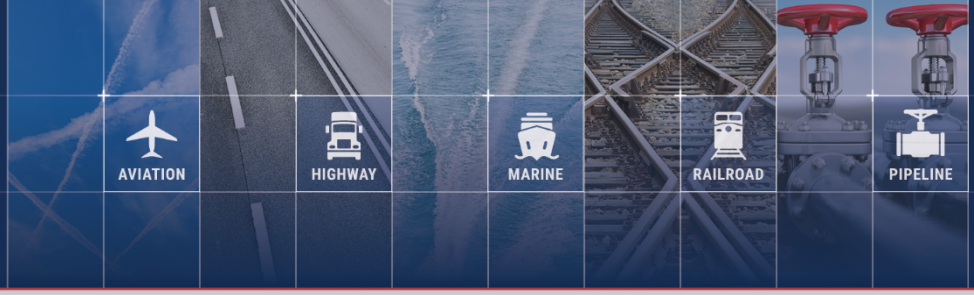

Aviation Investigation Final Report

Location:	Lebec, California	**Accident Number:**	LAX05FA092
Date & Time:	February 10, 2005, 20:30 Local	**Registration:**	N432AR
Aircraft:	Cessna P210N	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Fatal
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

During an instrument cross-country flight at night, the pilot encountered a mountain wave with severe turbulence at 9,000 feet mean sea level (msl) and entered an uncontrolled descent to impact with mountainous terrain at an elevation of 2,300 feet msl. The flight was level at 9,000 feet crossing a mountainous area when the pilot reported to air traffic control (ATC) controllers that he was encountering light rime icing conditions. Shortly thereafter, the controller observed the aircraft descending and the pilot asked for a lower altitude. The controller said the flight was already at the minimum altitude that could be assigned. The pilot responded that he was in extreme turbulence. The aircraft then dropped off radar and no further radio transmissions were received. The Area Forecast valid for the flight was predicting multiple layers of broken to overcast ceilings from 6,000 to 12,000 feet, with a freezing level at 10,000 feet. AIRMETS were in effect for mountain obscuration, moderate turbulence, and moderate rime or mixed icing conditions, though the conditions were forecast at elevations above the pilot's planned en route altitude. No SIGMETS were in effect for turbulence. No record was found that the pilot obtained a preflight or in-flight weather briefing from any official aviation weather source. An analysis of the weather conditions found increasing wind velocities from the surface to 7,000 feet over the mountains crossing the airplane's flight path, with several layers of strong vertical wind shear that increased the likelihood of very strong turbulence. In addition, the conditions were favorable for localized mountain wave activity, and supported the potential for moderate to severe turbulence, rotors, and downdrafts to 1,500 feet per minute. An automated weather observation station in the mountains very near the accident site was reporting wind gusts to 45 knots, 10 minutes prior to the accident. The pilot of a Gulfstream G-IV that was descending near the accident location reported encountering strong turbulence with both vertical and lateral components.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's in-flight loss of control due to the flight's encounter with unforecasted localized mountain wave activity with severe to potentially extreme turbulence, downdrafts, and rotors.

Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER
Phase of Operation: CRUISE - NORMAL

Findings
1. (C) WEATHER CONDITION - MOUNTAIN WAVE
2. (C) WEATHER CONDITION - TURBULENCE,TERRAIN INDUCED
3. WEATHER FORECAST - INACCURATE

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: CRUISE

Findings
4. WEATHER CONDITION - DOWNDRAFT
5. AIRCRAFT PERFORMANCE,CLIMB CAPABILITY - EXCEEDED
6. (C) AIRCRAFT CONTROL - NOT POSSIBLE - PILOT IN COMMAND

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

Findings
7. TERRAIN CONDITION - MOUNTAINOUS/HILLY

Factual Information

1.1 HISTORY OF FLIGHT

On February 10, 2005, at 2033 Pacific standard time, a Cessna P210N, N432AR, reported severe turbulence while in cruise flight and collided with the ground during a rapid descent 8 nautical miles northeast of Lebec, California. Action Air Express, Inc., was operating the airplane as an on-demand air taxi passenger flight under the provisions of 14 CFR Part 135. The commercial pilot and one passenger sustained fatal injuries. The airplane was destroyed. The airplane departed under visual flight rules (VFR) from Fresno Yosemite International Airport, Fresno, California, at 1935, and received an instrument clearance to Santa Monica Municipal Airport, Santa Monica, California, in flight over the Clovis vhf omni-directional range (VOR). A combination of visual and instrument meteorological conditions prevailed along the route of flight.

The Air Force Rescue and Coordination Center (AFRCC) issued an Alert Notice (ALNOT) at 2230 on February 10, 2005. The wreckage was located at 1000 on February 12, 2005.

According to the operator, the purpose of the flight was to transport the passenger from Fresno to Santa Monica. The passenger was scheduled to depart from Fresno at 1700 but was late to arrive. The pilot waited at a fixed-base-operator (FBO) for the passenger who arrived for the flight about 1915. At 1920, the operator called the pilot to verify that the passenger had arrived. The pilot replied affirmatively, and stated that the passenger was just boarding the airplane for departure to Santa Monica.

While en route, the pilot communicated with several Federal Aviation Administration (FAA) facilities. The National Transportation Safety Board investigator reviewed transcripts for the time period from 2021 through 2030.

At 2026:13, the accident pilot stated, "So Cal, four nine three alpha romeo's checkin with you nine thousand." The controller replied "November four nine three alpha romeo Los Angeles center, roger the uh Burbank altimeter two niner eight eight."

At 2026:21, the pilot radioed "two niner eight eight four three two alpha romeo add uh uh you guys had any reports over uh Lake Hughes for any icing or (did it) pretty much cleared up uh we're getting some uh we got some a little bit south of Shafter."

At 2026:31, the controller stated, "Uh there's been a bunch of icing between Shafter and Lake Hughes I believe it's getting a little better closer to Lake Hughes November one five mike what is your flight conditions sir?"

At 2026:40, N9351M reported, "Uh five one mike is experiencing light rime ice."

At 2026:44, the controller reported, "Okay rog roger that uh November two alpha romeo traffic over Lake Hughes at eleven has some light rime ice traffic overhead at eleven had un had a little bit earlier."

At 2026:54, the pilot stated, "Uh roger four three two alpha romeo and what kind of plane is that we're um a two ten."

At 2027:00, the controller stated, "Uh the traffic over Lake Hughes is a Mooney and uh right overhead is a twin Cessna at eleven."

At 2027:07, the pilot responds, "(thanks) four three two alpha romeo."

At 2029:40, the controller stated, "November two alpha romeo can you maintain your altitude, maintain niner thousand."

At 2029:50, the controller stated, "November four three two alpha romeo LA Center."

At 2030:09, the controller stated, "November four three two alpha romeo LA Center."

At 2030:12, the pilot stated, "Four three two alpha romeo uh we have lower request (unintelligible)."

At 2030:18, the controller stated, "Two alpha romeo you're below my minimum uh altitude do your best to climb can you maintain altitude?"

At 2030:23, the pilot reported, "Four three two alpha romeo extreme turbulence."

No further transmissions were received from the accident pilot.

1.2 PERSONNEL INFORMATION

1.2.1 Pilot

The pilot held a commercial pilot certificate for single and multiengine instrument airplane, and also held a certified flight instructor certificate with ratings for single and multiengine instrument airplane. He held a valid first-class medical certificate issued on October 1, 2004, that did not have any waivers.

The pilot began his flight training on December 5, 2000. He obtained his pilot certificates over a period of 2 years from August 22, 2001, until his last rating, which was a certified flight instructor-instrument on June 24, 2002. During this time period the pilot took seven check rides. He failed the following three check rides on his first attempt: private multiengine;

private instrument; and certified flight instructor instrument. Moreover, he took the private instrument check ride two times before passing.

The Safety Board investigator reviewed the pilot's records from Air Action Express, Inc. On May 26, 2004, the pilot satisfactorily completed a 14 CFR Part 135 flight check with an FAA inspector. The flight check satisfied the requirements of 14 CFR 135.293, 135.297, and 135.299.

On December 15, 2004, the pilot failed a 14 CFR 135.297 check. It was noted that item number 1, equipment examination (oral or written), was the reason for disapproval. On December 21, 2004, the pilot received another disapproval. It was noted on FAA Form 8410-3, "Airman Competency and Proficiency Check" that item number 23, holding, was unsatisfactory. Based on the FAA records, all other test areas were completed satisfactorily. On January 26, 2005, the pilot satisfactorily completed the 14 CFR 135.297 check.

Prior to the pilot's initial 14 CFR Part 135 check on May 26, 2004, he had attempted four Part 135 flight checks for the predecessor of Action Air Express, Inc., Peach, Inc. The FAA issued identifier code assigned to both companies was the same (QXNA). On January 30, 2004, the inspector noted, "135.293(a) unsatisfactory." On February 6, 2004, a disapproval was given for item number 1, equipment examination (oral or written). On March 4, 2004, a disapproval noted that item number 10, steep turns were unsatisfactory. On March 9, 2004, a disapproval again indicating item number 10 was unsatisfactory.

Two pilot's logbooks were recovered from the accident site and reviewed by the Safety Board investigator. The first logbook contained entries from December 5, 2000, to December 24, 2002. The second logbook began on May 8, and the last entry was dated October 3, 2004. The entries in the second logbook were intermittent so the times were estimated using the logged flight times. Based on a combination of the recorded flight logbook times and records from Action Air Express, Inc., the pilot's total flight time was estimated to be about 1,850 hours. On the pilot's most recent FAA medical application, the pilot reported a total pilot time of "2,000 est."

1.2.2 Passenger Information

Based on interviews with the passenger's spouse and a review of FAA airman records, the passenger did not hold a pilot certificate nor had he engaged in any flight training. The passenger had flown with the company on previous occasions due to business, and had not reported any complaints regarding Action Air Express, Inc., operations or flights.

1.3 AIRCRAFT INFORMATION

The single engine pressurized airplane was built in 1978. According to the maintenance records, the last annual was performed on July 14, 2004. The last maintenance performed was a 100-hour inspection on November 1, 2004. At the time of the accident, the airplane had

accumulated approximately 97 hours since its last inspection.

In the limitations section of the airplane Pilot's Operating Handbook (POH), the following limitation was noted: Flight into known icing conditions is prohibited.

The airplane was equipped with a System Fifty-Five X Autopilot. Pursuant to the operating requirements of the operator, the autopilot was required to be operational for IFR flights. The autopilot could be disconnected during flight through the following methods: turn the autopilot master switch to OFF; press the autopilot disconnect/trim interrupt switch on the aircraft's control wheel; and/or pull the aircraft's AUTOPILOT circuit breaker.

1.4 METEOROLOGICAL INFORMATION

1.4.1 Pilot Weather Briefing

There was neither an FAA Flight Service Station nor Direct User Access Terminal Service record of the pilot receiving a weather briefing the day of the accident; nor was one required. According to the FAA accepted operations specifications for the operator, the pilot "will use National Weather Service (NWS) reports and forecasts or the PIC may use his own observations when operating in Visual Flight Rules."

According to the FBO from which the airplane departed in Fresno, a weather station is setup in a private room in their facility. The pilot was not witnessed utilizing the FBO weather station; however, FBO personnel stated that it would have been possible for the pilot to use the weather station without them witnessing it.

Loose, undated papers were located within the wreckage that contained hand written weather observations for various geographic areas and routes of flight.

1.4.2 Weather Study

A Safety Board meteorologist performed a weather study of the accident area and time.

1.4.2.1 General National Weather Service (NWS) Reports

The southwest section of the NWS Surface Analysis Chart for 1900 on February 10, 2005, depicted three separate high pressure systems with a central pressure of 1034 millibars (mb) extending over western Wyoming and Colorado. A low pressure system with a central pressure of 1002 mb was located to the south of the accident site in the Pacific Ocean off Baja of California, with a trough of low pressure extending northward along the California coast. The location of the pressure systems resulted in a pressure gradient along eastern California and western Nevada with an east to northeast wind flow pattern across southern California and in the vicinity of the accident site.

The NWS observation station at Sandberg, California (KSDB), located approximately 10 miles south of the accident site at an elevation of 4,521 feet, reported the following conditions:

KSDB weather observation at 1952, automated observation, wind from 060 degrees at 18 knots gusting to 32 knots; visibility 10 miles in light rain; ceiling overcast at 5,000 feet; temperature 7 degrees Celsius (C); dew point -4 degrees C; altimeter 29.96 inches of Mercury (Hg). Remarks: automated weather observation system, peak wind from 070 degrees at 37 knots occurred at 1930; rain began at 1923; sea level pressure 1012.9 mb; hourly precipitation less than 0.01 inches (trace); temperature 7.2 degrees C; dew point -3.9 degrees C; thunderstorm sensor not operating.

KSDB weather observation at 2052, automated observation, wind from 060 degrees at 27 knots gusting to 35 knots; visibility 10 miles in light rain; ceiling overcast at 5,000 feet above ground level (agl); temperature 7 degrees C; dew point -1 degrees C; altimeter 29.95 inches of Hg. Remarks: automated weather observation system, peak wind from 070 degrees at 45 knots occurred at 2023; rain ended at 1953 and began again at 2015; sea level pressure 1012.6 mb; hourly precipitation less than 0.01 inches (trace); temperature 6.7 degrees C; dew point -1.1 degrees C; thunderstorm sensor not operating.

Santa Monica Municipal Airport (KSMO), the planned destination, was located approximately 55 miles southeast of the accident site at an elevation of 175 feet mean sea level (msl), and had an automated surface observation system (ASOS), which reported the following conditions:

KSMO at 1951, wind calm; visibility 10 miles in light rain; ceiling overcast at 8,000 feet; temperature 17 degrees C; dew point 7 degrees C; altimeter 29.88 inches of Hg. Remarks: automated observation system, rain began at 1951; sea level pressure 1011.5 mb; hourly precipitation less than 0.01 inches (trace); temperature 16.7 degrees C; dew point 6.7 degrees C.

KSMO at 2051, automated observation, wind from 040 degrees at 5 knots; visibility 10 miles; ceiling overcast at 7,500 feet; temperature 17 degrees C; dew point 7 degrees C; altimeter 29.88 inches of Hg. Remarks: automated observation system, rain ended at 2036; sea level pressure 1011.6 mb; hourly precipitation less than 0.01 inches (trace); temperature 17.2 degrees C; dew point 6.7 degrees C.

Meadows Field Airport (KBFL), Bakersfield, California, located approximately 32 miles northwest of the accident site at an elevation of 507 feet msl, reported the following conditions:

KBFL weather at 1954, wind calm; visibility 4 miles in haze; scattered clouds at 10,000 feet; temperature 12 degrees C; dew point 8 degrees C; altimeter 29.95 inches of Hg.

KBFL weather at 2054, wind from 190 degrees at 4 knots; visibility 3 miles in mist; ceiling

overcast at 9,000 feet; temperature 11 degrees C; dew point 9 degrees C; altimeter 29.94 inches of Hg.

1.4.2.2 Upper Air Sounding or Rawinsonde Observation (RAOB)

The closest upper air sounding or rawinsonde observation (RAOB) site was located at Vandenberg Air Force Base (KVGB), located approximately 90 miles west of the accident site. The 1600 sounding from Vandenberg was plotted on a standard Skew-T log P diagram from the surface to 500 mb or approximately 18,000 feet.

The Lifted Condensation Level (LCL) was identified at 822 mb or 5,370 feet. Low-level moisture was limited with relative humidity of 55 percent or less below 1,000 feet where there was a temperature inversion between 840 and 1,100 feet, where temperature increased with altitude. Relative humidity decreased above this inversion until reaching another inversion, which was noted between 10,000 and 11,000 feet. Moisture increased above this level with relativity humidity greater than 75 percent between 14,000 and 19,000 feet. The Lifted Index (LI) was 8.8, which indicated a stable atmosphere. The freezing level was identified at 702 mb or 9,934 feet with a potential for light to moderate icing between 14,000 and 19,000 feet.

The wind profile indicated light and variable winds below 1,000 feet with wind increasing from the southeast at 35 knots at 7,000 feet and then decreasing and backing to the east at 14,000 feet. The wind profile indicated several layers of strong vertical wind shear that increased the likelihood of turbulence.

The RAOB program also indicated favorable conditions for a localized mountain wave activity and support the potential for moderate to severe turbulence. The lowest wave was identified near the accident airplane's reported altitude and indicated a wave between 10,600 and 11,000 feet with potential updrafts and downdrafts to 1,500 feet per minute (fpm).

1.4.2.3 Geostationary Operations Environmental Satellite Number 10 (GOES-10)

The Geostationary Operations Environmental Satellite number 10 (GOES-10) data was obtained from the National Climatic Data Center (NCDC) and displayed on the Safety Board's Man-computer Interactive Data Access System (McIDAS) workstation. The infrared longwave and shortwave imagery (band 4 and 2) at a wavelength of 10.7 microns (m) and 3.9 m, respectively, provided a 4-kilometer (km) resolution with radiative cloud top temperatures. The satellite imagery surrounding the time of the accident from 2000 through 2130 on February 10, 2005, approximately every 15 minutes were reviewed.

The GOES-10 longwave band 4 image for 2030 on February 10, 2005, at 4X depicted an extensive area of overcast skies over southern California, which extended over the accident site. Several bands of enhanced clouds associated with precipitation extended over the area oriented in northeast-to-southwest bands. The accident site was located on the southern edge of one of these bands. The radiative cloud top temperature over the accident site was 233.70

degrees Kelvin or -39.46 degrees C, which corresponded to cloud tops near 28,000 feet based on the KVGB sounding.

1.4.2.4 Pilot Reports

Pilot reports (PIREPs) were recorded over California surrounding the time of the accident. The following reports are in chronological order and in standard format but in narrative form versus standard code and abbreviations.

Bakersfield (BFL) routine pilot report (UA); Over - over the route from Watsonville (WVI) to Bakersfield VOR (EHF); Time - 1708; Flight level - 7,000 feet; Type aircraft - multiengine Cessna (C310); Wind - from 110 degrees at 35 knots; Remarks - wind from 110 degrees at 20 knots during climb over WVI at 7,000 feet.

Van Nuys (VNY) routine pilot report (UA); Over - route between Van Nuys (VNY) and Fillmore (FIM); Time - 1900; Flight level - 10,000 feet; Type aircraft - Beechcraft (BE38); Sky cover - In and out of clouds; Temperature 0 degrees C; Turbulence - light to moderate; Icing - trace of rime ice 20 to 10 miles northeast of FIM.

Santa Ana (SNA) routine pilot report (UA); Over - ELB; Time - 1933; Flight level - 4,500 feet; Type aircraft - P68; Turbulence - moderate.

Van Nuys (VNY) routine pilot report (UA); Over - 15 miles northwest of VNY; Time - 1725; Flight level - 3,000 feet; Type aircraft - single engine Cessna Skyhawk (C172); Turbulence - light to moderate; Remarks - vicinity of Newhall Pass.

Ontario (ONT) routine pilot report (UA); Over - 30 miles northeast of Paradise (PDZ); time - 1936; Flight level - 14,500 feet; Type aircraft - Beechcraft business jet (BE40); Temperature - -6 degrees C; Icing - moderate rime icing; Remarks - from Los Angeles Center (ZLA) Center Weather Service Unit (CWSU).

Riverside (RAL) routine pilot report (UA); Over - DAWNA intersection; Time - 1937; Flight level - unknown; Type aircraft - Beechcraft business jet (BE40); Temperature - -6 degrees C; Icing - moderate rime icing between 14,000 and 13,000 feet.

Long Beach (LGB) routine pilot report (UA); Over - route between Santa Monica (SMO) and Long Beach (LGB); Time - 1957; Flight level - 5,000 feet; Type aircraft - single engine Cessna Skylane (C182); Weather - flight visibility 30 miles with light rain; Temperature - 10 degrees C; Turbulence - light.

Lancaster (WJF) routine pilot report (UA); Over - Tehachapi (TSP); Time - 2033; Flight level - 10,000 feet; Type aircraft - multiengine Piper Seminole (PA44); Sky cover - instrument meteorological conditions; Weather - heavy snow showers; Turbulence - moderate; Icing - negative.

Bakersfield (BFL) urgent pilot report (UUA); Over 10 miles north of Gorman VOR; Time - 2033; Flight level - 9,000 feet; Type aircraft - single engine Cessna Centurion (C210); Turbulence - extreme; Remarks - lost aircraft from radar, from ZLA CWSU (accident airplane).

Bakersfield (BFL) routine pilot report (UA); Over - Bakersfield VOR (EHF); Time - 2034; Flight level - 8,500 feet; Type aircraft - multiengine Piper Seminole (PA44); Sky cover - VFR; Weather - light snow showers; Temperature - 4 degrees C; Wind - from 324 degrees at 19 knots; Icing - negative.

1.4.2.5 Area Forecast

The Area Forecast (FA) is an aviation forecast of general weather conditions over an area the size of several states. It is used to determine forecast en route weather and to interpolate conditions at airports that do not have Terminal Aerodrome Forecasts (TAFs) issued. The NWS Aviation Weather Center (AWC) located in Kansas City, Missouri, issues the FA at regular intervals and issues specials reports as necessary usually in the form of an AIRMET. The region that covers California is under the San Francisco (KSFO) regional forecast. The forecast valid for this accident was issued at 1245 on February 10, and was valid until 0700 on February 11.

The synopsis indicated that a closed low pressure system with an abundant moisture plume was off western Baja would approach the southern California coast through the period. Over the Rocky Mountains a high pressure ridge would dominate the remainder of the area. As a result of these pressure systems, a moderate west-southwesterly wind flow pattern was expected over the southern portion of the forecast area and north-northwesterly flow over the northern sections. At the surface, a high pressure system would dominate and create an overrunning situation over the southern section that would be increasing through the forecast period.

The forecast for southern California was for scattered to broken clouds at 10,000 feet msl, with a second broken to overcast layer at 15,000 feet layered to 30,000 feet, with isolated light rain showers over the southern portions of California. Becoming from 1700 to 1900, broken to overcast clouds between 6,000 to 8,000 feet, with a second overcast layer at 12,000 feet, with widely scattered light rain showers. After 2200, visibility occasionally 3 to 5 miles obscured in mist. The outlook from 0100 to 0700 was MVFR conditions due to low ceilings and visibilities in rain showers and mist.

1.4.2.6 In-Flight Weather Advisories

The NWS issues in-flight weather advisories designated as Severe Weather Forecast Alerts (AWW's), Convective SIGMET's (WST's), SIGMET's (WS's), Center Weather Advisories (CWA's), and AIRMET's (WA's). In-flight advisories serve to notify en route pilots of the possibility of encountering hazardous flying conditions, which may not have been forecast at the time of the

preflight briefing. Whether or not the condition described is potentially hazardous to a particular flight is for the pilot to evaluate on the basis of experience and the operational limits of the aircraft.

The NWS Aviation Weather Center (AWC) had a full series of AIRMETs current over southern California, issued at 1745, and valid until 0100. AIRMET Sierra was issued for IFR conditions and mountain obscuration over portions of California, Arizona, and New Mexico. The advisory was enclosed by the navigation fixes from Tuba City, Arizona (TBC), to Las Vegas, Nevada (LVS), to 60 miles west of Wink, Texas (INK), to El Paso, Texas (ELP), to 60 miles south of San Simon, Arizona (SSO), to Yuma, Arizona (BZA), to Mission Bay, California (MZB), to Los Angeles, California (LAX), to 50 miles west of Santa Barbara, California (RZS), to Bakersfield, California (EHF), to Peach Springs, Arizona (PGS), to Tuba City, Arizona (TBC). The advisory warned of mountains occasionally obscured in clouds, precipitation, fog, and mist. The conditions were expected to continue beyond 0100 through 0700.

AIRMET Tango was also current for turbulence over portions of California. The advisory was enclosed from Beatty, Nevada (BTY), to Needles, California (EED), to Yuma, Arizona (BZA), to Mission Bay, California (MZB), to Los Angeles, California (LAX), to 50 miles west of Santa Barbara, California (RZS), to Beatty, Nevada (BTY). The advisory warned of occasional moderate turbulence below 12,000 feet.

AIRMET Zulu for icing conditions over California and coastal water, Nevada, Utah, Colorado, Arizona, and New Mexico. The advisory was enclosed by the fixes from Delta, Utah (DTA), to 50 miles west Liberal, Kansas (LBL), to Wink, Texas (INK), to EL Paso, Texas (ELP), to 60 miles south of San Simon, Arizona, to Yuma, Arizona (BZA), to Mission Bay, California (MZB), to 210 miles west-southwest of Mission Bay, California (MZB), to 140 miles southwest of Salinas, California (SNS), to Delta, Utah (DTA). The advisory warned of occasional moderate rime or mixed icing-in-clouds and in-precipitation between 10,000 and 24,000 feet. The conditions were expected to continue beyond 0100 through 0700. The freezing level over Washington, Oregon, and California was identified at multiple levels from the surface to 10,000 feet over the eastern portions.

1.4.2.7 Terminal Aerodrome Forecast (TAF)

The closest terminal aerodrome forecast (TAF) to Santa Monica was issued for Meadows Field Airport (KBFL), Bakersfield, located approximately 32 miles northwest of the accident site. The forecast that was current at the time of the accident was as follows:

KBFL TAF issued at 1539 and valid from 1600 to 1600 on February 11, 2005. From 1600, wind from 290 degrees at 5 knots; visibility 3 miles in haze; scattered clouds at 10,000 agl feet; ceiling broken at 15,000 feet. From 0100, wind from 090 degrees at 5 knots; visibility 4 miles in mist, ceiling broken at 7,000 feet, overcast at 10,000 feet, probability 30 percent between 0200 and 0600 of visibility 2 miles in light rain and mist. From 0600, wind from 120 degrees at 8 knots; visibility 4 miles in light rain and mist, ceiling broken at 5,000 feet, overcast at 8,000

feet. From 1300, wind from 340 degrees at 7 knots; visibility better than 6 miles in light rain, ceiling broken at 5,000 feet, overcast at 8,000 feet, temporarily between 1300 and 1600 of visibility 5 miles in light rain and mist.

The next closest forecast was for Los Angeles International Airport (KLAX), located approximately 63 miles southeast of the accident site. The forecast current at the time of the accident was as follows:

KLAX TAF issued at 1816, valid from 1800 to 1600 on February 11, from 1800, wind variable at 3 knots; visibility better than 6 miles scattered clouds at 5,000 feet agl, overcast at 12,000 feet. From 0100, wind from 080 degrees at 7 knots; visibility better than 6 miles, scattered clouds at 2,500 feet, ceiling broken at 5,000 feet. Temporarily between 0100 and 0300 of light rain showers. From 0300, wind from 100 degrees at 12 knots; visibility 5 miles in light rain and mist, ceiling broken at 2,500 feet, overcast at 4,000 feet. From 0800, wind from 100 degrees at 12 knots; visibility 3 miles in moderate rain and mist, ceiling broken at 1,500 feet, overcast at 3,500 feet.

1.4.3 Pilot Flying In Area Statement

A pilot flying a Gulfstream G-IV reported in a written statement that as the airplane descended in the vicinity of Hector VOR, turbulence increased from about 12,000 feet msl continuing through 8,000 feet msl to 6,000 feet msl. The pilot recalled encountering some unusually strong and unusually varied kinds of turbulence with movement up and down, as well as lateral displacement. He indicated in his 17,000 hours as a pilot, this was something he had rarely experienced. The pilot further stated that flight in any general aviation aircraft in those conditions would be extremely hazardous.

1.5 WRECKAGE AND IMPACT

On February 12, 2005, the Safety Board investigator, the FAA coordinator, and investigators from Teledyne Continental and Cessna Aircraft Company, all parties to the investigation, responded to the accident scene. The wreckage site was at the following global positioning system (gps) coordinates: 34 minutes 57 degrees 18.3 seconds north latitude and 118 minutes 45 degrees 50.5 seconds west longitude. The elevation was approximately 2,300 feet msl. The accident site was also located to the west-southwest of the Greenhorn Mountains. The accident area was situated to the west of the Sierra Nevada Mountain range oriented in a general north-to-south direction, and to the north and west of the Tehachapi Mountains oriented in a northeast to southwest direction.

The airplane impacted in a hilly, treed forested area of the Tejon Ranch, in the valley of Tunis Creek. A rectangular shape in the soft earth, similar in dimension and shape to the leading edge of the wing, ran along a general direction of 295 degrees magnetic. Green lens fragments were at the outer edge of the imprint. Following the rectangular shape, the engine and propeller were buried in a 4-foot crater. Crushed and fragmented sections of the fuselage

and the right aileron led from the crater, that continued to the empennage positioned inverted against a tree. The remainder of the wreckage was extensively fragmented and spanned outward in a fan-like shape from the tree in a direction approximately 300 degrees magnetic and a distance of approximately 130 feet.

All control surfaces and counterweights were accounted for at the accident site.

1.6 MEDICAL INFORMATION

The Kern County Sheriff's Department completed autopsies on the pilot and the passenger. The FAA Bioaeronatical Sciences Research Laboratory, Oklahoma City, Oklahoma, completed toxicology testing on specimens of the pilot. The following positive results were presented on the toxicology report:

15 (mg/dL, mg/hg) ETHANOL detected in Muscle
15 (mg/dL, mg/hg) ETHANOL detected in Brain

Putrefaction: Yes

1.7 TESTS AND RESEARCH

An additional wreckage examination commenced on March 2, 2005, with the Safety Board investigator and representatives from Teledyne Continental and Cessna Aircraft Company present.

1.7.1 Aircraft Control Cables

Control cables ran from the empennage section to the lower portion of the firewall. The elevator cables separated at the lower pulley on the firewall, which was extensively crushed. One rudder cable remained attached to the rudder pedal; the other cable was attached to a broken bracket from the rudder bar. The right aileron cable transitioned from the aileron bellcrank to the wing root area. A 4-foot portion of the left aileron cable was trapped between the leading edge and the front of the fuel tank. Various other portions of control cables were found loose within the wreckage.

1.7.2 Instruments

Two gyroscopic flight instruments were disassembled for examination. These instruments included the horizontal situation indicator (HSI) and attitude indicator (AI). Both of the instruments and their associated housings sustained crush damage to various degrees. All exhibited gyro wheel to housing scoring and the AI had a gouge approximately 1/4-inch in length. The HSI and AI gyro wheels were circumferentially scored. The vacuum pump was removed and examined. The rotor was shattered within the vacuum pump housing.

1.7.3 Engine and Propeller

The Teledyne Continental TSIO-520P engine, sustained extensive impact damage. The left side cylinders (cylinders 2, 4, and 6) were crushed and portions of the cylinder fins were missing. The top spark plugs for cylinders 2, 3, 4, and 5 were removed for further examination. The top spark plug for cylinder 6 was missing and the spark plug for cylinder 1 was broken off in the cylinder. All spark plugs were light grey in color and displayed similar amounts of gap. The spark plug for cylinder 2 was slightly oily.

The bottom spark plug to the number 6 cylinder and the oil sump were removed. Three holes were drilled in the engine case. The engine was borescoped and all coloration within the cylinders and throughout the camshaft and crankshaft attachment points was consistent with normal operation. There was no peening or gouging on the piston heads or cylinder walls. The starter ring gear was removed from the accessory housing. Rotational scoring was present on the inside of the engine casing. The engine crankshaft gear was crushed against the camshaft gear and the engine would not rotate.

The three-bladed McCauley propeller was extensively damaged. The entire hub was shattered and the three blades had dislodged themselves. Portions of hub material still covered the butt ends of the blades. One of the blades was bent and fractured approximately mid-blade. The other two blade surfaces were scratched and the blades were slightly deformed.

1.8 ORGANIZATION AND MANAGEMENT INFORMATION

1.8.1 Company Information

Action Air Express, Inc. is a single-airplane, single-pilot operation. The FAA had approved the on-demand passenger and cargo carrier for operation on June 4, 2004. The accident pilot was the sole pilot authorized to fly for the company.

The Los Angeles Flight Standards District Office (FSDO) issued the letter of authorization for the operation. The FAA-issued operations specifications indicated that the operator was authorized to conduct single-pilot IFR operations.

Action Air did not have a formalized 14 CFR Part 135 training program. The pilot received training to prepare for the FAA mandated Part 135 competency and proficiency checks by local certified flight instructors familiar with Part 135 operations.

Documentation obtained from the FAA accident coordinator showed that the Los Angeles FSDO performed routine inspections of Action Air Express since their inception in June 2004. Since that time, 10 surveillance actions were performed by FAA inspectors. The last surveillance prior to the accident was on November 2.

1.9 ADDITIONAL INFORMATION

According to Aviation Weather Services (AC 00-45E), significant meteorological information (SIGMET) and the Airman's Meteorological Information (AIRMET), "are considered widespread" because they must be either affecting or be forecasted to affect an area of at least 3,000 square miles at any one time." Due to this coverage area, localized activity covering an area less than 3,000 square miles would not be issued through these in flight aviation weather advisories.

The Aeronautical Information Manual (AIM) states, "mountain waves occur when air is being blown over a mountain ridge or even the ridge of a sharp bluff area. As the air hits the upwind side of the range, it starts to climb, thus creating what is generally a smooth ride turns into a turbulent downdraft as the air passes the crest of the ridge. From this point, for many miles downwind, there will be a series of downdrafts and updrafts." In addition, "All it takes to form a mountain wave is wind blowing across the range at 15 knots or better at an intersection angle of not less than 30 degrees."

The United States Naval Observatory Astronomical Applications Department calculated the sun and moon data for February 10, 2005, for Frazier Park, California. The sunset was at 1734, and the end of civil twilight occurred at 1800. The phase of the moon was a waxing crescent with 5 percent of the moon's visible disk illuminated.

The Safety Board investigator released the recovered wreckage on March 7, 2005. No parts or pieces were retained.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	29,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	October 1, 2004
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	January 1, 2005
Flight Time:	1850 hours (Total, all aircraft), 400 hours (Total, this make and model), 85 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N432AR
Model/Series:	P210N	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	P21000098
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	November 1, 2004 100 hour	**Certified Max Gross Wt.:**	4000 lbs
Time Since Last Inspection:	95 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	2852.2 Hrs as of last inspection	**Engine Manufacturer:**	Teledyne Continental
ELT:	Installed, not activated	**Engine Model/Series:**	TSIO-520-P7
Registered Owner:	Action Air Express, Inc.	**Rated Power:**	310 Horsepower
Operator:		**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:		**Operator Designator Code:**	QXNA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	SDB,4510 ft msl	**Distance from Accident Site:**	14 Nautical Miles
Observation Time:	19:52 Local	**Direction from Accident Site:**	155°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Overcast / 5000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	18 knots / 32 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	60°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.95 inches Hg	**Temperature/Dew Point:**	7°C / -4°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Fresno, CA (FAT)	**Type of Flight Plan Filed:**	IFR
Destination:	Santa Monica, CA (SMO)	**Type of Clearance:**	IFR
Departure Time:	19:35 Local	**Type of Airspace:**	Class E

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:**	35.079906,-118.790626(est)

Administrative Information

Investigator In Charge (IIC):	Dunks, Kristi
Additional Participating Persons:	James Murray; Federal Aviation Administration; Fresno, CA Henry Soderlund; Cessna Aircraft Company; Wichita, KS Michael Grimes; Teledyne Continental; Lancaster, CA Peter Trono; National Air Traffic Controllers Association; Pearblossom, CA Arthur Rubin; Action Air Express; Santa Monica, CA
Original Publish Date:	May 30, 2006
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=60997