National Transportation Safety Board
Aviation Accident Final Report

Location:	Carlsbad, CA	**Accident Number:**	SEA06MA047
Date & Time:	01/24/2006, 0640 PST	**Registration:**	N86CE
Aircraft:	Cessna 560	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	4 Fatal
Flight Conducted Under:	Part 91: General Aviation - Executive/Corporate		

Analysis

Air traffic control cleared the flightcrew for the instrument landing system (ILS) approach to runway 24, which was 4,897 feet long. The flightcrew then reported that they had the runway in sight, cancelled their instrument flight rules (IFR) clearance, and executed a visual flight rules (VFR) approach in VFR conditions to the airport. The reported winds favored a landing toward the east, onto the opposite runway (runway 6). During the approach, after a query from the first officer, the captain indicated to the first officer that he was going to "...land to the east," consistent with the reported winds. However, the final approach and subsequent landing were made to runway 24, which produced a six-knot tailwind. During the approach sequence the captain maintained an airspeed that was approximately 30 knots higher than the correct airspeed for the aircraft's weight, resulting in the aircraft touching down about 1,500 feet further down the runway than normal, and much faster than normal. The captain then delayed the initiation of a go-around until the first officer asked if they were going around. Although the aircraft lifted off the runway surface prior to departing the paved overrun during the delayed go-around it impacted a localizer antenna platform, whose highest non-frangible structure was located approximately 304 feet past the end of the runway, and approximately two feet lower than the terrain at the departure end of the runway. The aircraft continued airborne as it flew over downsloping terrain for about 400 more feet before colliding with the terrain and a commercial storage building that was located at an elevation approximately 80 feet lower than the terrain at the end of the runway. The localizer antenna platform was located outside of the designated runway safety area, and met all applicable FAA siting requirements. The captain had type 2 diabetes, for which he took oral medication and monitored blood sugar levels. He did not reveal his history of diabetes to the FAA. The captain's post-accident toxicology testing was consistent with an elevated average blood sugar level over the previous several months; however, no medical records of the captain's treatment were available, and the investigation could not determine if the captain's diabetes or treatment were potentially factors in the accident. The captain of the accident flight was the sole owner of a corporation that was asked by the two owners of the accident airplane to manage the airplane for them under a Part 91 business flight operation. The two owners were not pilots and had no professional aviation experience, but they desired to be flown to major domestic airports so that they could transfer and travel internationally via commercial airlines. One of the two

owners stated that the purpose of the accident flight was to fly a businessman to a meeting, and to also transport one of the owner's wives to visit family at the same destination. According to one of the owners, the businessman was interested in being a third owner in the accident airplane, so the owner permitted the businessman to fly. The owner also stated that the accident pilot told him that the passenger would pay for expenses directly related to the operation of the airplane for the flight (permitted under FAA Part 91 rules), and an "hourly fee" (prohibited under FAA Part 91 rules); however, no documentation was found to corroborate this statement for the accident flight or previous flights.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The captain's delayed decision to execute a balked landing (go-around) during the landing roll. Factors contributing to the accident include the captain's improper decision to land with a tailwind, his excessive airspeed on final approach, and his failure to attain a proper touchdown point during landing.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: LANDING - ABORTED

Findings
1. (F) IN-FLIGHT PLANNING/DECISION - IMPROPER - PILOT IN COMMAND
2. (F) AIRSPEED(VREF) - EXCESSIVE - PILOT IN COMMAND
3. (F) PROPER TOUCHDOWN POINT - NOT ATTAINED - PILOT IN COMMAND
4. (C) REMEDIAL ACTION - DELAYED - PILOT IN COMMAND
5. (F) WEATHER CONDITION - TAILWIND
6. OBJECT - AIRPORT FACILITY

Factual Information

*** THIS REPORT WAS MODIFIED ON DECEMBER 18, 2007 **

HISTORY OF FLIGHT

On January 24, 2006, approximately 0640 Pacific standard time, a Cessna Citation 560, N86CE, impacted the localizer antenna platform during an aborted landing (go-around) on runway 24 at McClellan-Palomar Airport, Carlsbad, California. The two airline transport pilots and their two passengers received fatal injuries, and the aircraft, which was owned by GOSHIP AIR, LLC, of Ketchum, Idaho, was destroyed by the impact sequence and the post crash fire. The flight, which was carried out under 14 CFR Part 91, departed Friedman Memorial Airport, Hailey, Idaho, at 0600 mountain standard time (MST), and was being operated under an instrument flight rules (IFR) flight plan. At the time of the accident, the crew had canceled their IFR flight plan, and were executing a Visual Flight Rules (VFR) approach to runway 24 in visual meteorological conditions.

The owners (principles) of GOSHIP AIR, LLC, were two businessmen with no professional aviation experience. According to one of the two principals of GOSHIP AIR, LLC, the flight to Carlsbad was scheduled on the day prior to the flight as a result of a phone call from JAXAIR, LLC, which consisted of one individual who was a pilot and was hired to manage the accident airplane for GOSHIP AIR (see the "Additional Data and Information" for detailed information regarding GOSHIP AIR and JAXAIR), According to the GOSHIP AIR principal, during this phone call, he was advised that JAXAIR and a local businessman had discussed the possibility of using the accident airplane to fly that individual to Carlsbad for a scheduled business meeting in San Diego. Permission was granted, and the wife of the GOSHIP AIR principal, who desired to visit family members in Southern California, was added as a second passenger. JAXAIR then advised Sun Valley Aviation, the owners of the hangar where the aircraft was kept, that the aircraft should be made ready for a 0530 departure the next morning.

According to Sun Valley Aviation, on the morning of the accident flight, the co-pilot arrived at the hangar at 0455, and proceeded to preflight the aircraft. The JAXAIR captain arrived at 0520, the business passenger at 0532, and the wife of the GOSHIP AIR principal arrived last at 0545. After the passengers were loaded, the aircraft was started using a ground power unit (GPU), and then it taxied for takeoff at 0555. Discussions with personnel at Sun Valley Aviation, and a review of their security camera videos did not reveal any unusual actions or activities on the part of the flight crew, nor any obvious anomaly associated with the aircraft.

The aircraft departed Hailey at 0600 MST (0500 Pacific standard time), climbed to an en route altitude of flight level 380, and remained there until 0605 Pacific standard time (PST), when it was cleared by Los Angeles Center to descend to flight level 350. At the time the clearance was issued, the aircraft was approximately 170 nautical miles straight-line distance, at a bearing of 026 degrees magnetic from the destination airport (although longer by flight path). Two minutes later, at 0607, the aircraft was cleared down to flight level 310. Approximately six minutes later, at 0613, the crew was given a clearance of direct Thermal (TRM), direct ESCON intersection, direct Carlsbad, and also cleared down to flight level 280. Three minutes later, at 0616, the crew was cleared down to flight level 240, and three minutes after that (0619), they were cleared to descend to 16,000 feet.

The aircraft reached 16,000 feet mean sea level (MSL) just after 0626, and about one minute later the crew was cleared down to 12,000 feet. The aircraft reached 12,000 feet between 0630 and 0631, and at 0631:11, the crew was cleared to fly direct to ESCON intersection, and to descend to 8,000 feet. They were also advised to expect the Instrument Landing System (ILS) approach to runway 24, and they were told that the ILS glideslope was unusable. Approximately one minute later, at 0632:39, the crew was cleared to descend and maintain 5,200 feet. Thirty seconds later, at 0633:09, the crew was cleared down to 3,500 feet, advised that they were five miles from ESCON intersection, and told to maintain 3,500 feet until they were established on the ILS for runway 24. At 0635:01 the crew was advised that the airport was at their 12 o'clock position at six and one-half miles, and they acknowledged that it was in sight. At 0635:07, the controller at Southern California (SOCAL) Approach Control advised the crew to contact the Palomar tower. About six seconds later, the controller told the crew to disregard the switch to tower, since it did not open for another 25 minutes. He then advised the crew to either cancel their IFR clearance with him (the controller), or to report a cancellation within five minutes after landing. At 0635:22, the crew advised the controller that they were canceling their IFR clearance and switching to frequency 118.6 (Polomar common traffic advisory frequency).

A review of the descent profile revealed that at the time the crew leveled off at 16,000 feet, the groundspeed of the aircraft was approximately 350 knots. When the crew leveled at 12,000 feet, the groundspeed of the aircraft decreased to about 295 knots, and then increased to about 330 knots for about one minute, before momentarily decreasing to 280 knots. The groundspeed then increased again to about 300 knots, and remained there for about another minute. About 0634:30, as the aircraft was descending through an altitude of about 6,700 feet, the groundspeed began a relatively linear decrease that brought it from about 300 knots to approximately 150 knots in a period of about two minutes. At the beginning of this speed decrease, the aircraft was about 8.5 miles from the end of the runway, and approximately 3,200 feet above the ILS glideslope. At the end of this two-minute period, the aircraft was seven-tenths of a mile from the end of the runway, and according to the NTSB performance data profile, within the glideslope two-dot deviation limit.

About four-tenths of a mile from the end of the runway, the flightcrew went below the two-dot deviation limit, decreased their rate of descent from the 3,000-4,000 feet per minute that they had maintained for the previous minute, to about 1,000 feet per minute, and then crossed the runway threshold at a groundspeed between 130 and 140 knots. This groundspeed equated to a calibrated airspeed of 124 to 134 knots, with a six-knot tailwind. According to the Cessna Aircraft Company, the recommended reference airspeed for the accident airplane under the known landing weight conditions was 101 knots (see the "Airplane Information" section for detailed information regarding the calculation of this recommended reference airspeed).

A review of the Cockpit Voice Recorder (CVR) and the recorded air traffic control communication during the descent revealed that the fight crew acquired both the Automated Terminal Information Service (ATIS) airport information and the Automated Surface Observation System (ASOS) weather information about 0622. At that time, their descent was approaching flight level 220, and the winds at Palomar were reported from 040 degrees at six knots. At 0632:14, the First Officer stated, "I'll be off on one," and the Captain responded with "Okay." From 0632:20 until 0633:49 (about one minute and thirty seconds) the First Officer was communicating with Western Flight Services, primarily about transportation for the passengers, and the Captain was communicating with Approach Control. During that period,

approach control advised the crew that they were five miles from ESCON, and instructed them to maintain 3,500 feet until established on the localizer, and that they were cleared for the ILS to runway 24.

Then after a brief pause, the controller added "You gonna be able to get down okay?" The Captain responded to the controller's question with, "ah yeah, thank you," but he did not read back the clearance, and the First Officer told the Captain to, "say thirty-five hundred until established." The First Officer then went back to his communications with Western Flight Services, but the Captain did not read back the clearance.

At 0633:53, about four seconds after completing his Western Flight Services communications, the First Officer asked the Captain to confirm that they had been cleared for the approach, and the Captain responded with, "That's what he said." About six seconds after asking the Captain to confirm that they had been cleared for the approach, the First Officer stated, "Is that the airport down there," and the Captain responded with, "yeah," followed by what sounded like a chuckle.

About six seconds after the Captain's response, the First Officer asked the Captain if he wanted to use speed brakes, and the Captain responded, "No, I thought it would be a go-around, land to the east ..." (A landing "to the east" would have placed the airplane in a position to land on runway 6, which would have been the opposite end of runway 24, and would have been into the reported wind direction). Almost immediately after that communication, a portion of the ASOS transmission is heard again, and the First Officer advised the Captain that the winds were from 040 degrees, which the Captain acknowledged.

About 40 seconds after the First Officer gave the Captain the updated wind direction, the controller advised the crew that the airport was at their 12 o'clock position at six and one-half miles. The First Officer advised the controller that it was "in sight," and the controller responded by advising the crew that they could "use S-turns to get down." The First Officer then thanked the controller for that clearance. At that time, the aircraft was about 5.8 miles from the end of the runway, and descending through 5,000 feet. At 0635:20, there was an increase in CVR background noise, which according to the NTSB Vehicle Recorder Specialist Factual Report, was consistent with the extension of the landing gear.

About 20 seconds later, after he had canceled the flight's IFR clearance with the controller, the First Officer told the Captain, "Okay, you got forty-nine hundred feet." The Captain responded with, "I know, I'm slowing down." To that the First Officer responded, "Alright." About five seconds after the First Officer's response to the Captain, a series of Enhanced Ground Proximity Warning System (EGPWS) alerts were recorded on the CVR. The series began with a number of intermittent "sink rate" alerts, and terminated about 20 seconds later with, "pull up, pull up, pull up, pull up, pull up, sink rate, sink rate, minimums, minimums, one hundred, sink rate, forty, thirty, sink rate". The series of alerts terminated at 0636:31, and, according to the NTSB Vehicle Recorder Specialist Factual Report, the sound of the landing gear contacting the runway occurred at 0636:52.8.

Although the Captain had earlier indicated to the First Officer that he was going to "...land to the east," the approach and subsequent landing were made to runway 24.

According to numerous witness statements and NTSB measurements based upon witness accounts and security camera video recordings, the aircraft's wheels did not contact the runway until it reached a point approximately 1,500 feet west of the runway 24 threshold. Then,

according to many of the same witnesses, within one to two seconds after touchdown, both thrust reversers deployed, followed almost immediately by the loud engine noise that they normally associated with the power applied for thrust reverser operation. At that point, most of the witnesses who had initially started watching the aircraft because of what they perceived as its higher than normal approach speed (some called it "very fast", or "way too fast") turned their attention to other things. The witnesses that continued to look at the aircraft and/or listen to the sounds from its engines, said that it appeared normal to them when after a number of seconds the engine noise began to decrease as an aircraft slowed. The witnesses stated that they were surprised when they heard the engines spool-up (accelerate) again, and most of the witnesses assumed that meant the crew had aborted the landing and were initiating a go-around.

Although a number of witnesses looked back toward the aircraft when its engines accelerated, their view was blocked by structures, parked vehicles and parked aircraft, and none reported actually seeing the aircraft depart the end of the runway. (No tire tracks were noted by investigators in the easily marked terrain off the departure end of the runway, indicating that the aircraft was airborne as it passed the runway overrun.) After passing the end of the runway, the aircraft continued another 304 feet, whereupon it impacted the non-frangible wooden platform upon which the localizer antenna array was sitting.

According to the NTSB Vehicle Recorder Specialist Factual Report, at 0636:52.8, there was a sound recorded on the CVR consistent with one or more of the landing gear contacting the runway, followed one and two-tenths seconds later (0636:54.0) with two distinct clicks, followed by a significant increase in background noise. For approximately the next five seconds, there were no communications between the crew members, nor were there any significant changes in background noise. Then at 0636:58.9 the First Officer said, "Let's get on them." To which the Captain responded, "Yeah, I don't like this, we got, we got that (expletive) reverser over there." For the next six seconds, there were no inter-crew communications. At 0637:06.2, the First Officer asked twice, in rapid succession, if they were going around, and the Captain responded with, "Yeah, let's get (unintelligible word) out of here."

At 0637:07.5, fourteen and seven-tenths seconds after the initial sound consistent with the gear contacting the runway, there was a significant decrease in background noise. Then, about two seconds later, the First Officer uttered two expletives, and about four seconds after that, there was a sound similar to a clunk and a sound similar to two thumps. Over the next three seconds there were a number of loud noises, with the final discernable, recorded sounds being an aural warning tone, followed by an electronic voice stating, "Bank Angle." The recording ended immediately thereafter.

WRECKAGE AND IMPACT INFORMATION

Examination of the accident site and wreckage by investigators revealed the following information:

After traveling approximately 304 feet past the departure end of the runway, the aircraft impacted the center two sections of the non-frangible localizer antenna platform. The aircraft's nose wheel tire contacted the center platform support beam near its eastern end. The nose wheel fork, wheel, and tire assembly, which were sheared from the gear strut, were located on the ground near the west end of the platform central support beam. The majority of the center two ten-foot-wide sections of the platform and their supporting structure were torn out by the

impact, and were scattered over a 40-foot wide by 115 -foot long path on the down slope to the west of the platform site. The outboard most 18 inches of the left wing impacted the steel platform access ladder approximately eight to eleven inches above the top surface of the platform. This section of the wing separated from the wing structure, and was found entangled in the ladder structure. Besides the nose wheel assembly and the left wing section, the only other aircraft structure found at the antenna site was the right main gear door. This door was located on the ground near the back (western) outboard end of the destroyed right platform center section.

An outboard portion of a wing flap was found near the right (north) edge of the debris field approximately 70 feet beyond the east (initial impact) side of the platform. A portion of the right elevator was found near the center of the debris field about 150 feet past the east side of the platform. The outboard most 17 inches of the right wing were located near the right edge of the debris field approximately 220 feet beyond the initial impact point. A two-foot section of the left wing outboard leading edge structure was located about 350 feet beyond the platform, near the center of the debris field. This wing section had a very clearly defined flat-surface impact mark approximately four inches wide, running nearly perpendicular to the leading edge. The left main landing gear structure was found approximately 395 feet past the impact point, at an elevation approximately 80 feet lower than the terrain at the end of the runway. The landing gear was wrapped/entangled in the chain link fence mesh material from the fence that separated the airport property from the commercial property to its west. About 15 feet past that fence was the first distinguishable ground scar, which was about six inches deep and five feet long.

About 30 feet past that scar, were a number of horizontal scratches on the lower part of the wall of the self-storage building. These were the first indications of the aircraft's contact with the building. Those scratches led to the beginning of an approximately 20-foot long slash in the side of the storage building, running from near ground level at its east end to near the roof level of the one-story building on its west end. About 15 feet past the west end of that slash, the building had been punctured by the aircraft. Portions of the aircraft's instrument panel were found on the floor of the two storage units that had been penetrated at that location. The aircraft did not contact the building again as it slid about 75 more feet to the west along an earthen berm. The aircraft then impacted two trees before coming to a stop adjacent to the west end of the storage building.

Much of the aircraft's nose structure and numerous components from the cockpit were strewn along a low area that ran between the earthen berm and the side of the building from the primary puncture location to where the aircraft came to rest on a magnetic heading of about 105 degrees. The total length of the wreckage path/debris field measured approximately 522 feet from the west edge of the antenna platform.

After the aircraft came to rest, a majority of the structure and system components forward of the engine mount area were consumed or significantly damaged by the ensuing fire. All flight controls were accounted for during the on-site inspection, and control cable continuity was established from the aft pressure bulkhead to the elevator and rudder. Due to a combination of impact and thermal damage, control cable continuity from the cockpit to the aft pressure bulkhead to the ailerons could not be established. The flap handle was found in the up (retracted) position, and both throttle levers were approximately one inch aft of the maximum power setting.

The thermal damage to the aircraft melted much of the wing skin, and exposed the internal structural components. The accident sequence separated sections of the left main and left aft wing spars, and at the point of separation, the structure showed indications of overload. The right wing main and aft spars were attached to the spar carry-thru, but they were missing starting at a point adjacent to the speed brake. The right wing speed brake actuator was extended two and four-tenths inches, and the right flap actuator was extended four and two-tenth inches (These readings were not considered reliable as pre-impact positions because of the tendency of the hydraulic actuator to change positions during or after the accident impact sequence.) The left speed brake and flap actuators were not able to be identified. The rudder was held in the full right position by the left elevator's bent trailing edge. The left elevator trim tab rod was extended one and three-tenths of an inch, which equates to approximately five degrees trim tab down, and the right elevator trim tab was extended one inch, which equates to approximately ten degrees trim tab down.

The right engine remained attached to its pylon, and the left engine had separated from its pylon, and came to rest on the ground just aft of the right engine. Some fan blade leading edges on the left engine had small gouges in them; gouges or metal smears on the left engine dome were consistent with some rotation at impact. The right engine blades were unremarkable, and the partially melted right engine dome exhibited rotational streaks. The thrust reversers on both engines were found in the stowed position. After having the thrust reversers removed, both engines were sent to Pratt & Whitney Engine Services (PWES) in Bridgeport, West Virginia, where under the direction of the Federal Aviation Administration (FAA), they underwent a teardown inspection on March 9-10, 2006. The inspection did not reveal any anomalies or pre-impact condition that would have precluded normal operation of either engine, and there were no signs of any outward penetration by any of the rotating engine components.

The NTSB examined the thrust reversers on April 24, 2006. All of the actuators showed thermal damage and were dry, ash colored, and dragging during their initial test movement. However, all of the actuators moved smoothly after their initial actuation. Reverser serial number 3039 deployed to the full open position within one second after hydraulic pressure of 1,200 pounds per square inch (psi) was applied to one of its two actuators. As long as the pressure was applied, the actuator could not be manually closed, but with the pressure released the reverser could be closed manually with no resistance. Reverser serial number 3038 deployed to the full open position within one second after 1,200 psi of hydraulic pressure was applied (after moving a damaged portion of the mounting frame out of the way), and as long as the pressure remained applied, the reverser could not be closed manually. After removal of the hydraulic pressure, the reverser could be closed manually with no resistance. This inspection did not reveal any pre-impact anomaly that would have precluded either thrust reverser from operating normally.

PERSONNEL INFORMATION

The Captain was certified to fly the accident airplane (Cessna Citation 560) in accordance with existing Federal Aviation Regulations (FAR's). A review of the FAA Airman and Medical Records database disclosed that on December 8, 1972, the pilot was issued an Airline Transport Pilot certificate (ATP), with an airplane multi-engine land rating. In addition to his ATP certificate, the pilot held type ratings for the BE-300 (Beech King Air 300), CE-525S (Cessna Citation 525 [single-pilot]), CE-500 (Cessna Citation [second-in-command required]), DC-3

(Douglas DC-3), FA-119C (Fairchild Aircraft Corporation), L-1049 (Lockheed Aircraft Corporation, Constellation), and M-202/M404 (Martin-Marietta Corporation, Mariner).

A review of flight-training records revealed that the Captain completed training for his initial CE-500 type rating at SIMCOM Training Centers on August 4, 2005. The CE-500 type rating carried a limitation requiring the pilot to be accompanied by a second-in-command while exercising the privileges of the rating.

The Captain's most recent FAA second-class medical certificate was issued on April 4, 2005. The medical certificate carried a limitation requiring the pilot to wear corrective lenses. A review of all the Captain's aviation medicals from 1962 to the present did not reveal any indications by the Captain or the examiner of any ongoing diseases, conditions, or treatments.

No personal flight time logbooks were located for the Captain and the aeronautical experience referenced in this report was obtained from a review of the most current FAA medical certificate application form. On the application for the medical certificate dated April 12, 2004, the Captain indicated that he had accumulated approximately 17,000 total flight hours, including 150 hours in the six months preceding the application date.

The First Officer was certified to fly the accident airplane in accordance with existing FARs. A review of the FAA Airman and Medical Records database disclosed that on March 22, 1994, the pilot was issued an ATP certificate, with an airplane multi-engine land rating. In addition to his ATP certificate, the first Officer held type ratings for the CE-500, DC-3 and HS-125 (Raytheon Hawker).

A review of flight-training records revealed that the First Officer completed training for his initial CE-500 type rating through SimuFlite, Inc, on February 5, 2001. The First Officer's most recent recurrent training in the CE-500 was successfully completed on January 17, 2006. During the recurrent training, the First Officer completed single-pilot ground training for the CE-500, but the practical test for the single-pilot waiver had not yet been completed.

The First Officer's most recent FAA first-class medical certificate was issued on January 4, 2006. The medical certificate carried no limitation or waivers.

No personal flight time logbooks were located for the First Officer and the aeronautical experience referenced in this report was obtained from a review of the most current FAA medical certificate application form. On the application for the medical certificate, dated January 4, 2006, the First Officer indicated that he had accumulated approximately 7,500 total flight hours, including 150 hours in the six months preceding the application date.

AIRPLANE INFORMATION

The accident airplane was a 1994 Cessna Citation V Ultra 560, serial number 560-0265. Its standard airworthiness certificate (normal category) was issued on August 07, 1994. The airplane was certified in accordance with FAR Part 25 airworthiness standards, and could be operated by either single or two pilot crews. A type rating is required to operate the airplane, and a waiver is required to operate the airplane with one pilot.

The aircraft underwent its last periodic inspection (Phase B and Phase 1 through 5) on July 6, 2005, the date the aircraft was purchased by GOSHIP AIR. At that time, the airframe had accumulated 4,592 hours total time. The Cescom 10 Aircraft Status Report printed on the day of the accident indicated that the last Cescom system update had been completed on November 28, 2005. As of that date, the airframe had accumulated 4,709 hours total time, the left engine

had accumulated 4,541 hours, and the right engine had accumulated 4,547 hours. The last weight and balance, performed when Coca-Cola Enterprises owned the aircraft, determined the aircraft's Estimated Center of Gravity (ECG) to be at 308.91, and its basic weight to be 9,535.2 pounds.

The airplane was equipped with a Fairchild model GA-100 Cockpit Voice Recorder (CVR), which was removed from the wreckage and delivered to the National Transportation Safety Board's audio laboratory in Washington, D.C., on January 26, 2006. The airplane was not equipped with a Flight Data Recorder (FDR).

The airplane was equipped with a Honeywell MK VIII Enhanced Ground Proximity Warning System (EGPWS). The EGPWS is classified as a Terrain Awareness and Warning System (TAWS). The EGPWS is a terrain warning system that provides relevant real-time terrain information. The system evaluates the aircraft flight parameters (airspeed, altitude, glideslope deviation) and compares it with an onboard terrain, obstacle and airport database. When the system predicts potential conflicts between the aircraft and terrain it alerts the flight crew of the conflict(s) via visual and audio caution or warning alerts. The system also provides alerts for excessive glideslope deviation, landing configuration errors (gear and flap positions with respect to altitude), excessive bank angles and altitude information.

The EGPWS incorporates six alerting modes, as well as positional alerts based on the internal terrain database. Two of those modes, Mode One and Mode Six, are relevant to the EGPWS warnings/alerts recorded by the CVR during the last two minutes of the subject flight. EGPWS Mode One (Excessive Descent Rate) provides an alert for excessive descent rates in reference to above ground level (agl) altitudes. The alert is presented via caution lights and the aural caution "Sink rate, Sink rate." If the sink rate continues into the inner boundary, the EGPWS warning light activates and the aural alert changes to, "pull up, pull up" until the terrain conflict is resolved. Mode Six (Advisory Callouts) provides predetermined callouts based on radio altitudes and bank angles. Mode 6 consists of aural messages only. There are no visual alerts associated with this mode. When flying with the autopilot disengaged, the EGPWS aural message, "Bank angle, Bank angle," sounds when one or more of the following parameters are reached:

· Plus or minus 10 degrees between 5 and 30 feet agl

· Plus or minus 10 to 40 degrees between 30 and 150 feet agl

· Plus or minus 40 to 55 degrees between 150 and 2,450 feet agl

The following calculations are an estimate of the weight and balance condition of the accident airplane at the time of takeoff at Sun Valley, Idaho, and during the approach at the Palomar Airport at Carlsbad, California, on January 24, 2006. The weight and balance calculations were completed by staff engineers at Cessna Aircraft Company, and reflect the actual empty weight and weight and balance data for the accident airplane and sample loading based on the full fuel load and the estimated weights of passengers and baggage. The passenger seating arrangement on the accident airplane is unknown, and therefore the calculations reflect an estimated takeoff weight and balance and estimated landing weight and balance.

1. Estimated weight and balance during takeoff at Sun Valley, Idaho:

Weight: 16,060 pounds

Arm: 302.17 inches

Moment/100: 48,519 inch/pounds

Center of gravity: 302.17 inches

2. Estimated weight and balance during landing at Carlsbad, California:

Weight: 13,450 pounds

Arm: 301.10 inches

Moment/100: 40,499 inch/pounds

Center of gravity: 301 inches

3. Center of gravity limitations for aircraft weight of 16,060:

Forward limit: 293 inches

Aft limit: 303 inches

4. Center of gravity limitations for aircraft weight of 13,450:

Forward limit: 294 inches

Aft limit 304 inches

At the request of the NTSB, staff engineers at Cessna Aircraft Company determined the recommended approach reference speed (Vref), and calculated the landing distance information utilizing the aircraft's performance data and known meteorological conditions (14 degrees C, approximately 6 knot tailwind and a field elevation of 328 feet above mean sea level). According to the Cessna calculations, the recommended reference speed for this aircraft under the known conditions was 101 knots, and the associated landing distance would have been 2,717 feet.

The approach reference speed (Vref) is the recommended landing approach speed (velocity) with flaps in the landing position and landing gear extended. The reference speed increases/decreases proportionately based on the aircraft's landing weight. The landing distance is the distance from a point where the aircraft on a normal approach profile would be 50 feet above the landing surface, to a point at which the aircraft would come to a full stop (which assumes idle thrust, full/35 degrees of flap extension, speed brakes extended after touchdown, thrust reversers stowed, optimal braking, and correct pilot technique).

In addition, Cessna calculated the landing distance for this aircraft at a Vref of 131 knots (the approximate groundspeed at which the accident airplane crossed the runway threshold), and that distance was determined to be 3,246 feet. When 1,500 feet (the approximate point of touchdown) is added to the 131-knot Vref landing distance of 3,246 feet, it equals 4,746 feet from the approach end of the runway. This represents a point 151 feet short of the departure end of runway 24 (the total length of runway 24 is 4,897 feet, and these figures assume all of the conditions and correct pilot technique mentioned above).

METEOROLOGICAL INFORMATION

The 0653 automated aviation weather surface observation (METAR) for McClellan-Palomar Airport reported winds from 060 degrees at six knots, 10 statute miles visibility, clear skies, a temperature of 14 degrees Celsius, a dew point of minus nine degrees Celsius, and an altimeter setting of 29.93 inches of mercury. A review of the CVR recording revealed that the ASOS information that the flight crew listened to beginning at 06:22:36 reported the winds were

from 040 degrees at six knots, the visibility was 10 statute miles, the skies were clear, the temperature was 14 degrees Celsius, the dew point was minus nine degrees Celsius, with an altimeter setting of 29.92 inches of mercury.

The same recording revealed that the ASOS information that the crew listened to at 06:34:13 reported the winds from 040 degrees, with a velocity that was unintelligible on the recording, a visibility of 10 miles, clear skies, a temperature of 15 degrees Celsius, dew point of minus nine degrees Celsius, and an altimeter of 29.92 inches of Mercury.

AIRPORT INFORMATION

The McClellan-Palomar Airport is a FAR Part 139 certificated facility that has one hard-surfaced asphalt runway (runway 6/24). Runway 6/24 is 4,897 feet long and 150 feet wide. Runway 24 is equipped with a Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR), Runway End Identifier Lights (REIL) and a 4-light Precision Approach Path Indicator (PAPI) with a 3.2-degree visual glide path angle. The PAPI array is located on the south (left) side of the runway.

The airport is serviced by an Air Traffic Control tower, which is staffed by FAA personnel. The tower operates from 0700 to 2200 local. During the hours that the tower is not operating, local traffic communications are accomplished via the published airport Common Traffic Advisory Frequency (CTAF) on frequency 118.6. Southern California (SOCAL) TRACON provides approach/departure control services for the airport on a continuous basis.

There is a published ILS approach to runway 24, with a decision height of 200 feet above ground level (agl) for category A, B, and C aircraft. The eastern edge of the ILS Localizer antenna non-frangible platform for runway 24 is located approximately 304 feet from the west end of the runway.

The antenna is outside the lateral limits of the Runway Safety Area (RSA), the Object Free Zone (OFZ), and the Object Free Area (OFA), as stipulated by FAA specifications. Its position is dictated by function and the fact that there is a significant terrain slope drop-off directly west of the antenna platform.

According to FAA and San Diego County survey data, the terrain elevation at the west end of the runway 24 centerline was 328.15 feet mean sea level (msl). The terrain to the west of runway 24 slopes downward, with the terrain elevation at the center front (east/runway side) of the localizer antenna platform being approximately 317 feet msl (about 11 feet lower than the departure end of the runway). The platform itself was constructed of treated lumber and was non-frangible, as was its perimeter handrail. The platform deck height was surveyed at 323.1 feet msl (approximately five feet lower than the departure end of the runway).

The Mark 1-D Log Periodic Dipole Localizer Antenna array was attached to the top of the platform by frangible thin-walled three-inch diameter aluminum tubing, and the top of the antenna elements were approximately six feet above the platform deck, at a surveyed height of 329.3 feet msl (approximately one foot higher than the departure end of the runway). A wooden 2x4 handrail was mounted along all four sides of the platform approximately 36 inches above the platform deck, at a surveyed height of about 326 feet msl (approximately two feet lower than the elevation at the departure end of the runaway). The handrail was supported by ten wooden 4x4 posts (five on the east/runway side, and five on the west/down-slope side), each spaced approximately ten feet apart. In the space between the 4x4 posts, 2x4 posts placed approximately every 40 inches supported the railing. Near the southwest corner of the

platform, there was a steel access ladder that was attached (bolted) to both the platform side and two of the handrail supports. The height at the top of the ladder was surveyed at 326.3 feet (approximately two feet lower than the runway end height).

A post-accident inspection of the two outboard localizer platform sections revealed that the deck and support structure of these two sections was not directly impacted by the aircraft, but that their handrail, and all but one of the 4x4/2x4 handrail support posts, had been sheared at or near the level of the deck. The 4x4 handrail support post at the southwest corner of the southern platform section, to which the access ladder was connected, had partially failed at deck level, and was leaning westerly at about 35 degrees past vertical.

The antenna elements had separated from their frangible support posts, and the two elements on the northern platform section were lying on the platform deck almost directly below their elevated position. The northern antenna element on the southern platform section was also lying on the platform deck almost directly below its elevated position, and the southern element on the southern platform was found lying on the ground about four feet to the south of the platform, but still nearly aligned with its elevated position and direction. The access ladder in the southwest corner of the southern platform section was impacted by the aircraft's left wing, and the eastern/runway-side leg of the access ladder was bent to the west, starting at a point approximately level with the platform deck. This leg had come in contact with the western leg, which itself was bent aft/west about 35 degrees. The two center sections of the antenna platform, except for the center 4x4 support post on the eastern/runway side, and portions of two main east-west support beams, had been ripped from the remainder of the structure, and scattered along the westerly down-slope for approximately 110 feet, with the majority of the heavier structure being located in the first 70 feet.

MEDICAL AND PATHOLOGICAL INFORMATION

As part of the investigation, autopsies and forensic toxicology examinations were performed on both flight crewmembers. The autopsies were performed by the San Diego County Medical Examiner's Office, with the manner of death being designated as "accident" and the cause of death being "multiple blunt force injuries." The FAA's Forensic Toxicology Research Laboratory performed the forensic toxicology examinations on samples taken from both flight crewmembers, and the results were negative for carbon monoxide or cyanide in the blood and ethanol and screened drugs in the urine.

On the day after the accident, a relative of the first officer advised the NTSB IIC that about four months prior to the accident, while the relative and the First Officer were at the Captain's home, they noticed on a shelf in the bathroom a container of medication commonly used by type 2 (two) diabetics to control high blood sugar levels. This individual believed the medication was Glucovance (or a generic version of the same). This same individual said that the first officer shared with them that he had become concerned with the Captains health because he thought the Captain often appeared fatigued, slept often during their flights together, and would eat large quantities of certain foods while in flight (i.e., "two large cans of nuts in one sitting."). According to this relative, the First Officer planned to "address the issue" on the day of the accident, since the crew expected to a have significant downtime before returning to Idaho later that day.

Another witness, who stated that they had been a close friend of the Captain, reported to the NTSB that they had, at one time, engaged in a discussion with the Captain about some specific

health issues, and that the Captain indicated that he was a diabetic. Reportedly, during that same conversation, the Captain stated that he received his medication from Mexico, and that a family member assisted him in measuring and managing his blood sugar levels.

A third witness, who also stated that they had been a close friend of the Captain, told the NTSB that they believed the Captain was a diabetic, and that he had a "little machine" that this witness believed he used to check his blood sugar level.

Because of these reports, the NTSB Investigator-In-charge (IIC) asked the FAA's Forensic Toxicology Research Laboratory to perform, in addition to their standard toxicology profile, a Hemoglobin A1C test on blood specimens from the Captain. The A1C test is used to determine how close to normal (4% to 6%) an individual's blood sugar has been over a period of approximately three months prior to the date of the test. The result from the Captain's Hemoglobin A1C blood level test was 7.7%. According to the Toxicology Laboratory, Hemoglobin A1C levels above 6% are considered abnormal, and according to The American Diabetes Association, a 7.7% test result is in the range expected of an individual who is a Type 2 diabetic.

ADDITIONAL DATA AND INFORMATION

Owner/Operator Information.

GOSHIP AIR is a special purpose Limited Liability Company (LLC) based in Ketchum, Idaho. The company was formed in the summer of 2005 in conjunction with the purchase of the accident aircraft . The owners (principles) of GOSHIP AIR, LLC, were two businessmen with no professional aviation experience, who desired a corporate airplane to taken them to major domestic airports in order to transfer to commercial airline flights oversees. According to one of the two principals of GOSHIP AIR, when he and the other principal decided to purchase an aircraft for their joint use, they asked the proprietor of JAXAIR, another Idaho LLC, to assist them in the process of evaluating, selecting, and purchasing an aircraft. JAXAIR consisted of one person, who was also the captain of the accident airplane.

When the aircraft was purchased on July 6, 2005, the principals of GOSHIP AIR asked the principal of JAXAIR to, "handle everything to do with the aircraft."

According to GOSHIP AIR, JAXAIR was supposed to arrange for hangar space, ensure the aircraft's maintenance program was performed and kept current, hire a copilot, maintain the currency of the crew, arrange for the insurance, and keep the aircraft ready to fly GOSHIP AIR parties when needed. Although JAXAIR was paid a flat monthly fee for its services/actions related to the accident airplane, according to GOSHIP AIR, at the time of the accident there was no formal written agreement in effect. The two LLC's were in the process of finalizing an Aircraft Lease and Management Agreement, but the document had not yet been executed. It was also understood by both LLC's that JAXAIR would be working toward acquiring an FAR Part 135 Air Carrier Certificate, so that using the aircraft for income producing charter flights would offset the cost of owning the aircraft.

According to one of the GOSHIP AIR principals, this was the second time the aircraft had been used for the purpose of transporting the businessman who was a passenger on the accident flight. He said that the first flight had been to Seattle, Washington, and that JAXAIR had completed the round-trip flight without first seeking permission from GOSHIP AIR. He did not know if there had been any compensation from the passenger to JAXAIR, and he was not aware of any payment or compensation to GOSHIP AIR. After becoming aware of this flight,

this GOSHIP AIR principal told JAXAIR that no flights for other than GOSHIP AIR parties were to be initiated without prior permission from a GOSHIP AIR principal.

According to this same principal, JAXAIR had called on the day prior to the accident flight to get permission to take the businessman to California, and the principal granted permission, primarily because he felt that there was some possibility that the businessman may have had some interest in becoming a third partner in ownership of the aircraft. He further stated that JAXAIR had advised him that for this flight the passenger would be paying for the fuel and oil, parking fees, any expenses specific to the flight, and an hourly fee. (According to FAR Part 91 rules, passengers may pay for fuel, oil, parking fees, and other expenses specific to the flight; however, the acceptance of fees for the flight would constitute the need to operate under FAR Part 135). The GOSHIP AIR principal did not interact directly with the passenger regarding the flight, but instead JAXAIR coordinated all arrangements and agreements.

In a phone interview with the NTSB IIC, the second GOSHIP AIR principal stated that he was unaware that the aircraft had been used to take the businessman to Seattle, or that this individual was on the accident flight. This principal said that he first became aware of the businessman's presence on the aircraft during either of these flights only after he learned about the accident.

Wreckage Release.

On October 29, 2007, the aircraft wreckage was released to Daniel Heersema, a representative of Global Aerospace, of Woodland Hills, California.

Pilot Information

Certificate:	Airline Transport	**Age:**	59, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land; Single-engine Sea	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With Waivers/Limitations	**Last FAA Medical Exam:**	04/01/2005
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	17000 hours (Total, all aircraft)		

Co-Pilot Information

Certificate:	Airline Transport	**Age:**	50, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land; Single-engine Sea	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 Without Waivers/Limitations	**Last FAA Medical Exam:**	01/01/2006
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	7500 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N86CE
Model/Series:	560	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	560-0265
Landing Gear Type:	Retractable - Tricycle	**Seats:**	8
Date/Type of Last Inspection:	07/01/2005, Continuous Airworthiness	**Certified Max Gross Wt.:**	16500 lbs
Time Since Last Inspection:	130 Hours	**Engines:**	2 Turbo Fan
Airframe Total Time:	4720 Hours at time of accident	**Engine Manufacturer:**	Pratt & Whitney Canada
ELT:	Installed	**Engine Model/Series:**	JT15D-5D
Registered Owner:	GOSHIP AIR LLC	**Rated Power:**	3045 lbs
Operator:	GOSHIP AIR LLC	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	KCRQ, 331 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	0653 PST	**Direction from Accident Site:**	60°
Lowest Cloud Condition:	Clear	**Visibility**	10 Miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	60°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.93 inches Hg	**Temperature/Dew Point:**	14°C / -9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Hailey, ID (KSUN)	**Type of Flight Plan Filed:**	IFR
Destination:	Carlsbad, CA (KCRQ)	**Type of Clearance:**	None
Departure Time:	0600 MST	**Type of Airspace:**	

Airport Information

Airport:	McClellan-Palomar Airport (KCRQ)	**Runway Surface Type:**	Asphalt
Airport Elevation:	331 ft	**Runway Surface Condition:**	Dry
Runway Used:	24	**IFR Approach:**	Visual
Runway Length/Width:	4897 ft / 150 ft	**VFR Approach/Landing:**	Go Around

Wreckage and Impact Information

Crew Injuries:	2 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	2 Fatal	**Aircraft Fire:**	On-Ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-Ground
Total Injuries:	4 Fatal	**Latitude, Longitude:**	33.126944, -117.288889

Administrative Information

Investigator In Charge (IIC):	Orrin K Anderson	**Report Date:**	12/20/2007
Additional Participating Persons:	Wayne Laner; FAA, Los Angeles FSDO Eric West; FAA, AAI-100 Thomas Berthe; Pratt & Whitney Canada Tom Moody; Cessna Aircraft Company		
Publish Date:	09/24/2014		
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov, or at 800-877-6799. Dockets released after this date are available at http://dms.ntsb.gov/pubdms/.		

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.