the cloud tops near 1,500 feet msl. Other satellite imagery at 1/2 hour before and after the accident time shows the stratiform type clouds along the coast and inland in the vicinity of the accident site.

According to the Astronomical Applications Department at the United States Naval Observatory, the official sunset was at 1959, the official end of civil twilight was at 2027, and the official moonrise was 0039.

#### COMMUNICATIONS

According to ATC communications, the pilot was in contact with Seattle ARTCC and was being transferred to the Oakland ARTCC. During the communication between the two controllers, the Seattle controller stated that he never did see the airplane on his radar due to a radar outage, and for the Oakland controller to expect to hear from the pilot 85 miles north of

Mendocino. The radar outage covered the southern Oregon and northern California area, which the Seattle controller relied on. The Oakland controller could not see the airplane on his radar at the expected time, and informed the pilot that his transponder was not working. After some communication, the pilot recycled his transponder, and about 4 minutes later, the controller said they had him on radar. A transcript of the recorded transmissions between the pilot of N1160T and ATC is attached to the accident docket. The following partial transcripts are noted.

At 2049:45, while N1160T is passing over the Point Reyes area, the controller issued "...after point reyes you're cleared via the point reyes one arrival into san carlos," and N1160T acknowledged by repeating the clearance.

At 2112:44, N1160T was instructed by the controller to cross Stins intersection at 5,000 feet.

At 2121:07, the controller instructed the pilot to change frequencies and contact NORCAL approach, and the pilot acknowledged.

At 2121:23, N1160T had not changed frequencies and stated to the controller, "...got some engine trouble might need uh might need to divert."

At 2121:34, N1160T then stated, "one one six zero tango is calling in an emergency."

At 2121:37, the controller asked N1160T to state the nature of the emergency.

At 2121:45, the controller again asked N1160T to state the nature of the emergency.

At 2121:50, N1160T stated "losing engine power one one six zero tango."

At 2122:01, N1160T stated "what's my best routing from here..."

At 2122:04, the controller replied by stating "uh six zero tango i have santa rosa off your three five zero radial at about twenty miles". At this time, N1160T was traveling southbound and Santa Rosa was north his current position.

At 2122:10, N1160T requested the heading again, and the controller repeated.

At 2122:20, the controller queried "...uh you wanna go to gnoss that's about ten miles."

At 2122:45, N1160T stated "out of engine in and out of engine."

At 2122:48, the controller advised "...the uh gnoss airfield is at your zero seven five radial fourteen miles."

At 2123:00, N1160T replied "which one sorry?"

At 2123:02, the controller repeated the directions.

At 2123:50, the controller asked N1160T how many people were on board the airplane.

At 2123:52, N1160T stated "Just me."

At 2124:52, N1160T asked the controller "(unintelligible) am i heading november one one six zero tango, which direction?"

At 2124:57, the controller advised N1160T "...you're in the right direction right now for novato."

At 2125:35, the controller advised N1160T that the minimum vectoring altitude in his area was 3,400 feet. At this time N1160T was descending below 2,000 feet over mountainous terrain east of the Point Reyes area.

At 2125:59, the controller stated, "november six zero tango, you're uh coming left over like a you're on like a three six zero heading right now turn uh right heading of zero seven five."

At 2126:37, N1160T stated, "okay i appear to have uh engine back and uh and power."

At 2126:40, the controller requested "...fly heading zero seven five for novato airfield."

At 2127:16, N1160T queried the controller "what heading do you show me on for one one six zero tango."

At 2127:18, the controller stated to N1160T that he was on the 360° heading and gave him a heading of 085° for DVO.

At 2127:34, the controller queried N1160T "november one one six zero tango say your intentions do you wanna try to land novato or do you wanna go somewhere else."

At 2127:39, N1160T stated "uh novato would be fine but i've lost my compass".

At 2128:06, the controller instructed N1160T to turn another 15° right, and N1160T answered "fifteen right". The controller then advised N1160T that he was on course for DVO and N1160T asked "how far one one six zero tango."

At 2128:32, the controller stated "...you're headed uh you're pretty close to heading uh in the right direction", and then added "...another 10 left now".

At 2128:42, N1160T queried the controller again, "how far for one one six zero tango".

At 2128:44, the controller answered, "oh about seven miles", followed by "actually its nine point seven miles from novato," and "november one one zero tango the novato altimeter is two nine eight three."

At 2129:48, N1160T repeated the altimeter setting and asked if DVO was VFR and the controller replied by stating "affirmative."

At 2130:05, N1160T advised the controller "i'm in the clouds..." and in the next transmission, asked "any hills between me and novato."

At 2130:20, the controller stated "i'll take a look right now" followed by "yeah i'm showing the weather at novato for one one six zero tango is uh zero four one five auto observation winds calm it's clear and ten miles visibility."

At 2130:41, N1160T stated "i'm in the cloud."

The last identified transmission from N1160T was at 2130:48 PDT, "one thousand feet."

A few minutes later, the controller asked the pilot of a Pilatus airplane, that was in the area at the time of the accident, to divert over the Novato area to see if he could observe N1160T on the ground at DVO. At 2136:00, the Pilatus pilot reported receiving an ELT signal. The Pilatus pilot further stated, "...completely overcast here, I can see the beacon at Gness, but uh, it's really almost completely obscured, we're gonna continue on to destination".

#### WRECKAGE AND IMPACT INFORMATION

The accident site was about 7 miles northwest of DVO. Examination of the accident site revealed that the wreckage was located on a northeast-facing slope, with a terrain elevation of about 700 feet msl. The debris path was about 350 feet in length, in a direction of about 045 degrees magnetic. Postimpact fire damage was found throughout the debris path and surrounding terrain. A total of about 32 acres was burned, and the wreckage was partially consumed by postimpact fire.

The debris field crossed over the top of a small grass covered hill with about 30 degree slopes on either side. The first identified point of contact (FIPC) was an area of disturbed dirt and grass about 350 feet from the main wreckage. Nose landing gear components were found near the FIPC, consistent with the landing gear being in the down position. Large scrape marks about 15 to 30 feet in length were observed about 190 feet further up from the FIPC where the hill started sloping downhill towards the main wreckage. A main landing gear fixed strut door was found near the scrape marks. The upper engine cowling was found 235 feet from the FIPC along the debris path. The main wreckage was another 65 feet further downhill and was pointing in the direction of 200 degrees magnetic. The propeller assembly and crankshaft propeller flange separated from the engine. The main wreckage (fuselage, wings, cabin, rear fuselage and empennage) remained mostly intact. Both flap actuators were retracted – flaps retracted. Pitch trim actuator measurement corresponds to one-degree tab trailing edge down. Flight control system was traced from the cockpit flight controls to the flight control surfaces and was found to be intact. The left wing remained attached to the airplane. The aileron and flap remained attached to the wind trailing edge. The right wing remained attached to the airplane and its aileron and flap remained attached. The leading edge of both tank areas was consumed by fire. The outboard leading edges were pushed aft, ballooning the upper and lower surfaces outward. The nose landing gear and two main landing gear struts separated from the airplane. The landing gear actuator housing and bellcrank were consumed by postimpact fire. The orientation of the landing gear extend rods suggest that the landing gear was being commanded to the extended position. The instrument panel, forward and aft cabin areas, and baggage compartment area were partially consumed by post-impact fire; only the cabin floor remained. The rear fuselage remained intact with the empennage and flight control surfaces attached.

The wreckage was relocated to a secure facility for further examination.

## MEDICAL AND PATHOLOGICAL INFORMATION

The Marin County Sherriff's Office Coroner's Division conducted an autopsy on the pilot on August 23, 2014. The medical examiner determined that the cause of death was "multiple blunt impact injuries."

The FAA Civil Aeromedical Institute conducted forensic toxicology examinations on specimens from the pilot, and reported that no carbon monoxide, cyanide, ethanol, or any screened drugs were detected.

## ADDITIONAL INFORMATION

### Post-Accident Examination

Further examination of the wreckage was conducted on August 21, 2014 at Plain Parts in Pleasant Grove, California. The fuel selector valve handle, the fuel sump and the fuel strainer was consumed by post-impact fire. The orientation of the selector valve was found in the left tank position. The remains of the horizontal situation indicator (HSI) compass ring was oriented about 030 degrees, airplane heading. The artificial horizon gyro was identified and disassembled. Scoring was identified in the housing suggesting that the gyro rotor was spinning at the time of impact. The vacuum system plumbing and indicators were consumed by postimpact fire. The vacuum pump was removed from the engine, disassembled and showed normal operating signatures. The rotor and vanes remained intact. The drive coupler displayed thermal damage.

A further examination of the engine was conducted on January 12, 2015 at Continental Motors Inc., Mobile Alabama. The engine was disassembled and all of the internal components were examined. Thermal damage and discoloration was found throughout the engine and its accessories. No evidence of preimpact mechanical failure was noted during the examination. For further information, see the Engine Examination Summary report in the public docket for this accident.

The propeller was examined on May 12, 2015 at McCauley Propeller Systems, in Wichita, Kansas. According to the McCauley Examination Report, the propeller had damage as a result of impact, and there were no indications of any type of propeller failure or malfunction prior to impact. The propeller had indications consistent with rotational energy absorption above windmilling (rotation at impact with some engine power) during the impact sequence. Exact engine power levels were not able to be determined. The propeller did not have impact signature markings or component positions indicating blades outside the normal operating blade angle range. No evidence of blade angle mismatch between blades at impact was noted.

During communication with the pilot, the controller was issuing radials some of the time and radar vectors at other times. According to the FAA's Aeronautical Information Manual (AIM) Pilot-Controller Glossary defines "radial" as a term used by ATC or pilots, as a magnetic bearing extending from a VOR/VORTAC/TACAN navigation facility.

## FAA Rules, Regulations, and Guidance to Pilots

The AIM, paragraph 4-1-16, describes the manner in which pilots could expect to receive traffic safety alerts from ATC and states, in part, the following:

A safety alert will be issued to pilots of aircraft being controlled by ATC if the controller is aware the aircraft is at an altitude which, in the controller's judgment, places the aircraft in unsafe proximity to terrain, obstructions or other aircraft. The provision of this service is contingent upon the capability of the controller to have an awareness of a situation involving unsafe proximity to terrain, obstructions and uncontrolled aircraft. The issuance of a safety alert cannot be mandated, but it can be expected on a reasonable, though intermittent basis. Once the alert is issued, it is solely the pilot's prerogative to determine what course of action, if any, to take. This procedure is intended for use in time critical situations where aircraft safety is in question. Noncritical situations should be handled via the normal traffic alert procedures....

### FAA Prescription to Air Traffic Controllers

FAA Order 7110.65, Air Traffic Control, prescribes ATC procedures and phraseology for use by personnel providing ATC services. Paragraph 2-1-2, "Duty Priority," states, in part, that controllers should "give first priority to separating aircraft and issuing safety alerts as required in this order. Good judgment must be used in prioritizing all other provisions of this order based on the requirements of the situation at hand."

Paragraph 2-1-2. "Duty Priority" states, in part, the following:

a. Give first priority to separating aircraft and issuing safety alerts as required in this order. Good judgment must be used in prioritizing all other provisions of this order based on the requirements of the situation at hand.

Paragraph 2-1-6, "Safety Alerts," states, in part, the following:

Issue a safety alert to an aircraft if you are aware the aircraft is in a position/altitude that, in your judgment, places it in unsafe proximity to terrain, obstructions, or other aircraft....

#### NOTE—

1. The issuance of a safety alert is a first priority...once the controller observes and recognizes a situation of unsafe aircraft proximity to terrain, obstacles, or other aircraft. Conditions, such as workload, traffic volume, the quality/limitations of the radar system, and the available lead time to react are factors in determining whether it is reasonable for the controller to observe and recognize such situations. While a controller cannot see immediately the development of every situation where a safety alert must be issued, the controller must remain vigilant for such situations and issue a safety alert when the situation is recognized....

#### PHRASEOLOGY—

TRAFFIC ALERT (call sign) (position of aircraft) ADVISE  
YOU TURN LEFT/RIGHT (heading),

and/or

CLIMB/DESCEND (specific altitude if appropriate)  
IMMEDIATELY.

## History of Flight

Enroute-cruise	Loss of engine power (partial) (Defining event)
Emergency descent	Flight instrument malf/fail Controlled flight into terr/obj (CFIT)

## Pilot Information

Certificate:	Private	Age:	51
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Unknown
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 None	Last FAA Medical Exam:	06/17/2013
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	(Estimated) 650 hours (Total, all aircraft), 50 hours (Last 90 days, all aircraft)		

## Aircraft and Owner/Operator Information

Aircraft Make:	BEECH	Registration:	N1160T
Model/Series:	V35B B	Aircraft Category:	Airplane
Year of Manufacture:	1976	Amateur Built:	No
Airworthiness Certificate:	Utility	Serial Number:	D-9928
Landing Gear Type:	Retractable - Tailwheel	Seats:	4
Date/Type of Last Inspection:	05/23/2014, Annual	Certified Max Gross Wt.:	
Time Since Last Inspection:	2708 Hours	Engines:	1 Reciprocating
Airframe Total Time:	as of last inspection	Engine Manufacturer:	CONTINENTAL
ELT:	Installed, activated, aided in locating accident	Engine Model/Series:	IO-550-BB
Registered Owner:	On file	Rated Power:	285 hp
Operator:	On file	Operating Certificate(s) Held:	None

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Night
Observation Facility, Elevation:	KDVO, 2 ft msl	Distance from Accident Site:	8 Nautical Miles
Observation Time:	2115 PDT	Direction from Accident Site:	105°
Lowest Cloud Condition:		Visibility	10 Miles
Lowest Ceiling:		Visibility (RVR):	
Wind Speed/Gusts:	Calm /	Turbulence Type Forecast/Actual:	/ Unknown
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	BROOKINGS, OR (BOK)	Type of Flight Plan Filed:	IFR
Destination:	NOVATO, CA (DVO)	Type of Clearance:	IFR
Departure Time:	1920 PDT	Type of Airspace:	Class E

## Airport Information

Airport:	Gnoss Field (DVO)	Runway Surface Type:	
Airport Elevation:	2 ft	Runway Surface Condition:	Unknown
Runway Used:	N/A	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	None

## Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	On-Ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	38.173889, -122.704722 (est)

## Administrative Information

Investigator In Charge (IIC):	Andrew L Swick	Report Date:	01/26/2017
Additional Participating Persons:	Matt DeSeelhorst; FAA; Oakland, CA Chris Lang; Continental Motors; Mobile, AL Paul Yoos; Textron Aviation; Wichita, KS Danny Ball; McCauley Propellers; Wichita, KS		
Publish Date:	01/26/2017		
Investigation Docket:	<a href="http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=89904">http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=89904</a>		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).