Aviation Investigation Final Report

Location:	WINDSOR, California	**Accident Number:**	LAX99LA189
Date & Time:	May 22, 1999, 08:20 Local	**Registration:**	N3037V
Aircraft:	Cameron A-250	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 Serious, 13 Minor, 2 None
Flight Conducted Under:	Part 91: General aviation - Other work use		

Analysis

The balloon basket hit hard and overturned during a precautionary landing. The pilot contacted the tower at the intended point of landing 2 miles away, and they notified him of winds gusting to 21 knots. The wind was calm at the balloon's location, but the pilot decided to land. Before he could get the balloon to the ground, the winds increased rapidly. The balloon hit the ground and went through a fence prior to a hard collision with the steep bank of a creek. The pilot was ejected as he tried to deflate the balloon, and the copilot landed the balloon. It hit hard and the basket turned onto its side. The balloon Flight Manual (FM) requires the balloon to be equipped with helmets for each passenger and recommends that they be worn during landings in winds 10 mph or greater. It instructs the pilot to brief passengers on proper use prior to flight. The pilot did not have enough helmets on board to equip every passenger, did not brief the passengers that they were available, and did not brief them on the equipment's proper use. About 3 hours before the flight, the pilot contacted a Flight Service Station for weather information at his destination. This brief occurred a few minutes prior to the release of the next scheduled aerodrome forecast (TAF), which noted the possibility of a rapid increase in wind velocity about the time of the actual landing. The estimated time of arrival for which the pilot obtained the brief could not be established. The pilot did not update his briefing prior to launch. It could not be established if he obtained a standard briefing, abbreviated briefing, or requested specific information. The pilot recalled receiving winds aloft, but not a forecast for high surface winds. The Airman's Information Manual states that if the pilot requests either a standard or abbreviated weather briefing, a briefer will automatically provide adverse conditions both present and forecast. The briefer will provide a destination forecast for the estimated time of arrival and any significant changes within 1 hour before and after the planned arrival time.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot did not obtain the most current weather briefing available, which forecast high winds about his actual landing time. The balloon encountered high winds and collided with an embankment in a field during a precautionary hard landing. Factors in the accident were that the pilot did not have enough protective gear for all passengers as prescribed in the Flight Manual, and he did not brief the passengers that the gear was available or on its proper use.

Findings

Occurrence #1: HARD LANDING
Phase of Operation: LANDING

Findings
1. (C) WEATHER CONDITION - HIGH WIND
2. (C) WEATHER FORECAST - NOT OBTAINED - PILOT IN COMMAND
3. (C) WEATHER EVALUATION - INADEQUATE - PILOT IN COMMAND
4. PRECAUTIONARY LANDING - ATTEMPTED - PILOT IN COMMAND
5. (F) MISC EQPT/FURNISHINGS,PROTECTIVE CLOTHING - LACK OF
6. (F) PROCEDURES/DIRECTIVES - NOT COMPLIED WITH - PILOT IN COMMAND
7. (F) PASSENGER BRIEFING - INADEQUATE - PILOT IN COMMAND

Occurrence #2: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER
Phase of Operation: LANDING

Findings
8. (C) TERRAIN CONDITION - DIRT BANK/RISING EMBANKMENT
9. (C) UNSUITABLE TERRAIN OR TAKEOFF/LANDING/TAXI AREA - ENCOUNTERED - PILOT IN COMMAND

Occurrence #3: ON GROUND/WATER COLLISION WITH OBJECT
Phase of Operation: LANDING

Findings
10. OBJECT - FENCE

Factual Information

HISTORY OF FLIGHT

On May 22, 1999, about 0820 hours Pacific daylight time, a Cameron Balloons A-250, N3037V, sustained substantial damage during a hard landing near Windsor, California. The local sightseeing flight departed an open field 3 miles north of the landing site approximately 35 minutes earlier. Its destination was the Sonoma County Airport, which was about 2 miles away. Sonoma Thunder, Inc., was operating the flight under the provisions of 14 CFR Part 91. Visual meteorological conditions prevailed and no flight plan had been filed. The commercial pilot/owner and copilot were not injured, 13 passengers sustained minor injuries, and 2 passengers sustained serious injuries.

The pilot stated he obtained a weather briefing from a flight service station prior to 0500. He and his passengers went to the Sonoma County Airport, near Santa Rosa, California, around 0630. He verified winds with the tower and launched his own pibal (test balloon) to determine wind conditions. He selected a point of departure that would allow them to return to the airport, and transported everyone to that location.

The pilot said the wind was calm when the balloon departed. He said he checked in with the local air traffic control tower as he entered their area and received a report of no significant winds. About 30 minutes later he contacted the tower to announce his intention to land. The tower advised him the winds were gusting to 21 knots. A few minutes later he verified the wind velocity. He was not detecting winds that strong, but decided to land. It would take him 5 minutes to descend. He attempted to set down in a field 2 miles from the airport. During the descent the winds gained velocity.

The first impact was not severe, but the balloon continued along the ground. The pilot was pulling a rope to open the top of the balloon and help it collapse. The balloon crossed a small creek about 8 feet wide with hard, vertical walls 4 to 6 feet high. The basket lurched and tilted when it struck the creek wall. The pilot felt most injuries occurred at this time. As the canopy billowed, it pulled the pilot from the basket. The balloon became airborne and moved over him. He continued to pull the line and tried to open the top some more. The balloon began dragging him and he was forced to let go. The canopy was partially open and the copilot continued to try to get the balloon down. The pilot estimated the balloon rose 10 to 15 feet and traveled 200 to 300 feet across the field. He said the second and final bump was hard and the basket stopped, falling onto its side, but no one was ejected. The pilot told a police officer that he routinely briefed hazards associated with windy conditions, and did so on this flight.

Various passengers indicated that they arrived at the designated meeting place about 0555. The crew was there, and the group waited about 40 minutes before the crew took roll call.

They waited an additional 5 to 10 minutes before they left for the Sonoma County Airport.

They observed the pilot launch a test balloon. About 20 minutes later the crew loaded them into vans. After they waited for two more people to arrive, the crew transported them to the launch site.

At the launch site, the pilot briefed them on normal procedures and discussed the handholds. He spent about 3 minutes discussing emergency procedures. They did not recall being told that headgear was available or being briefed on its use. The pilot did not launch a test balloon at the launch site.

The basket was about 9 1/2 feet long by 5 feet wide and less than 4 feet high. The basket had five compartments. Four rectangular sections occupied the ends and another rectangular section traversed along the center of the short axis. The center section housed the three burners and four fuel tanks. The pilot was in a passenger compartment and the copilot occupied the center section.

The pilot stayed low to maintain favorable wind directions and observed two other balloons aloft. The pilot thought the other balloons had been aloft for 10 to 20 minutes. A local resident who routinely observes balloon operations estimated the other balloons launched about an hour earlier.

Several of the passengers recalled the pilot's radio conversations with the tower. After the pilot confirmed the winds, he moved people around in the basket. He placed the larger people on the downwind (impact) side, and instructed everyone to get low. One passenger commented that after the female passengers got down low, the men couldn't get very low. Just prior to impact, the balloon turned so that the small people were on the impact side.

PERSONNEL INFORMATION

The pilot submitted a report that indicated he had 2,245 hours in lighter-than-air aircraft. He had flown 74 hours in the last 90 days, and 17 hours in the last 30 days.

The report indicated the copilot had 2,245 hours total time in lighter-than-air aircraft, with 153 in this make and model. He had 24 hours in the last 90 days and 12 hours in the last 30 days.

AIRCRAFT INFORMATION

The balloon was a Cameron A-250 model, serial number 6052. The Federal Aviation Administration (FAA) accident coordinator determined the balloon had a total time of 153 hours. The FAA accident coordinator estimated that the balloon was operating at less than certified maximum gross weight.

METEOROLOGICAL INFORMATION

The Sonoma County Airport had an Automated Surface Observation System (ASOS) installed.

A METAR (aviation routine weather report) for the airport issued at 0653 PDT indicated: clear skies; visibility 8 statute miles; winds from 130 degrees at 4 knots; temperature 52 degrees Fahrenheit; dew point 48 degrees Fahrenheit; and altimeter setting 29.82 InHg.

A METAR at 0753 was: clear; visibility 9 statute miles; winds calm; temperature 57 degrees Fahrenheit; dew point 52 degrees Fahrenheit; and altimeter 29.82 InHg.

Archived ASOS data indicated that the conditions at 0815 were: clear; visibility 10 statute miles; winds from 340 degrees at 15 knots gusting to 21 knots; temperature 73 degrees Fahrenheit; dew point 44 degrees Fahrenheit; and altimeter 29.79 InHg.

The METAR at 0853 showed: clear; visibility 10 statute miles; winds from 010 degrees at 15 knots gusting to 21 knots; temperature 82 degrees Fahrenheit; dew point 48 degrees Fahrenheit; and altimeter 29.79 InHg.

The METAR at 0953 was: clear; winds from 030 degrees, variable 360 to 070 at 7 knots; temperature 86 degrees Fahrenheit; dew point 57 degrees; and altimeter 29.80 InHg.

The pilot stated he obtained a weather briefing from a flight service station prior to 0500, but his estimated time of arrival could not be established. This brief occurred a few minutes prior to the release of the next scheduled aerodrome forecast (TAF), which noted the possibility of a rapid increase in wind velocity about the time of the actual landing. It could not be established if he obtained a standard briefing, an abbreviated briefing, or requested specific information. He recalled receiving the winds aloft forecast, but not a forecast for high winds. The pilot did not update his briefing prior to launch.

The Airman's Information Manual (AIM) describes standard and abbreviated weather briefings. An abbreviated briefing supplements mass disseminated data, updates a previous briefing, or provides one or two specified items. The AIM notes that if the pilot requests a standard or abbreviated briefing, a briefer will automatically provide adverse conditions both present and forecast. The briefer will provide a destination forecast for the estimated time of arrival and any significant changes within 1 hour before and after the planned arrival time.

The AIM discusses Aerodrome Forecasts (TAF), which provide a concise statement of the expected meteorological conditions at an airport during a specified period (usually 24 hours). The TAF uses the same codes as a METAR. They are scheduled four times daily for 24-hour periods at 0000Z, 0600Z, 1200Z, and 1800Z. The format provides the date and time of origin, valid period date and time, and forecast meteorological conditions.

The accident occurred about 0820 PDT (UTC-7), and the pilot obtained his brief prior to 0500 PDT. The National Weather Service issued a Terminal Area Forecast (TAF) for the Sonoma

County Airport that was valid after 0500 for a 24-hour period. It forecast winds from 300 degrees at 4 knots with clear skies and visibility greater than 6 miles. The forecast indicated a change in winds at 0900 PDT, "FM1600 34016KT...." The AIM states that the "FM" marker indicates that a rapid change in prevailing conditions, usually occurring in less than 1 hour, is expected.

ADDITIONAL INFORMATION

Cameron Balloons published a flight manual (FM) for the Model A-250 balloon. Section 2 described the operating limitations. Item 2.6 specified that helmets were required for all occupants on board. It said they must be worn during emergency procedures as specified in Section 3 and any other time deemed necessary by the pilot-in-command. It recommended that helmets be utilized for takeoffs and landings in winds of 10 mph or greater. It also said passengers must be briefed on their proper use prior to flight.

Section 3.8 of the FM described preparations for a hard landing. It directed the pilot to advise passengers where to stand, where to hold on, which direction to face, and how to brace.

Section 4.2.10 described normal procedures. It stated that passengers should be issued protective headgear and leather gloves. It strongly encouraged pilots to require all occupants to wear helmets and gloves during flight, especially during takeoff and landing if they experienced much wind. It said to instruct passengers on what to expect during takeoff, flight, and landing.

Section 6 of the FM described the weight and equipment list. This section listed required equipment. Item C directed that protective headgear must be on board for each occupant.

Section 9.3 of the FM outlined general inspection procedures. Regarding the weight and balance, it specified that the inspector should verify that the equipment being inspected, the equipment listed in the logbook, and the equipment listed in the weight and balance section of the FM all agree. The equipment list for this balloon did not include a fourth fuel tank that was on board the balloon at the time of the accident.

A warning placard mounted on the basket above the airworthiness certificate advised pilots to brief passengers completely to avoid injuries. Items to brief included normal and emergency landing procedures, handhold locations, appropriate clothing and footwear, and location of helmets. It continued that helmets were required for all occupants on board and must be worn during emergency procedures. It strongly recommended that helmets be used when landing in winds in excess of 10 mph.

The pilot informed the FAA accident coordinator that he only carried 12 helmets on board the balloon. All of the helmets were in the center section of the balloon. The pilot said he did not have enough time to distribute the helmets.

Pilot Information

Certificate:	Commercial	**Age:**	39,Male
Airplane Rating(s):	None	**Seat Occupied:**	Unknown
Other Aircraft Rating(s):	Balloon	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	None None	**Last FAA Medical Exam:**	
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	2245 hours (Total, all aircraft), 2203 hours (Pilot In Command, all aircraft), 74 hours (Last 90 days, all aircraft), 17 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Co-pilot Information

Certificate:	Commercial	**Age:**	45,Male
Airplane Rating(s):	None	**Seat Occupied:**	
Other Aircraft Rating(s):	Balloon	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	None None	**Last FAA Medical Exam:**	
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	230 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cameron	**Registration:**	N3037V
Model/Series:	A-250 A-250	**Aircraft Category:**	Balloon
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	6052
Landing Gear Type:		**Seats:**	
Date/Type of Last Inspection:	August 6, 1998 Annual	**Certified Max Gross Wt.:**	5000 lbs
Time Since Last Inspection:	43 Hrs	**Engines:**	Unknown
Airframe Total Time:	153 Hrs at time of accident	**Engine Manufacturer:**	
ELT:	Not installed	**Engine Model/Series:**	
Registered Owner:	SCOTT VAN DER HORST	**Rated Power:**	
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	STS,125 ft msl	**Distance from Accident Site:**	2 Nautical Miles
Observation Time:	08:53 Local	**Direction from Accident Site:**	180°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	15 knots / 21 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	10°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	28°C / 2°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	HEALDSBURG, CA (O31)	**Type of Flight Plan Filed:**	None
Destination:	SANTA ROSA, CA (STS)	**Type of Clearance:**	None
Departure Time:	07:45 Local	**Type of Airspace:**	Class D

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	2 Serious, 13 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Serious, 13 Minor, 2 None	**Latitude, Longitude:**	38.529731,-122.810081(est)

Administrative Information

Investigator In Charge (IIC):	Plagens, Howard
Additional Participating Persons:	JACKIE BLACK; OAKLAND, CA
Original Publish Date:	January 2, 2002
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=46388