

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, D.C. 20594

June 18, 2015

GPS Factual Report

by Jane Foster

A. EVENT

Location: Anchorage, Alaska
Date: October 19, 2014
Aircraft: Cub Crafters Inc., CC18-180
Registration: N537CC
NTSB Number: ANC15TA003

B. GROUP - No Group

C. SUMMARY

On October 19, 2014, about 1530 Alaska daylight time, a tailwheel-equipped Cub Crafters Inc., CC18-180 airplane, N537CC, sustained substantial damage following a loss of control, while attempting to drag an off-airport landing site near Anchorage, Alaska. The airplane was being operated as a visual flight rules (VFR) cross-country public-use flight, under Title 14, CFR Part 91, when the accident occurred. The airplane was operated by the U.S. Department of Interior, U.S. Fish and Wildlife Service. The certificated commercial pilot and one passenger were not injured. Visual meteorological conditions prevailed, and a VFR flight plan had been filed. The flight originated at the Soldotna Airport, Soldotna, Alaska, about 1500, destined for Pincher Creek Cabin an off-airport landing site, located within the Kenai National Wildlife Refuge near Anchorage, AK.

D. DETAILS OF INVESTIGATION

The NTSB Vehicle Recorder Laboratory received the following device(s):

GPS Manufacturer/Model: Garmin GPSMAP 495
Serial Number: IE0002660

Garmin GPSMAP 495 Device Description

The Garmin GPSMAP 495 is a battery-powered portable 12-channel GPS receiver with a 256-color TFT LCD display screen. The unit stores date, route-of-flight, and flight-time information for up to 50 flights. A flight record is triggered when groundspeed exceeds 30 knots and altitude exceeds 250 feet, and ends when groundspeed drops below 30 knots for 10 minutes or more. A detailed tracklog – including latitude, longitude, date, time, and GPS altitude information for an unspecified number of points – is stored within the unit whenever the receiver has a lock on the GPS navigation signal. Position is updated within the tracklog as a function of time or distance moved, depending on how the unit has been configured. Once the current tracklog memory becomes full, new information either overwrites the oldest information or recording stops, depending on how the unit is configured. The current tracklog can be saved to long-term memory and 15 saved tracklogs can be maintained in addition to the current tracklog. Tracklog storage may be activated or de-activated at user discretion. All recorded data is stored in non-volatile memory. The unit contains hardware and software permitting the download of recorded waypoint, route, and tracklog information to a PC via a built-in serial port using the NMEA 0183 version 2.0 protocol. The unit can also communicate with external devices such as a computer using a built in USB port. An internal button-battery is used to back-up power to the internal memory and real-time clock during those periods when main power is removed.

GPS Data Recovery

Upon arrival at the Vehicle Recorder Laboratory, an exterior examination revealed that the unit had sustained minimal damage. Figure 1 and 2 show the front and back of the device as received at the Vehicle Recorder Laboratory.

Figure 1. Photo of front of Garmin GPSMAP 495



Figure 2: Photo of back of Garmin GPSMAP 495



GPS Data Description

The data extracted included 45 sessions from December 31, 1989¹ through October 20, 2014. The accident flight was recorded starting 23:48:51 UTC on October 19, 2014 and ending 00:29:12 UTC on October 20, 2014.

GPS Parameters Provided

Table 1 describes data parameters provided by the GPS device. Date, Time, Latitude, Longitude, and GPS Altitude are recorded by the device. Groundspeed and Track are derived from the recorded parameters.

¹ All dates and times are referenced to Coordinated Universal Time (UTC).

Table 1: GPS Data Parameters

Parameter Name	Parameter Description
Date	Date for recorded data point (MM/DD/YYYY)
Time	Time (UTC) for recorded data point (HH:MM:SS)
Latitude	Recorded Latitude (degrees)
Longitude	Recorded Longitude (degrees)
GPS Alt	Recorded Altitude (feet)
Groundspeed	Average groundspeed between current and previous data point (knots)
Track	Average course between current and previous data point (degrees)

OVERLAYS AND TABULAR DATA

Figure 3 is a graphical overlay generated using Google Earth for the accident flight. The flight departed Soldotna at approximately 23:48:51 UTC. The last recorded data was at 00:29:12 UTC on October 20, 2014, with a GPS altitude of 13 feet above Mean Sea Level (MSL) and a ground speed of 0 knots.

Figure 4 is a graphical overlay generated using Google Earth zoomed in on the last 7 minutes of recorded data. Figure 4 highlights the landing by the water.

Tabular data used to generate figures 2 through 6 are included as Attachment 1. This attachment is provided in electronic comma-delimited (.CSV) format.

Figure 3. Google Earth overlay showing the accident flight recorded on the GPSMAP 495

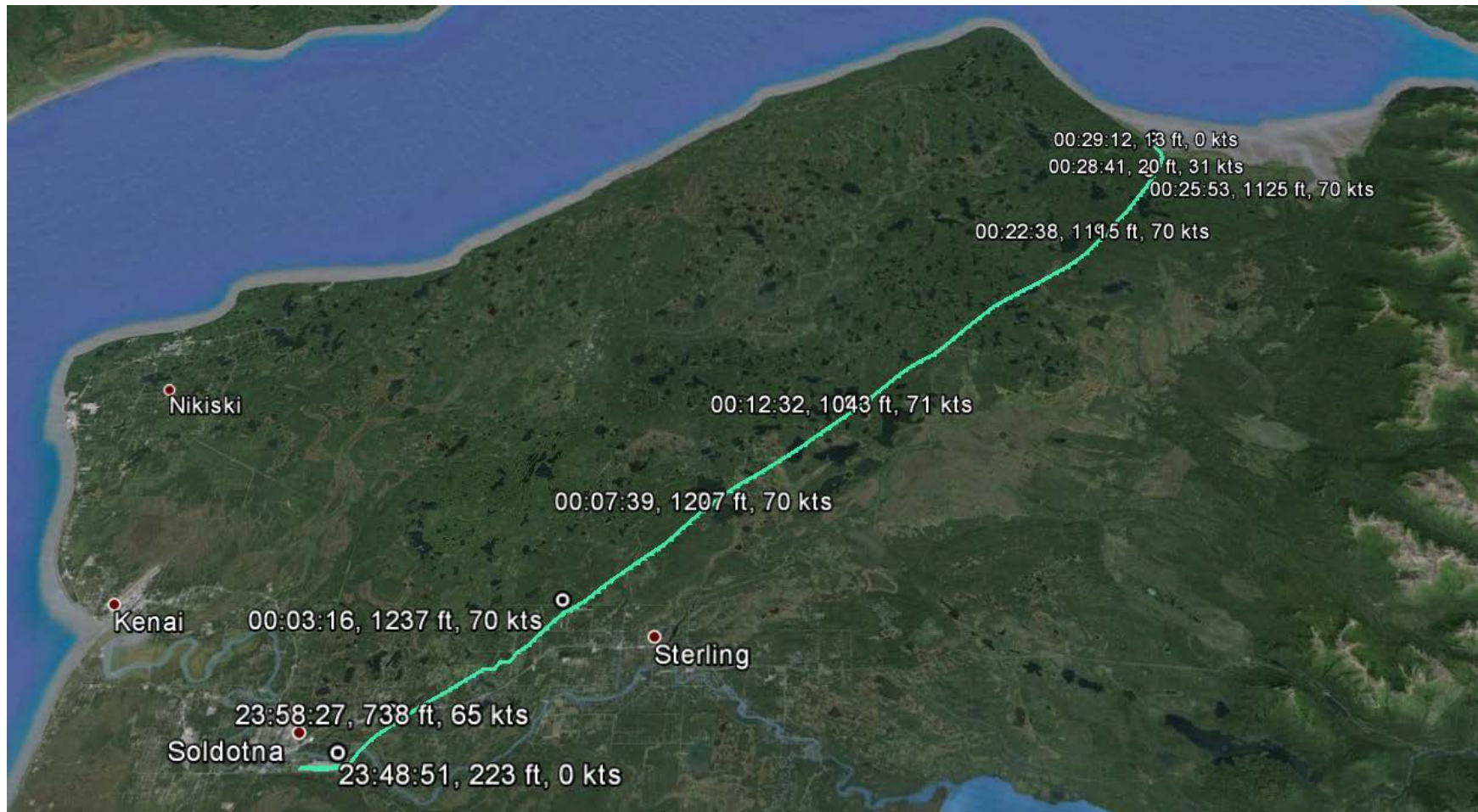


Figure 4. Google Earth overlay showing the final 7 minutes of the accident flight recorded on the GPSMAP 495

