On April 10, 2023 at approximately 17:50 EST, the mishap aircraft lost power and crashed into a residential area striking a house and coming to rest against an adjacent home approximately 1 mile East of Danbury Municipal Airport (DXR).

FUEL
Documents show that the mishap aircraft took on 16.6 US gallons of AVGAS 100LL at 10:05 the morning of the mishap. There is no records or evidence that show the mishap aircraft receiving fuel at any time subsequently on April 10.

It should be noted that during the post-crash investigation of the wreckage, the remaining fuel in the right wing was drained and measured using the calculation for volume of a vertical cylinder where;

Height of bucket is 13 inches
Diameter of bucket is 11.75 inches
Fill depth of remaining fuel is 3.5 inches
Bucket volume approximately 27% full or 1.65 gallons.

It should also be noted that post-crash photos show that the left wing was situated vertically in the wreckage. There was no fuel remaining in the left wing that was able to be drained.

AIRCRAFT TIME - April 10, 2023 – Flight Times Prior To the Mishap Flight
After receiving fuel, the mishap aircraft was subsequently used for three training evolutions prior to the mishap flight.
Business logs show flight times of +0.50, +0.30, and +2.30 for a combined total of +3.1 hours prior to the mishap flight.
The business logs also recorded the aircraft Hobbs Times for the three training evolutions as 1124.1 to 1124.6 (+.50), 1124.6 to 1124.9 (+.30), and 1124.9 to 1127.2 (+2.30) for a combined total of +3.1 hours prior to the mishap flight.
The business logs recorded the tach times as 1980.5 to 1980.8 (+.30), 1980.8 to 1981.0 (+.20) and 1981.0 to 1983.0 (+2.0) for a combined total of +2.5 hours prior to the mishap flight.

MISHAP FLIGHT
The mishap flight was operated as a Title 14 *Code of Federal Regulations* part 91 training flight, by a non-certificated flight school.

The flight had two occupants. One certificated flight instructor and one non-certificated passenger / student. Both occupants suffered only minor injuries.

A review of ADS-B data begins at 20:00:34 and ends at 21:58:17. This suggests that the aircraft was under its own power for approximately 2 hours during the mishap flight.
Post-accident photographs of the cockpit show that Hobbs Time meter at 1129.4. This is an increase of +2.4 hours from the final business log entry made previously that day.
Post-accident photographs of the cockpit show a tach time of 1984.8. This is an increase of +1.8 from the final business log entry made previously that day.

Adding all sources together, evidence shows that the mishap aircraft flew a total of four training evolutions for 5.3 hours on April 10, 2023.

During an interview the mishap pilot stated that he used a "Sporty's Pilot training syllabus" for the ground instruction portion of the training evolution. He stated that he briefed power on / power off stalls, steep turns, and pattern work. He also stated that he did not know off hand what specific section of the syllabus he had used.
The mishap pilot also stated during his interview that he had the performed weights and balance calculations during the ground training. The W&B sheet was provided to this inspector by the flight school.
A follow up email (April 21, 2023) from the mishap pilot to this inspector stated that he used "Foreflight" to brief the weather prior to flight.
The mishap pilot was asked about his fuel management calculations prior to the mishap flight. He stated that he used "5 gallons per hour fuel burn" as a calculation for what the aircraft needed for the training flight. The mishap pilot was asked where that could be found. He replied that he did not know. The mishap pilot was also asked why he used 5 gallons per hour fuel burn as his standard and he replied that he did not know. It should be noted that the Lycoming Operators Manual for an O-235-L2C states that the fuel burn for its motor is;
5.8 GPH @Economy Cruise 65% rated power.
6.7 GPH @Performance Cruise 75% rated power.
9.5 GPH@Normal Rated 100% power.
Lycoming O-235and O-290 Series, 5th Edition, Part No.60297-9, January 2007.

The passenger / student when asked specifically about the ground training portion of the flight, stated during her interview that she performed a W&B calculation during the ground training portion of the evolution. She did not reference training with a ground training syllabus or reference having received a weather briefing.

During his interview the mishap pilot was asked specifically about the preflight inspection of the aircraft. He stated that he observed the passenger / student check the tires, oil level, and flight control movements. He stated he observed the passenger / student drain fuel from the low point drains in the wings and filter bowl to check for water and sediments. It should be noted that a graduated cup with stick for draining fuel from aircraft sumps was recovered from the wreckage. When asked specifically if HE checked the fuel caps or the fuel level in the wings, he stated that he did not. He stated that he observed the passenger / student "stick" the tanks and verify that the fuel caps were re-installed properly. When asked where the fuel "stick" was kept, he replied that it was kept in the aircraft. It should be noted that a graduated fuel measuring stick was not recovered from the aircraft.

The passenger / student when asked specifically about a graduated fuel measuring stick replied that she did not recall where they had gotten the stick. She also stated that she did not recall what marking were on the stick. She did not recall what the amount of fuel indicated on the stick was at the time she used. She stated in the interview that the fuel level was "good".

During his interview the mishap pilot was asked about the "start" portion of the flight. When asked what the cockpit fuel gauges read prior to takeoff, the mishap pilot stated he did not know

because he could not see them from the right seat. He also stated that he had no recollection of asking the passenger / student what the gauges were reading prior to takeoff.

The passenger / student was asked if she recalled what the cockpit fuel gauges read during startup and prior to takeoff. She replied that she did not recall what the fuel gauges reading was with power on. She also stated that she remembers no discussion with the mishap pilot regarding the fuel status during start up or prior to takeoff. She also stated that she did remember that the mishap pilot said they "should be fine, I've already been out twice."

The mishap pilot stated during his interview that takeoff was at approximately 15:40 EST from runway 26. The aircraft performed pattern work and departed the DXR traffic pattern to work on departure stalls, power off stalls, and steep turns. The aircraft then returned to the DXR pattern to perform further pattern work with touch and go landings. The mishap pilot stated that on the third downwind leg, he received clearance for the option, and took control of the aircraft at a pattern altitude of 1700'. The mishap pilot stated he turned base was in a decent at approximately 800-900' on the base leg when the engine "sputtered". When asked what the fuel gauges read at this point in the flight, the mishap pilot stated he does not know, and does not recall asking for their level. The mishap pilot did not state what the emergency procedures were for an "Engine Out". The mishap pilot stated he attempted a restart and that the engine did start and regain full power for a few seconds before it stopped running again. It should be noted that security video footage with audio from [redacted] Danbury, supports this statements. The mishap pilot stated that the engine did no restart a second time. The mishap pilot stated he did not secure the engine, and that until impact, the engine did not make power and did not wind mill. Post-crash photographs confirm that the engine was not making power. Neither propeller blade exhibits scoring of any kind on either the camber or face of the blade. There are no impact marks, chord or span wise, on the leading or trailing edges from the shank to the tips. The mishap pilot stated that he had the flaps set at 20% and a glide speed of 60 – 65 knots. When asked specifically if he checked the fuel shutoff valve, he replied he did not, but knew where it was. Post-crash photographs show that the fuel shutoff valve was in the "ON" position. The mishap pilot stated that he did not believe that he would be able to make Runway 26 and picked an alternate landing site. The mishap pilot stated that he chose a "swimming pool" in the back yard of a house. It should be noted that post-crash photographs show that the aircraft flaps were still set at 20%. The mishap aircraft descended through trees on the southeast side of Southern Blvd, Danbury CT, crossed Southern Blvd, and impacted the southwest side of [redacted] at the houses ridgeline on an approximately north easterly heading. The mishap aircrafts right wing leading edge struck the ridgeline of the house squarely from the wing root to the wing tip. The right main wheel and tire assembly also struck the house squarely. Post–crash photographs of the house, as well as that of the aircraft wreckage confirm these statements. Post-crash photographs support a violent rotation to the right around the aircraft's vertical axis, causing the engine and mounts to shift their position opposite the direction of the rotation (to the left). Photographs also show the empennage separated from the aircraft opposite the direction of the rotation (to the right). The aircraft impacted a shed at [redacted] coming to rest on top of it with the nose of the aircraft pointed in a north western direction.

The passenger / student stated that during the start phase of the flight lesson, the mishap pilot needed to shut down the aircraft prior to taxi because he had forgotten something in the

building. She stated that the subsequent start up and taxi to the run up area was uneventful. The passenger / student does recall performing a magneto check and a carburetor heat check during the run up. She remembers the carburetor heat knob needing a bit of "elbow grease" to operate. A post-crash test of the carburetor heat mechanism indicated normal operation with no excessive force being needed for operation and no binding of the mechanisms. She stated that take off was made with a full rich setting and with full throttle. When asked specifically if a pre-take off check of the fuel quantity was made, the passenger / student stated she does not recall one being made or of the indicated amount. The passenger / student stated that take off and departure were uneventful. She stated that she and the mishap pilot performed pattern work before departing the DXR pattern to perform, power on stalls, power off stalls, and steep turns. She stated that the returned to DXR to perform more pattern work. The passenger / student stated that on the third trip around the pattern she was flying the mishap aircraft on the downwind leg when the mishap pilot took over the aircraft. The passenger / student stated that the pilot set the airplane up for approach with carburetor heat and 10 degrees of flaps. The passenger / student heard the engine sputtering and asked the mishap pilot what was happening. She stated his reply was that he did not know. The passenger / student also said she thought that the mishap pilot might be making a simulated soft field landing. The passenger / student also does not remember striking the ridge of the home. She believes the initial impact was with the shed at the adjoining property.

It should be noted that both parties, mishap pilot and passenger / student exited the aircraft on their own with little assistance from the occupants of the homes involved. Both parties were treated and released after less than two hours of treatment with minimal injuries.

THIS IS THE SAS ENTRY "COMMENT" for Task ID T-EA63-FY23-0527

On April 10, 2023 at approximately 17:50 EST, the aircraft lost power and crashed into a residential area striking a house and coming to rest against an adjacent home approximately 1 mile East of Danbury Municipal Airport (DXR).
The flight was operated as a Title 14 Code of Federal Regulations part 91 training flight, by a non-certificated flight school. The flight had two occupants. One certificated flight instructor and one non-certificated passenger / student. Both occupants suffered only minor injuries.
Documents show that the aircraft took on 16.6 US gallons of AVGAS 100LL at 10:05 the morning of the mishap. There is no records or evidence that show the aircraft receiving fuel at any time subsequently on April 10. Flight school records coupled with tach and Hobbs times show that the aircraft flew three training evolutions prior to the mishap flight. Total hours flown were 5.3 including the mishap flight.
The pilot conducted ground training portion of the mishap evolution, briefed the lesson plan, the weather, and performed a weights and balance calculation.
The mishap pilot was asked about his fuel management calculations prior to the mishap flight. He stated that he used "5 gallons per hour fuel burn" as a calculation for what the aircraft needed for the training flight. The mishap pilot was asked where that could be found. He replied that he did not know. The mishap pilot was also asked why he used 5 gallons per hour fuel burn as his standard and he replied that he did not know.

During his interview the mishap pilot was asked specifically about the preflight inspection of the aircraft. He stated that he observed the passenger / student check the tires, oil level, and flight control movements. He stated he observed the passenger / student drain fuel from the low point drains in the wings and filter bowl to check for water and sediments. When asked specifically if HE checked the fuel caps or the fuel level in the wings, he stated that he did not. He stated that he observed the passenger / student "stick" the tanks and verify that the fuel caps were re-installed properly.

The mishap pilot stated during his interview that takeoff was at approximately 15:40 EST from runway 26. The aircraft performed pattern work and departed the DXR traffic pattern to work on departure stalls, power off stalls, and steep turns. The aircraft then returned to the DXR pattern to perform further pattern work with touch and go landings. The mishap pilot stated that on the third downwind leg, he received clearance for the option, and took control of the aircraft at a pattern altitude of 1700'. The mishap pilot stated he turned base was in a decent at approximately 800-900' on the base leg when the engine "sputtered". The mishap pilot stated he attempted a restart and that the engine did start and regain full power for a few seconds before it stopped running again. The mishap pilot stated that the engine did no restart a second time. The mishap pilot stated that he did not believe that he would be able to make Runway 26 and picked an alternate landing site. The mishap pilot stated that he chose a "swimming pool" in the back yard of a house. The mishap aircraft descended through trees on the southwest side of the impacted residence, and impacted the southwest side of a residence at the houses ridgeline on an approximately north easterly heading. The mishap aircrafts right wing leading edge struck the ridgeline of the house squarely from the wing root to the wing tip. The right main wheel and tire assembly also struck the house squarely. Post–crash photographs of the house, as well as that of the aircraft wreckage confirm these statements. Post-crash photographs support a violent rotation to the right around the aircraft's vertical axis, causing the engine and mounts to shift their position opposite the direction of the rotation (to the left). Photographs also show the empennage separated from the aircraft opposite the direction of the rotation (to the right).The aircraft impacted the shed of the next residence, coming to rest on top of it with the nose of the aircraft pointed in a north western direction. Evidence supports the conclusion that the aircraft was operated to the point of fuel exhaustion.

IT SHOULD BE NOTED THAT THE AIRCRAFT HAD AN UPGRADED ENGINE INSTALLED. PAGE 3 OF THE SUPPLEMENT TO THE POH, STC NO. SA1000NW, STATES "THE INCORPORATION OF THIS STC INTO THIS AIRPLANE WILL RESULT IN INCREASED FUEL CONSUMPTION RELATIVE TO THE VALUES GIVEN IN THE AIRPLANE

FLIGHT MANUAL."

KENNIS G. BLACKMAN, FAA APPROVED AIRPLANE FLIGHT MANUAL SUPPLEMENT TO CESSNA MODELS 152 AND 152A APPROVED AIRPLANE FLIGHT MANUALS, FAA APPROVED, AUGUST 18, 1980.REISSUED JUNE 12, 1986, REISSUED OCTOBER 6, 2003.

It should be noted that the mishap aircraft had an upgraded engine installed. Page 3 of the supplement added to the POH, STC No. SA1000NW, states;

"THE INCORPORATION OF THIS STC INTO THIS AIRPLANE WILL RESULT IN

INCREASED FUEL CONSUMPTION RELATIVE TO THE VALUES GIVEN IN THE AIRPLANE
FLIGHT MANUAL."
KENNIS G. BLACKMAN, FAA APPROVED AIRPLANE FLIGHT MANUAL SUPPLEMENT TO CESSNA MODELS 152 AND 152A APPROVED AIRPLANE FLIGHT MANUALS, FAA APPROVED, AUGUST 18, 1980.REISSUED JUNE 12, 1986, REISSUED OCTOBER 6, 2003.

ATQA Statement.

ON MARCH 10, 2023 AT APPROXIMATELY 1750 EST, AIRCRAFT LOST POWER AND CRASHED IN A RESIDENTIAL AREA STRIKING A HOUSE AND COMING TO REST AGAINST AN ADJACENT HOME APPROXIMATELY 1 MILE EAST OF DANBURY MUNICIPAL AIRPORT (DXR).
THE PILOT WAS ASKED ABOUT HIS FUEL MANAGEMENT CALCULATIONS PRIOR TO THE FLIGHT. HE STATED THAT HE USED “5 GALLONS PER HOUR FUEL BURN” AS A CALCULATION FOR WHAT THE AIRCRAFT NEEDED FOR THE TRAINING FLIGHT. THE PILOT WAS ASKED WHERE THAT COULD BE FOUND. HE REPLIED THAT HE DID NOT KNOW. THE PILOT WAS ALSO ASKED WHY HE USED 5 GALLONS PER HOUR FUEL BURN AS HIS STANDARD AND HE REPLIED THAT HE DID NOT KNOW. IT SHOULD BE NOTED THAT THE AIRCRAFT HAD AN UPGRADED ENGINE INSTALLED. PAGE 3 OF THE SUPPLEMENT TO THE POH, STC NO. SA1000NW, STATES
"THE INCORPORATION OF THIS STC INTO THIS AIRPLANE WILL RESULT IN INCREASED FUEL CONSUMPTION RELATIVE TO THE VALUES GIVEN IN THE AIRPLANE FLIGHT MANUAL."
KENNIS G. BLACKMAN, FAA APPROVED AIRPLANE FLIGHT MANUAL SUPPLEMENT TO CESSNA MODELS 152 AND 152A APPROVED AIRPLANE FLIGHT MANUALS, FAA APPROVED, AUGUST 18, 1980.REISSUED JUNE 12, 1986, REISSUED OCTOBER 6, 2003.
DURING HIS INTERVIEW THE PILOT WAS ASKED SPECIFICALLY ABOUT THE PREFLIGHT INSPECTION OF THE AIRCRAFT. HE STATED THAT HE OBSERVED THE PASSENGER / STUDENT CHECK THE TIRES, OIL LEVEL, AND FLIGHT CONTROL MOVEMENTS. HE STATED HE OBSERVED THE PASSENGER / STUDENT DRAIN FUEL FROM THE LOW POINT DRAINS IN THE WINGS AND FILTER BOWL TO CHECK FOR WATER AND SEDIMENTS. IT SHOULD BE NOTED THAT A GRADUATED CUP WITH POST FOR DRAINING FUEL FROM AIRCRAFT SUMPS WAS RECOVERED FROM THE WRECKAGE.
WHEN ASKED SPECIFICALLY IF HE CHECKED THE FUEL CAPS OR THE FUEL LEVEL IN THE WINGS, HE STATED THAT HE DID NOT. HE STATED THAT HE OBSERVED THE PASSENGER / STUDENT “STICK” THE TANKS AND VERIFY THAT THE FUEL CAPS WERE RE-INSTALLED PROPERLY. WHEN ASKED WHERE THE FUEL “STICK” WAS KEPT, HE REPLIED THAT IT WAS KEPT IN THE AIRCRAFT. IT

SHOULD BE NOTED THAT A GRADUATED FUEL MEASURING STICK WAS NOT RECOVERED FROM THE AIRCRAFT.
WHEN ASKED WHAT THE COCKPIT FUEL GAUGES READ PRIOR TO TAKEOFF, THE PILOT STATED HE DID NOT KNOW BECAUSE HE COULD NOT SEE THEM FROM THE RIGHT SEAT. HE ALSO STATED THAT HE HAD NO RECOLLECTION OF ASKING THE PASSENGER / STUDENT WHAT THE GAUGES WERE READING PRIOR TO TAKEOFF.
THE PILOT STATED DURING HIS INTERVIEW THAT TAKEOFF WAS AT APPROXIMATELY 15:40 EST FROM RUNWAY 26. THE AIRCRAFT PERFORMED PATTERN WORK AND DEPARTED THE DXR TRAFFIC PATTERN TO WORK ON DEPARTURE STALLS, POWER OFF STALLS, AND STEEP TURNS. THE AIRCRAFT THEN RETURNED TO THE DXR PATTERN TO PERFORM FURTHER PATTERN WORK WITH TOUCH AND GO LANDINGS. THE MISHAP PILOT STATED THAT ON THE THIRD DOWNWIND LEG, HE RECEIVED CLEARANCE FOR THE OPTION, AND TOOK CONTROL OF THE AIRCRAFT AT A PATTERN ALTITUDE OF 1700'. THE PILOT STATED HE TURNED BASE, AND WAS IN A DESCENT AT APPROXIMATELY 800-900' ON THE BASE LEG WHEN THE ENGINE "SPUTTERED". WHEN ASKED WHAT THE FUEL GAUGES READ AT THIS POINT IN THE FLIGHT, THE PILOT STATED HE DOES NOT KNOW, AND DOES NOT RECALL ASKING FOR THE GAUGE LEVELS. THE PILOT STATED HE ATTEMPTED A RESTART AND THAT THE ENGINE DID START AND REGAIN FULL POWER FOR A FEW SECONDS BEFORE STOPPING AGAIN. IT SHOULD BE NOTED THAT SECURITY VIDEO FOOTAGE WITH AUDIO FROM 21 TARRYWILLE LAKE ROAD, DANBURY, SUPPORTS THIS STATEMENTS. DURING POST CRASH INVESTIGATION NEITHER PROPELLER BLADE EXHIBITED SCORING OF ANY KIND ON EITHER THE CAMBER OR FACE OF THE BLADE. THERE ARE NO IMPACT MARKS, CHORD OR SPAN WISE, ON THE LEADING OR TRAILING EDGES FROM THE SHANK TO THE TIPS.
POST CRASH INVESTIGATION SHOWS THE AIRCRAFT RECEIVED 16.6 GALLONS OF FUEL THE MORNING OF APRIL 10, FOR A TOTAL ONBOARD FUEL LOAD OF 26 GALLONS. THE AIRCRAFT SUBSEQUENTLY FLEW 5.5 HOURS (HOBBS TIME) PRIOR TO THE CRASH.
DURING THE POST CRASH INVESTIGATION IT WAS NOTED THAT ALL FUEL LINES RUNNING FROM BOTH THE LEFT AND THE RIGHT WING TO THE ENGINE, WERE BROKEN OR TORN AT MULTIPLE AREAS INCLUDING; LEFT WING ATTACH SECTION, RIGHT WING ATTACH SECTION, LOWER RIGHT FUESELAGE SECTION, T-FITTING AT FUEL SELECTOR VALVE AREA, COCKPIT FORWARD FLOOR AREA, AND ENGINE BAY LOWER AFT AREA AT THE GASCOLATOR.

NOTES FRO THE ENGINE EXAMINATION OF JULY 25, 2023

NTSB Case # ERA23LA191
N757YM, Cessna 152
Danbury, CT, April 10, 2023

N757YM Wreckage Examination Requested Items:

INSPECTION CHECKLIST

1. Photo the tachometer and hour meter
    a. Both items photographed at the crash scene and on July 25. Photos provided.
2. Verify left fuel cap is a vented cap and free of obstructions
    a. Accomplished at the scene of the accident.
3. Verify right fuel cap is a vented cap and free of obstructions
    a. Accomplished at the scene of the accident.
4. Verify the position of the fuel selector valve and if it is in a detent
    a. Verified on at the scene of the accident. Photos provided.
5. If possible, connect wings electrically and verify fuel gauge readings
    a. Unable to accomplish at the scene or at subsequent times.
6. Verify primary fuel vent line are free of obstructions
    a. Unable to verify due to damage.
7. Inspect the air induction system and verify no collapsed ducts, hoses, blockage, etc.
    a. Verified clear of obstruction during engine examination of July 25.
8. Visually inspect the exhaust system to verify no blockage or obstruction
    a. Visual inspection on July 25 showed no abnormalities.
9. Verify throttle and mixture control positions at carburetor first, then document continuity from the cockpit and corresponding movement at each control lever.
    a. Throttle and mixture control operations were verified at the crash scene. There were no discrepancies noted.
10. Drain the carburetor bowl into clear glass jar documenting quality and quantity of fuel.
    a. Carburetor bowl was inaccessible on the night of the crash. The carburetor bowl was drained on July 25 and there was no fuel present.
11. Inspect carburetor inlet screen for blockage, etc.
    a. Verified clean and free of obstructions on July 25. Photos provided.
12. Remove upper spark plugs from each cylinder, annotate position on each with permanent marker (such as 1T, 2T, 3T, 4T), then place in plug tray for color and gap inspection. Possibly retain for testing in spark plug tester.
    a. Accomplished. Photos provided.
13. Verify all lower spark plugs leads are marked for the appropriate cylinder, document if they are tightly installed, and remove all leads from the lower spark plugs
    a. Accomplished no discrepancies noted.
14. Verify all lower spark plugs are tightly installed.
    a. Lower sparks plugs were re-installed but not torqued, after removal for photos on July 25.
15. Remove all cylinders rocker box covers and inspect for broken parts, etc.
    a. This was not deemed necessary on July 25 because thumb compression was evident at cylinders indicating normal operation.
16. With ignition switch off, rotate crankshaft in the direction of rotation and verify thumb suction and compression in each cylinder and crankshaft, camshaft and valve train continuity.
    a. Accomplished with no discrepancies noted.
17. Document quantity of oil in engine.

a. 5 quarts of clean oil indicated on dipstick on July 25. This check was cold.

18. Verify both magnetos are tightly installed and do not move on the accessory case.
    a. Accomplished. No discrepancies noted.
19. Verify magneto to engine timing of each magneto reference to specification on the data plate.
    a. Accomplished. No discrepancies noted.
20. With spark plug from all cylinders removed but attached to the spark plugs leads and ignition switch on the both position, rotate crankshaft in the direction of rotation and verify spark at all spark plugs.
    a. Accomplished. Spark present on upper and lower plugs.
21. Borescope each cylinder noting condition of piston, cylinder walls and valves.
    a. Not accomplished.