

INVESTIGATIVE SUPPORT MATERIALS SUPPLEMENT

HISTORY OF FLIGHT

On October 06, 2020 at 1533 Pacific daylight time, a Rans S-7 Courier amphibian airplane, N55893, was substantially damaged when it was involved in an accident near Spirit Lake, Idaho. The pilot sustained fatal injuries and the passenger sustained minor injuries. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 personal flight.

The pilot and pilot-rated passenger had flown from Ponderay Lake earlier in the day and landed at Treeport Airport to see an acquaintance. The passenger stated that they intended to fly to Timber Basin Airpark, Sagle, Idaho where the pilot was based. The pilot elected to depart runway 07 and during the initial takeoff the airplane stayed in ground-effect. The passenger thought the pilot was going to land and taxi back, but then the pilot pulled aft on the control stick. The airplane climbed above the trees at the end of the runway (about 40 ft tall) and at about 50 ft above ground level (agl), the airplane's left wing stalled. The airplane impacted the ground nearly inverted.

In an interview with the FAA, the passenger stated they completed one water landing and takeoff before landing at Treeport Airport. During takeoff, they remained in ground effect until the last moment, and he thought they were going to land and attempt another takeoff. The pilot pulled back on the stick and after they climbed above the tree line the airplane did not continue climbing. He stated they were around 50 feet and the left wing stalled and rolled the airplane to the left and inverted. They impacted the ground inverted. He stated the engine sound was normal, but the airplane felt heavy during the takeoff roll and he questioned if there was water present in the floats.

The acquaintance's son captured a video of the takeoff on his cell phone and witnessed the accident. A review of the video revealed that as the airplane departed runway 07 it became airborne about 1,100 ft down the grass runway (see Figure 1). As the departure continued, the wings rocked as it slowly ascended and then it temporarily climbed above the tree line (see Figure 2). The airplane turned left (to the north) and then descended below the tree line. The airplane came to rest about 900 ft north of the runway centerline (see Figure 3).

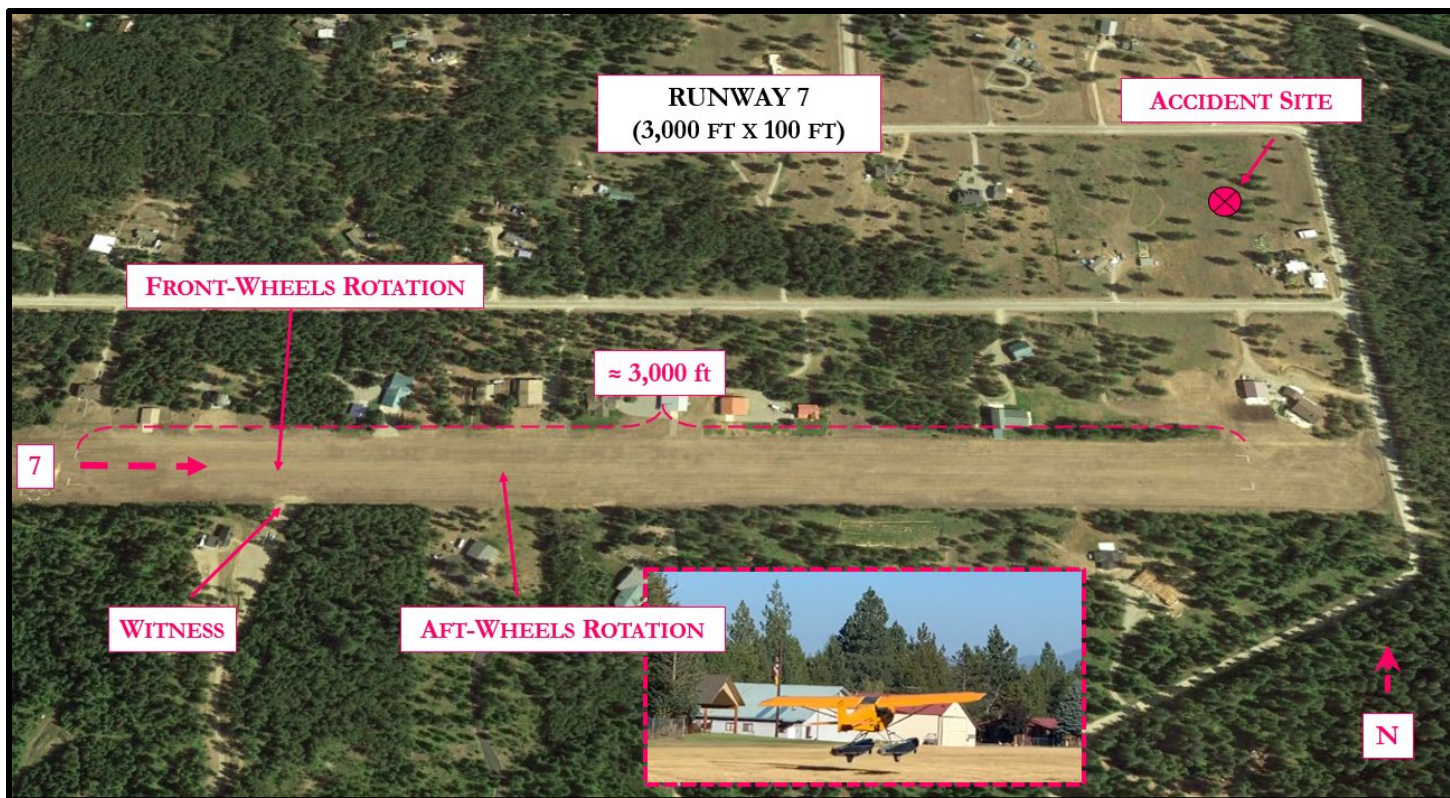


Figure 1: Runway Diagram

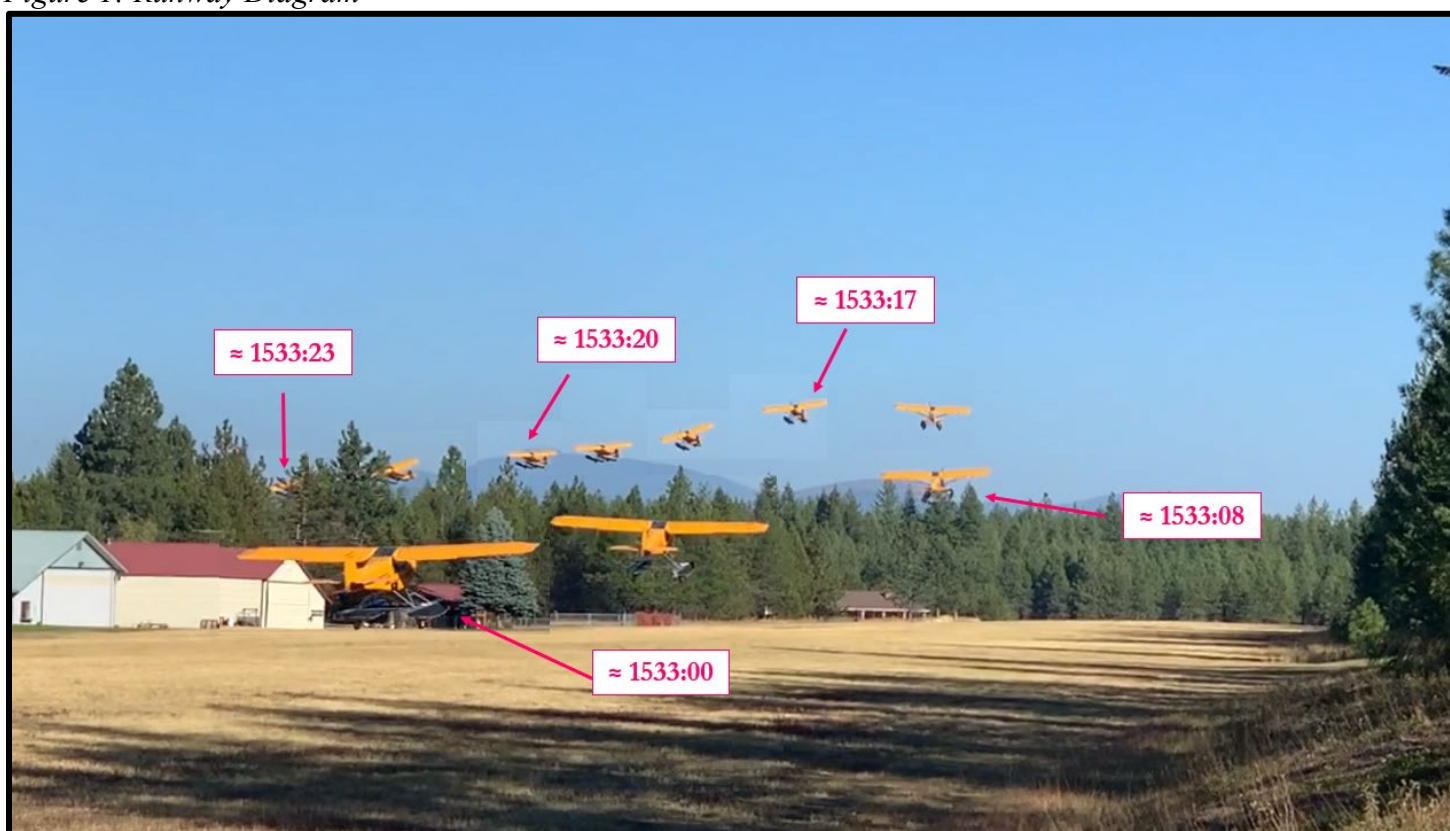


Figure 2: Excerpts of Video Capturing Takeoff

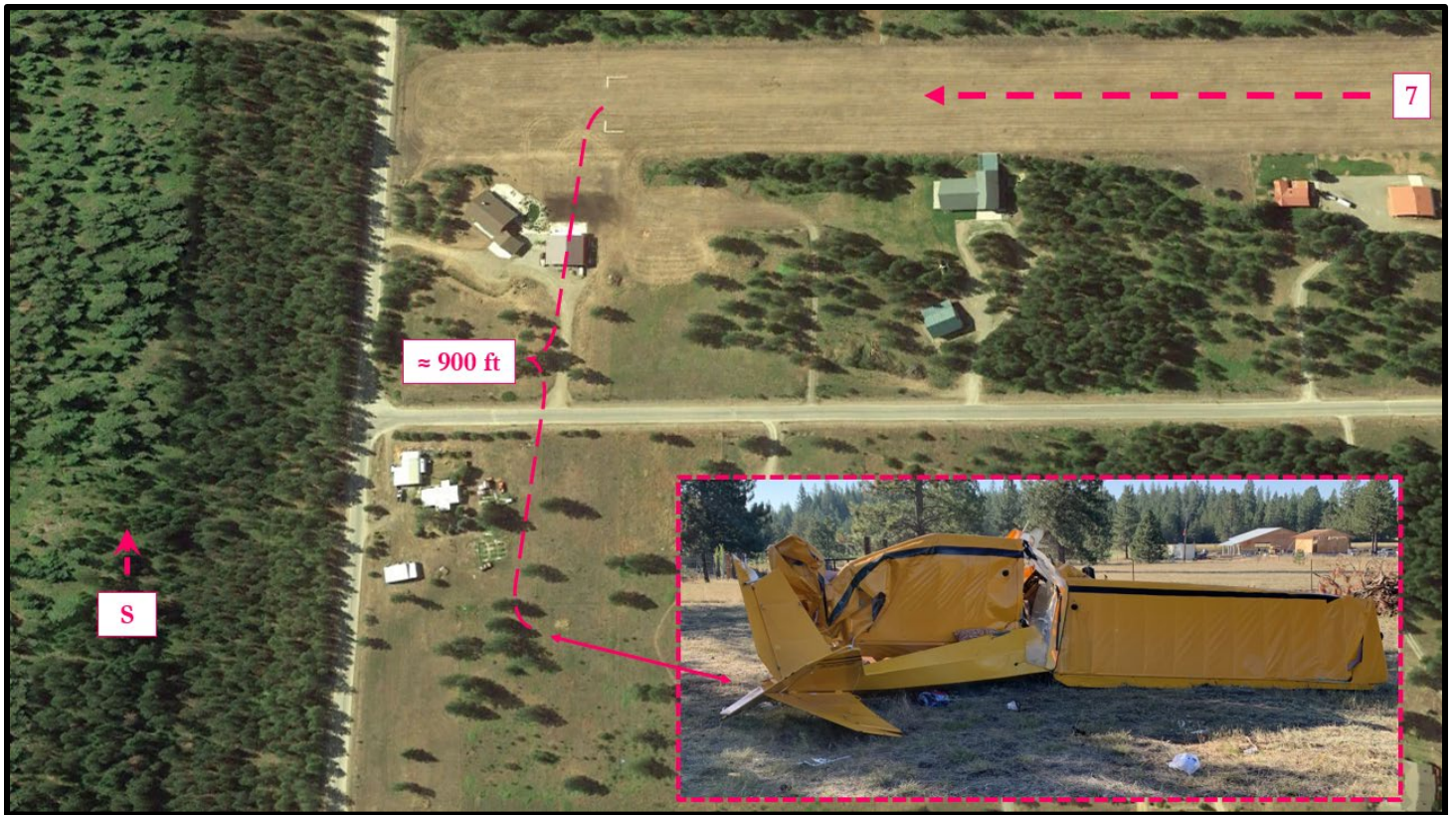


Figure 3: Accident Site in Reference to the Runway

In an effort to determine the estimated ground track, ground speed, altitude, orientation angles and engine speed of the airplane, the NTSB completed a performance study using the video recorded by a viewer on the ground. The airplane had a Garmin Aera 660, battery-powered multi-functional display (MFD) and GPS receiver. Recorded data plots were recovered for the flight prior to the accident and the accident flight. The data revealed that the airplane departed Timber Basin Ranch airport about 1325. The airplane flew south, made a maneuver over Lake Pend Oreille which appeared to be a touch-and-go landing. Thereafter, the airplane then continued to Treeport Airport, where it landed on runway 25 about 1410.

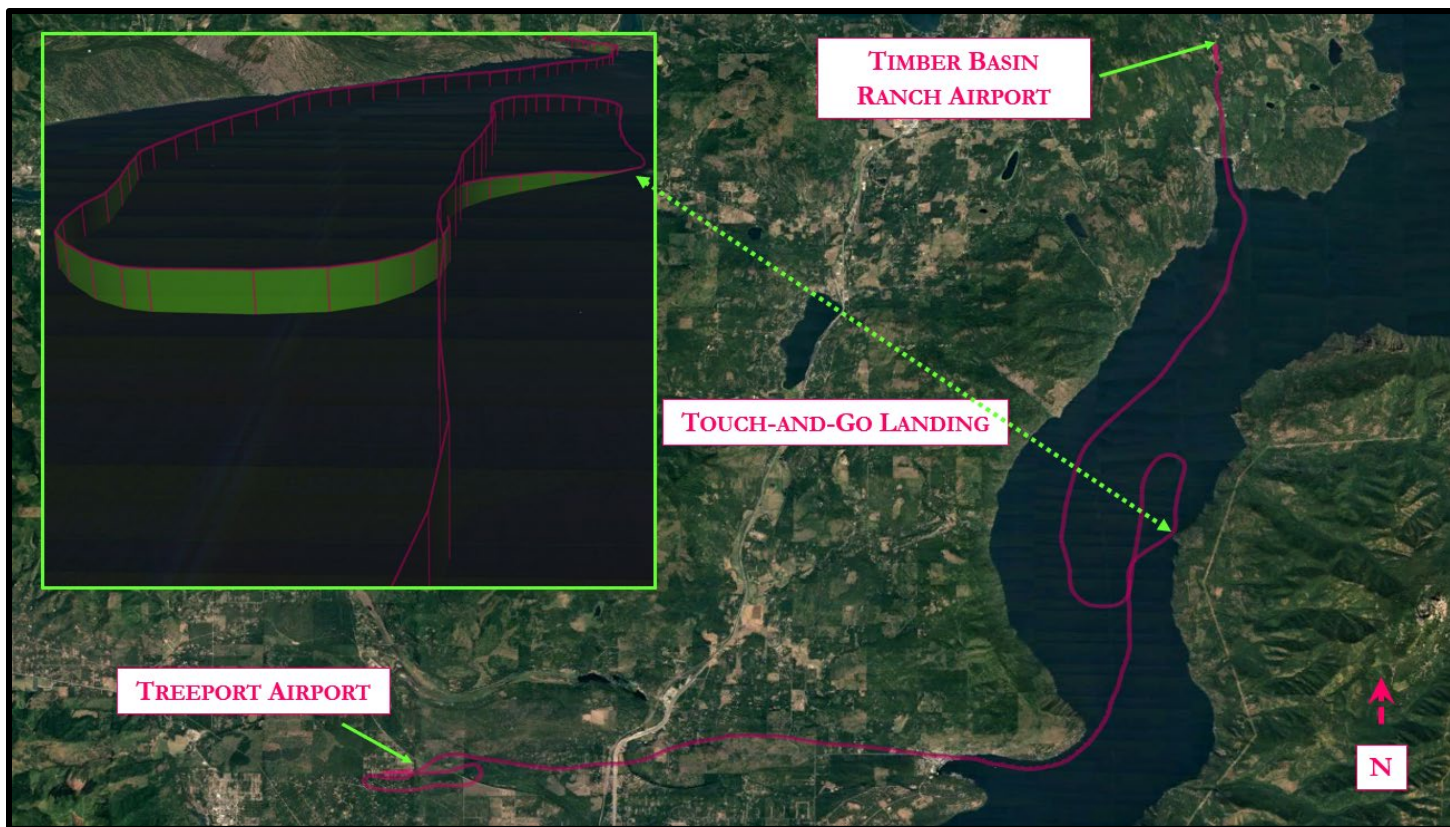


Figure 4: Prior Flight

The track record indicated the airplane departed runway 07 at 1532:50 Pacific standard time. After becoming airborne, 7 hits were recorded, the last track at 1533:08 prior to impact (See figure 5). During that time the airplane's groundspeed increased from 41 to 52 knots, then 51 knots as the airplane climbed over the tree line.



Figure 5: Google Earth Overlay Showing the Accident Flight and Recorded Groundspeed.

WRECKAGE AND IMPACT

Safety Board investigators were unable to go to the accident site due to the COVID pandemic. There was no evidence of water in the floats, but it could not definitely determined, because of the position the airplane came to rest after the impact.



Figure 6: Wreckage (provided by the FAA)



Figure 7: Wreckage from a Distance (provided by the FAA)

AIRPLANE INFORMATION

The experimental light-sport, single-engine, high-wing amphibious airplane was a Rans S7 Courier (serial number 0207459) manufactured by Rans Designs, Inc in 2008. The engine was a 100-horsepower Rotax 912-S and the propellor was a 3-bladed composite manufactured by Warp Drive. The basic empty weight was recorded as 732 lbs. and with a maximum gross weight of 1320 lbs.

According to the Pilot Operating Handbook (POH), normal takeoffs are accomplished with flaps-up or half retracted. With the flaps retracted the normal climb speed was 65-70 mph. The POH further stated that with the flaps half retracted during takeoff, they should be left in that position until all obstacles are cleared; the speed exceeds 60 mph, and minimum altitude of 100 ft above ground level (agl) is reached.

The POH states the stall speed at maximum gross weight in a flaps-retracted position was 50 kts. Stall speed for flaps at half retracted was 48 kts. The stall recovery procedure published, advises the pilot to smoothly move the control stick forward to accelerate to normal flight speed.

The passenger estimated the airplane contained about 11.25 gallons of fuel at the time of departure. According to Rans Aircraft, the airplane would have been under gross weight and well within the center-of-gravity envelope.

PILOT INFORMATION

PILOT: MICHAEL MILLS

A review of the Federal Aviation Administration (FAA) airman records revealed that the pilot held a commercial pilot certificate with ratings for single-engine land and sea, multiengine land and sea, and instrument airplane. The pilot's most recent medical certificate was issued as a third class on October 08, 2019 and contained limitations that he must have available glasses for near vision.

The pilot's personal flight records were not recovered. His commercial certificate was issued May 8, 1990. On his last application for a medical certificate, the pilot reported a total flight time of 10,000 hours. He purchased the airplane May 7, 2000.

PILOT-RATED PASSENGER: BRENDEN DUDDY

The pilot-rated passenger, positioned in the aft seat, held an air-transport-pilot (ATP) certificate with ratings for airplane single-engine and multiengine land. The passenger's most recent medical certificate was issued as a first-class on March 21, 2020 and contained limitations that he must wear corrective lenses.

On the pilot-rated passenger's last application for a medical certificate he reported a total flight time of 7,200 hours.

WEATHER INFORMATION

Time interval: from 10/06/2020 20:00 to 10/06/2020 23:59 UTC

KCOE, Coeur D'Alene Automatic Weather Observing / Reporting System (United States).

WMO index: -----, Latitude 47-46N. Longitude 116-49W. Altitude 707 m.

SA	06/10/2020 23:56->	METAR KCOE 062356Z AUTO 26010KT 10SM CLR 26/08 A3002 RMK AO2 SLP168 T02560078 10267 20194 56020=
SA	06/10/2020 22:56->	METAR KCOE 062256Z AUTO 24007KT 10SM CLR 27/07 A3003 RMK AO2 SLP175 T02670072=
SA	06/10/2020 21:56->	METAR KCOE 062156Z AUTO 00000KT 10SM CLR 26/07 A3006 RMK AO2 SLP184 T02560072=
SA	06/10/2020 20:56->	METAR KCOE 062056Z AUTO 15003KT 10SM CLR 24/07 A3008 RMK AO2 SLP191 T02390072 58019=

METAR/SPECI from KCOE, Coeur D'Alene Automatic Weather Observing / Reporting System (United States). No short TAF reports from KCOE during solicited interval in the database.

FT 06/10/2020 23:20- TAF KCOE 062320Z 0700/0724 22005KT P6SM
> SKC FM070400 06007KT P6SM
SKC=

large TAF from KCOE, Coeur D'Alene Automatic Weather Observing / Reporting System (United States).

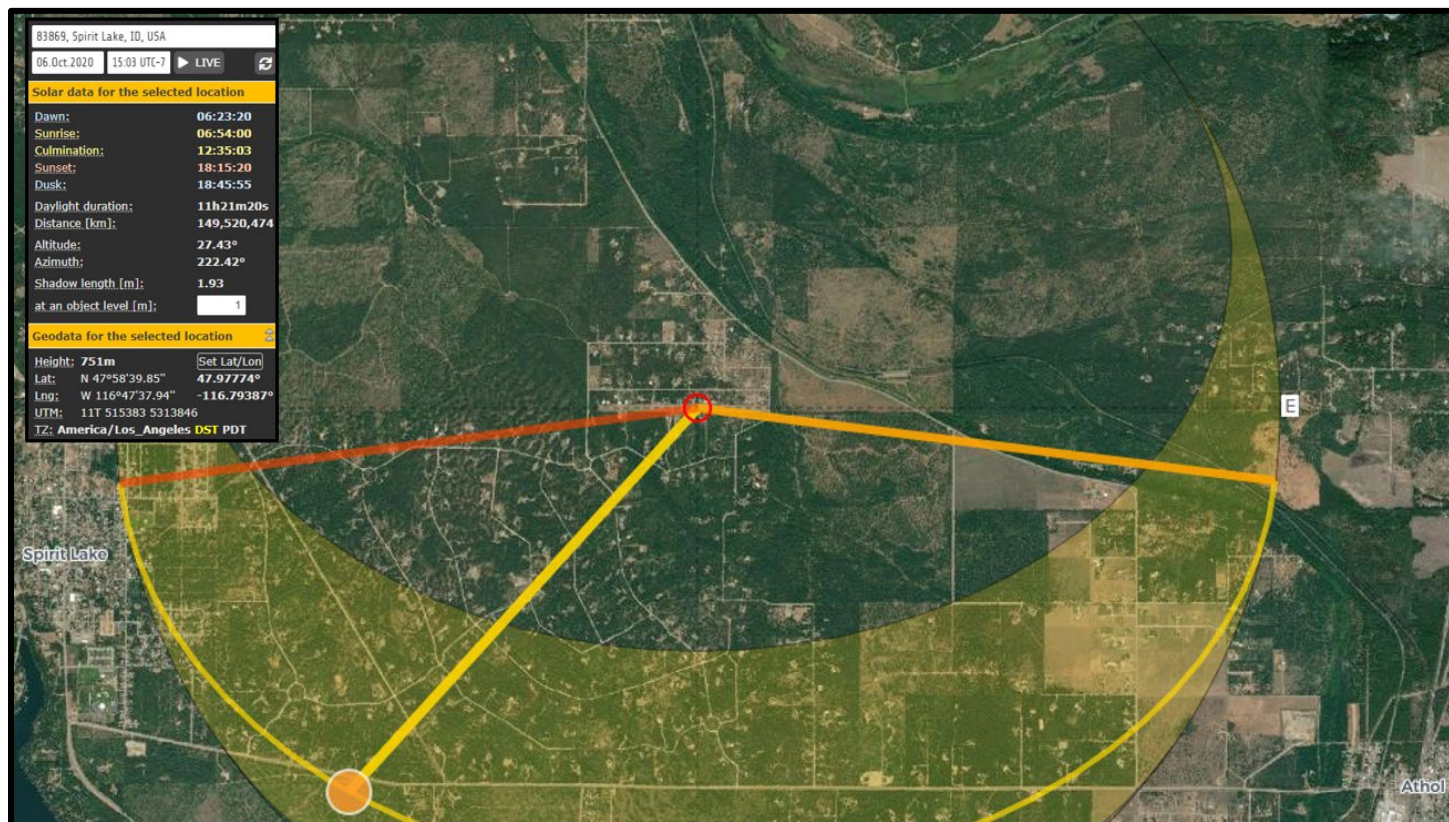


Figure 8: Sun Information (provided by Suncal.com)