

Fuel usage estimates

Fuel records obtained from the pilot's home base, Sterling Airport (3B3), Sterling, Massachusetts, revealed that the most recent fueling of the airplane at that airport was on 7/16/19 for 15.1 gallons. Acquaintances of the pilot reported that he often fueled at other locations, due to the higher price of fuel at 3B3.

A canvas of fuel suppliers at other nearby airports did not reveal any other recent fuel records for the accident airplane.

The pilot's wife found a record of a check written on 10/19/19 to Pioneer Aviation, at Turners Falls Airport (0B5), in Montague, Massachusetts for \$158.88, which she believed was for fuel. According to the pilot's logbook, he flew the airplane to that airport on that date. Internet research revealed that the price of 100LL fuel in the area at that time was about \$4.80 per gallon, which would equate to about 33.1 gallons. Assuming the check was for fuel only, and that the tanks were topped off at that time (60 gallons usable), the following flights took place since that presumed fueling:

Flight Count	Date	Route	Flight Time	Number of Landings	Source of Flight Info	Note:
1	10/19/19	7B2-0B5-3B3	0.3	1	Pilot Log	(conservatively) - Half of the total logged time of 0.6 hours, and 2 landings) for only the 0B5-3B3 leg
2	10/21/19	3B3-7B2-3B3	0.7	2	Pilot Log	
3	11/20/19	3B3(Local)	0.6	1	Pilot Log	
4	12/5/19	3B3(Local)	0.5	1	Pilot Log	
5	12/26/19	3B3(Local)	0.5	1	Pilot Log	
6	1/7/20	3B3(Local)	0.5	1	Pilot Log	
7	1/21/20	3B3(Local)	0.3	4	Pilot Log	
8	2/23/20	3B3-CNH-3B3	1.4	2	FAA ADSB Tracking Data	Not In Pilot's Logbook, assume landing at CNH

According to the Airplane Operating Handbook, the fuel burn during cruise flight is between 10 and 11 gallons per hour. The fuel burn for engine warm up and climb from sea level (to an unspecified altitude, but below the values published for a climb to 5,000 ft) is 1.5 gallons.

Flights 1-6 and 8, Total Time = 4.5 hours, total landings (and takeoffs) = 9

Estimate cruise time = total time – estimated 2 minutes for each takeoff = 4.5 hours – $(2 \times 9)/60 = 4.2$ hours.

Cruise Fuel used = 4.2 hours at 10-11 gallons per hour, = 4.2×10 to 4.2×11 - 42 to 46.2 gallons used

9 takeoffs at estimated 1 to 1.5 gallons per takeoff = 9×1 to $9 \times 1.5 = 9$ to 13.5 gallons

Estimated Fuel used flights 1-6 and 8: 51 to 59.7 gallons

Flight 7: Flight 7 was logged as 0.3 hours with 4 landings at 3B3. Estimating 0.75 to 1.5 gallons per takeoff, the fuel used on flight 7 is estimated to as 4×0.75 to 4×1.5 , = 3 to 6 gallons.

Estimated total fuel used since the assumed top off on 10/19/19 at 0B5, prior to the accident flight:

54 to 65.7 gallons

Chart of FAA ADSB data for Flight on 2/23/20 (not listed in pilot logbook) began about 17:15z, ended about 1841z (1.4 hours)

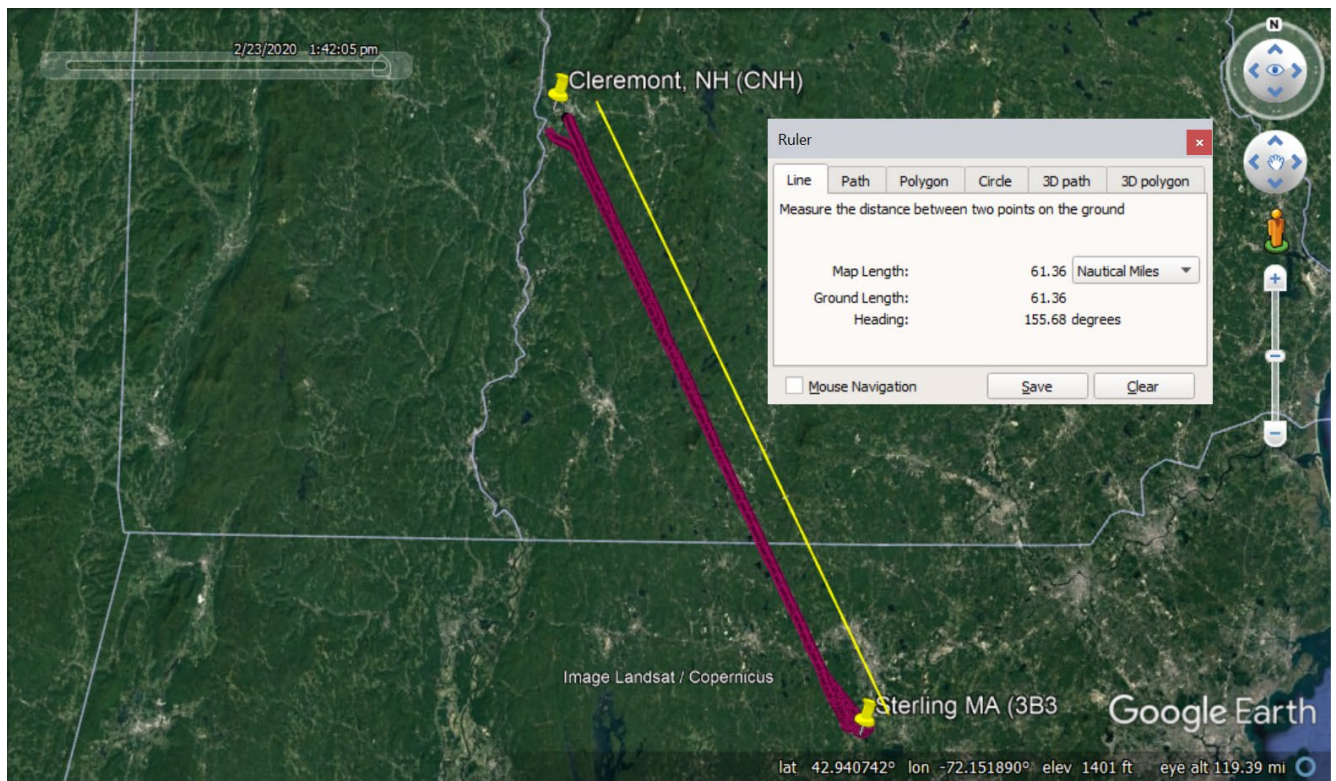


Figure 1 ADSB Data for Flight on 2/23/20