



National Transportation Safety Board Aviation Accident Final Report

Location:	Fort Carson, CO	Accident Number:	CEN15LA300
Date & Time:	07/02/2015, 0704 MDT	Registration:	N210GB
Aircraft:	BALONY KUBICEK SPOL BB60Z	Aircraft Damage:	None
Defining Event:	Hard landing	Injuries:	2 Serious, 6 Minor
Flight Conducted Under:	Part 91: General Aviation - Business - Sightseeing		

Analysis

The commercial pilot checked the weather before the air tour balloon flight. The Colorado Springs Municipal Airport (COS) automated weather system reported that the surface wind was 070 degrees at 7 mph. A National Weather Service meteorologist informed the pilot that a front north of Denver was expected to pass through Colorado Springs about 6 hours after the flight was going to take off. The pilot also attempted to contact Lockheed Martin Flight Service (LMFS) twice without success; LMFS reported that, on the morning of the accident, it experienced an abnormally high call volume, which resulted in long wait/hold times. About 15 minutes before taking off, the pilot released a pilot balloon (pibal) from the launch site to check the wind aloft. At first, the pibal drifted toward the west slowly. However, when it reached about 1,000 ft above ground level (agl), it appeared to drift back toward the launch site. The pilot reported that he also noticed a slight breeze blowing in a tall treetop located on a rise south of the launch site.

Before departure, the pilot rechecked the wind at COS, which was still 070 degrees at 7 mph. The balloon lifted off in calm wind conditions. However, as the flight continued, the balloon's groundspeed began to increase rapidly. About 22 minutes into the flight, a crew chief for another balloon company called the pilot and told him that COS was now reporting wind at 18 mph gusting to 26 mph. The pilot reported that he then began looking for a place to land and that, as he was doing this, the wind continued to increase to about 43 mph. The pilot located a large open field and set up for a high-wind landing, which involved descending to about 20 ft agl, at which point he intended to pull out the [parachute] top of the balloon envelope and make a steep, rapid descent to the ground. However, at 100 ft agl, the balloon encountered a drop in wind velocity from about 43 to 26 mph. The pilot had allowed the envelope to cool for the approach, which, along with the drop in wind velocity, caused the balloon's descent rate to increase rapidly. The pilot subsequently fully engaged the burners, but he was unable to arrest the descent, and the balloon impacted the ground hard. One passenger was ejected from the basket but was not injured. Two of the passengers remained in the basket but sustained serious injuries. Because the pilot had fully engaged the burners before it landed, the balloon lifted off again and ascended rapidly. The pilot regained control of the balloon, flew it to an open field, and subsequently conducted a controlled high-wind landing.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's improper burner control, which allowed the balloon's envelope to cool, and the balloon's subsequent encounter with a drop in wind velocity during a high-wind landing approach, both of which resulted in the balloon's descent rate increasing too rapidly for the pilot to arrest it and led to a hard landing.

Findings

Aircraft	Descent rate - Not attained/maintained (Cause)
Personnel issues	Aircraft control - Pilot (Cause) Use of equip/system - Pilot (Cause)
Environmental issues	High wind - Effect on operation (Cause)
Organizational issues	Support/Oversight/Monitoring - Meteorological service

Factual Information

HISTORY OF FLIGHT

On July 2, 2015, at 0704 mountain daylight time, a Balony Kubicek Spol Sro BB60Z ride balloon, N210GB, experienced a high-wind landing on a Fort Carson dudud artillery range, near Fort Carson, Colorado. Two passengers sustained serious injuries. The pilot and five remaining passengers received minor injuries. The balloon was not damaged. The balloon was registered to the pilot and operated by High but Dry Balloons as a 14 CFR Part 91 air tour business flight. Visual meteorological conditions prevailed for the local flight that originated from Colorado Springs, Colorado, at 0605.

Before the flight, the pilot checked the weather at Colorado Springs Municipal Airport (COS), and the National Weather Service in Pueblo, Colorado. COS reported the surface wind was 070-degrees at 7 mph. The National Weather Service told the pilot that a front that was north of Denver was expected to pass through Colorado Springs around noon. The pilot also attempted to contact Lockheed Martin Flight Service twice, but was unable to get through to them. About 15 minutes before taking off, the pilot released a pibal from the launch site. At first, the pibal drifted toward the west slowly. However, about 1,000 ft, it appeared to drift back toward the launch site. He noticed a slight breeze blowing in a tall treetop located on a rise south of the launch site. Before departure he rechecked the winds at COS, which were still 070 degrees at 7 mph.

The balloon lifted off at 0605 in calm wind conditions. As the flight continued, however, the balloon's speed began to increase rapidly. At 0627, and flying over the south entrance to COS, a crew chief for another balloon company called the pilot and told him that COS was now reporting wind at 18 mph, gusting to 26 mph and also discussed with the pilot what to expect for landing sites on Fort Carson. The pilot began looking for a place to land. As he was doing this, the wind continued to increase to 43 mph. The pilot located a large open field on Fort Carson to put the balloon down in. He set up for a high wind landing, descending to about 20 ft. agl, where he would pull out the [parachute] top of the envelope and make a steep, rapid descent to the ground. However, at 100 ft agl, the balloon encountered a drop in wind velocity from 43 to about 26 mph. This caused the balloon's descent to increase rapidly. The pilot engaged the burners fully, but was unable to arrest the rapid descent before impacting the ground hard. A male passenger was ejected from the basket, but was not injured. Two of the female passengers in the basket sustained serious injuries. The balloon lifted off again, ascending rapidly. The pilot regained control of the balloon, and flew to an open field where a controlled high wind landing was accomplished.

ON BOARD RECORDING DEVICES

--- Global Positioning Satellite Receiver ---

A handheld Garmin GPS 12 Global Positioning Satellite receiver was on board the balloon during the accident flight. It recorded date, time, latitude, longitude, ground speed in knots, and course. Data derived from the unit showed the balloon's ground track for the entire flight. The device began recording the balloon's track at 0608:50. At this time, the balloon was in the vicinity of the intersection of North Academy Boulevard and North Carefree Circle, in the north central part of Colorado Springs. The balloon traveled along a predominantly south-southeast heading of about 167 degrees for the first half of the flight. At 0622:16, the balloon skirted the

east side of COS and proceeded on a more southerly heading of about 175 degrees. About a mile south of COS runway 17R, the balloon turned and began to travel along a south-southwesterly heading of about 195 degrees. The balloon continued on this course until putting down on an artillery range on the U. S. Army Fort Carson at 0704:18, about 7 miles south of Butts Army Airfield (FCS), Fort Carson, Colorado. A route overlay for the entire flight is provided in the Global Positioning System Device Specialist's Factual Report, which is provided in the docket to this report. The average groundspeed for the duration of the flight was approximately 20 knots. The maximum derived ground speed between two sequential data points was 39 knots.

--- Handheld Personal Electronic Device ---

Video with audio retrieved from one of the passenger's handheld personal electronic device produced several short segment video files. The device was a Samsung SM-GM900A, better known by its marketing name, the Samsung Galaxy S5. The video files revealed the following:

About 0534, the ground crew was inflating the balloon's envelope with a large fan. There were no clouds visible over the terrain. The treetops captured in the recording showed no wind. The video segment duration lasted 4 minutes and 6 seconds.

About 0545, the video shows the hot inflation. The burners are engaged and the balloon's envelope rises. The video ends with the balloon upright. The video segment duration lasted 1 minute and 55 seconds.

About 0632, the recording shows the balloon in flight. Some ground features are seen, but the balloon's rate of movement cannot be determined. The audio track recorded some wind noise. A female passenger is then heard saying, "We're moving." The video segment duration lasted 16 seconds.

About 0633, the recording shows the camera looking up inside the balloon envelope from the basket. There is light wind noise and then the burner is seen firing. A male voice is then heard, "That must be the entrance to the base." The video segment duration lasted 20 seconds.

About 0637, the recording, which lasted 18 seconds, showed the balloon in flight and the field of view looking at an industrial facility. An exhaust output cloud was shown blowing in a southwest direction, which corresponded to the balloon's flight direction at the time. Treetops in the foreground were shown rustling. The balloon operator is heard saying, "I'm haulin' butt. I have no idea where I'm goin'. I can see one fifteen though [reference to a north-south state highway]." Shortly after, a male passenger says, "Holy smokes." The balloon operator is then heard saying, "I'm in a big flat area. I'm gunna drop down and land so hang on." The recording ends with the field of view showing a large green field forward and beneath the balloon. Wind noise was present throughout the recording.

About 0738, the recording showed the balloon operator standing next to the basket which is resting on the ground. The video panned around showing portions of the accident site. During the 5 minute and 16 second segment, the operator was heard making statements. Relevant statements were:

0738:52: "They lied about this front. [Maybe] they didn't lie about it but they were misinformed."

0741:02: [sound of a mobile telephone ringing]

0741:07: "Yeah, that's one time ... I have no idea. The last I saw when I was landing was twenty six [knots]. No ... nothing. There was nothing. I even called Pueblo. [He] saw nothing ... but uh ... the winds at the airport, the highest they [they got] ..."

0742:13: "We're waiting for the helicopter to come. [I found] I was [gliding along] ... drug, uh, drug a hundred feet ... ripped the top out."

About 0747, the recording showed the accident site. There was a considerable amount of wind noise and tall grass seen surrounding the balloon basket was seen blowing in the wind. The video segment duration lasted 2 minutes and 16 seconds.

Additional information can be found in the Image Specialist's Factual Report, which is provided in the docket to this report.

METEOROLOGICAL INFORMATION

At 0554, weather conditions at COS was wind 030 degrees at 5 knots, few clouds at 11,000 and 18,000 feet, 25,000 foot broken ceiling, 10 miles visibility, temperature 57 degrees Fahrenheit (F), dew point 53 degrees F, and altimeter 30.18 inches Hg.

At 0640, weather conditions at COS was wind 360 degrees at 16 knots with gusts to 25 knots, scattered clouds at 2,100 and 11,000 feet, 18,000 foot broken ceiling, 10 miles visibility, temperature 63 degrees F, dew point 55 degrees F, and altimeter 30.24 inches Hg

At 0658, the weather conditions at FCS was wind 010 degrees at 27 knots with gusts to 38 knots, clear skies, 10 miles visibility, temperature 63 degrees F, dew point 57 degrees F, and altimeter 3018 inches Hg. Remarks a peak wind of 38 knots from 010 degrees occurred 53 minutes after the hour.

Lockheed Martin Flight Service (LMFS) reported that on the morning of the accident they experienced an abnormally high call volume, which resulted in long wait/hold times for users who called the 1-800-WXBRIEF number. Facility logs indicated that some time earlier an outage occurred that precluded the National Weather Service data feed for METAR reports and the Weather Message Switching Center Replacement (WMSCR) system. With this type of outage, most if not all aviation weather providers do not have current weather reports available. LMFS's call volume appeared to spike about the same time and subsided when the issue was resolved.

A meteorologist at the National Weather Service (NWS) Weather Forecast Office (WFO) in Pueblo, Colorado said that at about 0430, he took a call from the pilot and provided him the forecast wind information for the Colorado Springs area. He provided the pilot with the Pueblo Doppler Radar Velocity Azimuth Display (VAD) wind profile, which showed winds out of the south for the first few thousand feet agl, at a speed of 10 to 25 knots. He told the pilot there was a cold front located just south of Denver "racing" southward [toward Colorado Springs], but the stronger north winds would hold off until "later in the morning." Following the call, winds at COS continued to show "light" through 0540. The Terminal Area Forecast (TAF) at 0520 for COS indicated a wind shift and increase of winds at 0900, from 360 degrees at 10 knots, gusting to 20 knots.

Meteorological Terminal Aviation Routine Weather Reports (METARs) for COS showed light winds prior to 0600, and a marked change in conditions between 0600 and 0900. Reported winds at FCS were stronger with a peak wind of 46 knots at 0717.

In a post-accident interview, the meteorologist stated that fronts moving from the north in Colorado often slow down or stall and do not make it as far south as where the balloon pilot was flying, and "occasionally they will accelerate." He said the front on the morning of the accident was moving considerably faster than the model expected. He became more concerned when he realized the front was moving faster than what he conveyed to the balloon pilot, about 10 to 15 minutes after their telephone conversation. He said he told his coworker, "I hope he [the accident pilot] calls back."

As to amending the TAF, the meteorologist said he often "will not jump" on a changing weather condition as that condition could change again and "flip-flop back and forth" and that he did not just use the model guidance to populate the TAFs that morning. For the TAF written for COS at 0520 on the morning of the accident, the model guidance had the wind coming in at 1100, but he had forecasted a wind increase for 0800. The front crossed over the Palmer Divide (a 7,800 foot msl east-west running ridge located between Denver and Colorado Springs) about 0640 to 0650.

The meteorologist said that to get real-time wind information he has to telephone the COS Automated Surface Observing Station, and that there is no specific local policy regarding the handling of weather briefings to pilots who call the WFO. He said that other balloon operators contact him two or three times a day, and that he did not know why they contact the WFO and not Flight Service.

History of Flight

Enroute	Other weather encounter
Landing	Hard landing (Defining event)

Pilot Information

Certificate:	Commercial	Age:	70, Male
Airplane Rating(s):	None	Seat Occupied:	None
Other Aircraft Rating(s):	Balloon	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	None Unknown	Last Medical Exam:	02/08/1991
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	03/16/2015
Flight Time:	4128 hours (Total, all aircraft), 1100 hours (Total, this make and model), 4128 hours (Pilot In Command, all aircraft), 14 hours (Last 90 days, all aircraft), 6 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	BALONY KUBICEK SPOL	Registration:	N210GB
Model/Series:	BB60Z	Aircraft Category:	Balloon
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Balloon	Serial Number:	779
Landing Gear Type:	Skid	Seats:	8
Date/Type of Last Inspection:	02/26/2015, Annual	Certified Max Gross Wt.:	
Time Since Last Inspection:		Engines:	
Airframe Total Time:	493 Hours	Engine Manufacturer:	
ELT:	Not installed	Engine Model/Series:	
Registered Owner:	Gary V. Born	Rated Power:	
Operator:	High but Dry Balloons	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:	FCS, 5874 ft msl	Observation Time:	0658 MDT
Distance from Accident Site:		Condition of Light:	Day
Direction from Accident Site:		Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Clear	Temperature/Dew Point:	17° C / 14° C
Lowest Ceiling:	None	Visibility	10 Miles
Wind Speed/Gusts, Direction:	27 knots/ 38 knots, 10°	Visibility (RVR):	
Altimeter Setting:	30.18 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Colorado Spring, CO	Type of Flight Plan Filed:	None
Destination:	Colorado Spring, CO	Type of Clearance:	None
Departure Time:	0605 MDT	Type of Airspace:	Military Operation Area

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	None
Passenger Injuries:	2 Serious, 5 Minor	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Serious, 6 Minor		

Administrative Information

Investigator In Charge (IIC):	David C Bowling	Adopted Date:	06/01/2016
Additional Participating Persons:	Mike Davey; Federal Aviation Administration; DEN FSDO; Denver, CO		
Publish Date:	06/01/2016		
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=91522		

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