Aviation Investigation Final Report

Location:	GABBS, Nevada	**Accident Number:**	LAX97FA334
Date & Time:	July 23, 1997, 08:25 Local	**Registration:**	N2429T
Aircraft:	Navion G	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation		

Analysis

The non-instrument rated pilot departed California on a business flight to a South Dakota destination. No flight plan was filed. Radar flight following service was terminated as the pilot approached the western slopes of the Sierra Nevada Mountains, and there were no further radar contacts or voice communications with the pilot. The pilot did not request any en route weather briefings from FAA flight service stations, and his route of flight over the mountains to the accident site was not determined. Instrument meteorological conditions including multiple cloud layers and rain showers existed in the vicinity of the accident site. Additionally, between 0830 and 0900, National Climatic Data Center visible and infrared spectrum satellite imagery revealed an area of rapidly developing cumulonimbus clouds at the site. On May 18, 1998, the wreckage was located scattered over a distance of 0.64 miles, about 26 miles south of the pilot's intended direct route of flight. The engine, wings, flaps, ailerons, elevators and empennage were found separated from the fuselage, along with a handheld GPS receiver. Acquaintances of the pilot reported he kept accurate flight records. The pilot's logbook contained several 'pilot-in-command' entries indicating that cross-country business flights had been performed in actual instrument weather conditions while navigating using a GPS receiver. No safety pilot or CFI was listed as accompanying the pilot during these flights. About 1.5 days prior to the accident the pilot was treated for a periodontal infection. An antibiotic and narcotic pain reliever was prescribed, and partially empty containers of these drugs were found in the wreckage. Insufficient specimens remained to perform an autopsy or toxicological tests.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's attempted visual flight into instrument meteorological conditions which resulted in

his spatial disorientation and a loss of airplane control. A contributing factor was his overconfidence in his personal ability.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: CRUISE

Findings
1. (F) WEATHER CONDITION - CLOUDS
2. IN FLIGHT WEATHER AVOIDANCE ASSISTANCE - NOT OBTAINED - PILOT IN COMMAND
3. VFR FLIGHT INTO IMC - ATTEMPTED - PILOT IN COMMAND
4. (F) OVERCONFIDENCE IN PERSONAL ABILITY - PILOT IN COMMAND
5. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
6. (C) SPATIAL DISORIENTATION - PILOT IN COMMAND

Occurrence #2: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: DESCENT - UNCONTROLLED

Findings
7. (C) AIRFRAME - FAILURE,TOTAL
8. (C) DESIGN STRESS LIMITS OF AIRCRAFT - EXCEEDED - PILOT IN COMMAND

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

HISTORY OF FLIGHT

On July 23, 1997, at an undetermined time after 0825 hours Pacific daylight time, a Navion G, N2429T, owned and operated by the pilot, experienced an in-flight structural failure and crashed about 25 nautical miles (nmi) southeast of Gabbs, Nevada. Between 0800 and 0850, multiple cloud layers and rain showers existed in the vicinity of the accident site over the unpopulated, high desert terrain. The airplane was destroyed, and the non-instrument rated private pilot and passenger were fatally injured. The flight originated about 0655 from the Reid-Hillview Airport in San Jose, California. The pilot's intended destination was the Bob Wiley Field in Winner, South Dakota.

The pilot's wife provided the National Transportation Safety Board with a copy of her husband's computerized flight plan log sheet. The pilot did not file his flight plan with the Federal Aviation Administration (FAA). The log sheet indicated that upon departure the pilot planed to initially fly along a magnetic course of 047 degrees for 167 nmi until reaching the Hawthorne Airport, Hawthorne, Nevada. The pilot then planned to proceed on a course of 042 degrees for the next 200 nmi. The projected ground speed for the first two legs of flight was 187 knots. All of the flight legs were indicated as direct routes. No airways were listed.

After takeoff, the pilot requested and received radar flight following service from the FAA's Oakland, California Air Route Traffic Control Center (ARTCC). The FAA reported that the airplane's transponder signal was received intermittently. The FAA was not able to adequately track the target, and radar service was terminated.

According to the California Wing of the Civil Air Patrol, the airplane was last recorded on radar at 0752:02 when located at 38 degrees 01 minute 23 seconds north latitude, by 119 degrees 41 minutes 41 seconds west longitude. At this time the eastbound airplane was approaching the western slopes of the Sierra Nevada Mountains. Minutes earlier, the pilot had reported to the FAA that he was climbing to 11,500 feet mean sea level (msl).

On May 18, 1998, the airplane wreckage was discovered by cowboys in hilly terrain to the east of the Sierra Nevada mountains. The accident site was located about 47 nmi east-northeast (074 degrees magnetic) from the Hawthorne Airport, and approximately 26 miles southeast of the pilot's flight planned course.

PERSONNEL INFORMATION

The pilot's flight time information contained in this report was obtained from several sources including data which the pilot submitted to the FAA in his December, 1996, application for a

third-class aviation medical certificate, from acquaintances of the pilot, and from remnants of the pilot's personal flight record logbook found at the crash site. Employees at Gavillan Aviation in Hollister, California, reported that the pilot accurately and meticulously recorded his flying activities.

On March 18, 1996, the pilot was issued a Private Pilot certificate. Between May and July, 1996, the pilot's logbook recorded five business related cross-country flights during which 12.2 hours were logged in actual instrument weather conditions. The flights were listed in the logbook's "pilot-in-command" column, and no safety pilot or certified flight instructor was listed as being in the airplane. In one of the flight entries the notation "GPS" was written in the "Actual Instrument" column.

The pilot's logbook also indicated that within 90-days of the accident he had flown his airplane about 52 hours. No instrument flight hours were recorded during this period.

AIRCRAFT INFORMATION

A partial photocopy of the airplane's maintenance records was obtained and reviewed from Gavillan Aviation. In pertinent part, the records indicated that on June 25, 1997, an annual inspection was completed on the airplane, and the Hobbs meter registered 0.0 hours. The mechanic who performed the inspection verbally acknowledged that the inspection was actually completed a few days earlier, likely around June 18. No evidence was located of any outstanding maintenance squawks. According to Gavillan's owner, during the inspection the airplane's oxygen tank was serviced and completely filled.

No original records were provided for the Safety Board's review. The airplane's total time was estimated, and it is based upon the mechanic's recollection.

METEOROLOGICAL INFORMATION

The nearest aviation weather observation station to the accident site is located at the Tonopah Airport, Tonopah, Nevada. The airport is located about 38 nmi east-southeast (121 degrees magnetic) from the accident site, and its elevation is 5,426 feet msl.

At 0800, a special weather observation was taken at the Tonopah Airport. Although the rain showers which occurred the previous hour had ended, some showers continued to be noted in the vicinity of the airport. The sky condition was reported as follows: few clouds at 400 feet above ground level (agl); scattered clouds at 2,700 feet agl; and a broken ceiling at 10,000 feet agl. The temperature and dew point were both 15 degrees Centigrade. The prevailing visibility was 12 miles and was lower in southwesterly to northerly directions (toward the accident site area).

At 0850, the sky condition was reported as follows: few clouds at 600 feet agl; scattered clouds at 2,000 feet agl; and a broken ceiling at 10,000 feet agl. Towering cumulus clouds

were observed in all quadrants. The temperature and dew point were 18 and 16 degrees Centigrade, respectively. The surface visibility was 25 miles.

Satellite images in the infrared and visible spectrum were received from the National Climatic Data Center and reviewed by a Safety Board staff meteorologist. At 0830 and 0900, a rapidly developing area of cumulonimbus clouds was noted at the location of the accident site. (See attached reports.)

COMMUNICATION

The FAA's Western-Pacific Quality Assurance management reported that no preflight or in-flight communications occurred between the pilot and any flight service station. Also, a search of FAA facilities did not reveal evidence that any air-to-ground communications occurred with the pilot while passing over or east of the Sierra Nevada Mountains. No evidence of an emergency locator signal (ELT) was received.

WRECKAGE AND IMPACT INFORMATION

The engine assembly, wings, flaps, ailerons, and empennage were found separated from each other and from the fuselage. Wreckage was observed scattered over elevations between 5,400 and 5,700 feet msl. The entire airplane structure, including all flight control surfaces, was located at the accident site. There was no evidence of fire.

Along the wreckage distribution path, the first piece of wreckage located was a piece of left elevator-to-stabilizer fairing material. This was located at global positioning satellite (GPS) coordinates of 38 degrees 32.223 minutes north latitude, by 117 degrees 37.962 minutes west longitude. The elevators, tail, wings, and the main wreckage were located between the fairing material and the engine, which was located at 38 degrees 31.662 minutes north latitude, by 117 degrees 37.559 minutes west longitude. The distance and magnetic course between the first and last pieces of wreckage was approximately 0.64 nmi and 136 degrees. (See the Wreckage Diagram for additional information.)

An impact-damaged (destroyed) handheld type of GPS receiver was observed in the wreckage. It was found along with its two suction cup attachment fixtures next to the cockpit.

An oxygen cylinder, along with several feet of plastic tubing, and several nasal cannulas were found in the wreckage area. One cannula was observed in an unopened package, and another was without packaging material.

MEDICAL AND PATHOLOGICAL INFORMATION

The two occupants were found, with their seat belts attached, in the cockpit's front seats. The seats were located on a hillside and were observed separated from the cockpit and all other airplane structure. Inadequate specimens remained to perform an autopsy or toxicological

tests.

The pilot's FAA medical certificate was issued for a duration of 12 months. The certificate was the subject of a special issuance due to the pilot's history of diabetes controlled with oral medication.

The pilot's dentist verbally reported to the Safety Board that the pilot had been treated on an emergency basis during the afternoon of July 21, 1997. The dentist stated that the patient was complaining of a pain in his mouth. The patient was examined and found to have an "advanced periodontal infection surrounding a lower molar." The infection was observed in the tissue around one tooth and the surrounding tissue was swollen. The dentist prescribed amoxicillin and Vicodin.

Later during the afternoon of July 21, the prescription for these drugs was filled in the pilot's name. According to a spokesperson for the dispensing pharmacy, the prescription was filled with drugs named Trimox and Hydroco. The pharmacist dispensed the Trimox with instructions to take the medication until gone. The pharmacist dispensed 20 tablets of the Hydroco with the instructions to take one tablet every 4 hours as needed for pain.

Pharmacy personnel reported that Trimox is an antibiotic. Hydroco is a narcotic pain-reliever that contains 500 mg of acetaminophen, and 7.5 mg of hydrocodone (similar to codeine).

Pharmacy personnel further reported that possible side effects from taking Hydroco include light-headedness, dizziness, and nausea. Precautions using the drug include exercising caution when engaging in activities requiring alertness such as driving or using machinery. Additionally, the drug can depress breathing.

Numerous vials containing medications were found in the pilot's personal belongings at the accident site. In particular, vials marked Trimox and Hydroco were located. The pilot's wife subsequently reported observing 16 remaining tablets of Hydroco in the vial. The Safety Board was not able to determine the time interval between the pilot's last dose of Hydroco and the accident.

TESTS AND RESEARCH

The airplane wreckage was recovered from the accident site. On June 17, 1998, it was examined while in storage at the facilities of Plain Parts, in Pleasant Grove, California. The following observations were made:

Propeller

The propeller was observed bent into an "S" shape and was torsionally twisted. Its cambered surface was found scratched in a chordwise direction. The leading edge of the propeller was observed nicked.

Engine

The spark plugs were visually examined, and the FAA opined that the plugs appeared in a serviceable condition. The engine's case was found impact damaged, and the crankshaft could not be rotated. A partial teardown examination was performed. The oil sump and rocker covers were removed. The mechanical continuity of the engine was confirmed. At the conclusion of the examination, the FAA and engine participant indicated that no evidence of any preimpact malfunction or failure had been observed in any of the examined components.

Airframe

An examination of the left and right side of the tail in the vicinity of where the horizontal stabilizers had been attached revealed no evidence of repair, discoloration, fatigue, or corrosion. The left and right sides of the horizontal stabilizer-to-tail attachment fittings were observed broken on the tailcone. The breaks on the tail were oriented in outward and downward directions. The breaks were symmetrical in appearance.

The right horizontal stabilizer was observed torsionally twisted with its leading edge bent downward and the tip bent upward. The left horizontal stabilizer was found with its leading edge curled downward and twisted in an aft direction. The left stabilizer was found partially separated from its tail attachment structure. It was observed twisted aft of the elevator with the stabilizer's leading edge pointed in an aft direction (see photographs).

The outboard portion of the left elevator and the entire right elevator were found separated from the horizontal stabilizers. An examination of the gap seals at the trailing edges of the stabilizers revealed the bottom skins were bent in a downward direction consistent with the elevators having over-traveled at their hinge lines in a downward direction. No evidence was observed of the elevators having over-traveled in an upward direction. The corresponding elevator control cables, which remained attached to the separated tail section, were observed broken and exhibited tension overload "broomstraw" signatures.

The vertical stabilizer and rudder assembly remained attached to the empennage and appeared devoid of in-flight damage. The empennage was observed separated from the fuselage at the aft tailcone bulkhead. All of the attachment rivets circumferentially oriented around the tailcone exhibited sheer overload characteristics.

The entire right wing was observed broken from the fuselage at a location adjacent to the right side of the cabin. The entire left wing with the attached center section was found separated from the fuselage. The two front cockpit seats were found separated from the wing's center section. The rear cabin seats remained attached to the floor tracks in the wing.

ADDITIONAL INFORMATION

Accident Time Calculation

The straight-line distance between the airplane's last known position at 0752 and the crash site is approximately 102 nmi. Based upon this time, distance, and the pilot's projected ground speed of 187 knots, the Safety Board calculates that the airplane could have arrived at the crash site at 0825. If the airplane's average speed was reduced to 110 knots (its average speed based upon recorded radar data between 0734 and 0752) it would have arrived at the crash site at 0848.

Prohibition On Operations During Medical Deficiency

The FAA has published regulations regarding operating an airplane during periods of medical deficiency (see 14 CFR Sec. 61.53). In pertinent part, the regulation states the following:

A person who holds a current medical certificate shall not act as pilot-in-command while that person (1) knows or has reason to know of any medical condition that would make the person unable to meet the requirements for the medical certificate necessary for the pilot operation; or (2) is taking medication or receiving other treatment for a medical condition that results in the person being unable to meet the requirements for the medical certificate necessary for the pilot operation.

Wreckage Release.

The wreckage was verbally released to the owner's assigned insurance adjuster on June 17, 1998. No parts were retained.

Pilot Information

Certificate:	Private	**Age:**	59,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Unknown
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	December 11, 1996
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	580 hours (Total, all aircraft), 160 hours (Total, this make and model), 460 hours (Pilot In Command, all aircraft), 70 hours (Last 90 days, all aircraft), 52 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Navion	**Registration:**	N2429T
Model/Series:	G G	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	NAV-4-2429
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	June 18, 1997 Annual	**Certified Max Gross Wt.:**	3315 lbs
Time Since Last Inspection:	62 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	3500 Hrs	**Engine Manufacturer:**	Continental
ELT:	Not installed	**Engine Model/Series:**	IO-470-H
Registered Owner:	FRANK M. COLLINS	**Rated Power:**	260 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	TPH ,5426 ft msl	**Distance from Accident Site:**	38 Nautical Miles
Observation Time:	08:50 Local	**Direction from Accident Site:**	121°
Lowest Cloud Condition:	Unknown	**Visibility**	25 miles
Lowest Ceiling:	Broken / 10000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	140°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	18°C / 16°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	SAN JOSE , CA (RHV)	**Type of Flight Plan Filed:**	None
Destination:	WENDOVER , UT (ENV)	**Type of Clearance:**	None
Departure Time:	06:55 Local	**Type of Airspace:**	Class G

Airport Information

Airport:		**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:	0	**IFR Approach:**	
Runway Length/Width:		**VFR Approach/Landing:**	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	38.799655,-118.110595(est)

Administrative Information

Investigator In Charge (IIC):	Pollack, Wayne
Additional Participating Persons:	ADRIAN GRIEVE; RENO , NV MIKE GRIMES; LANCASTER , CA
Original Publish Date:	January 28, 2000
Last Revision Date:	
Investigation Class:	Class
Note:	
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