



RECORD OF CONVERSATION

Timothy W. Monville
Sr. Air Safety Investigator
Eastern Region

Date: October 4, 2021
Person Contacted: Timothy W. Cook
NTSB Accident Number: ERA21LA335

Narrative:

Mr. Timothy W. Cook was contacted by phone on August 25, 2021 at 1606 EDT and left a voice mail message. He was called at [REDACTED]. He returned the call on August 26, 2021, at 1230 EDT. was called again on September 27, 2021, at 1937 EDT at the same number and left a voice mail message. He was also sent an e-mail on September 28, 2021, at 0858 EDT. He called on September 29, 2021, at 1625 EDT. He provided an e-mail address of [REDACTED].

At the beginning of the interview he was advised that the NTSB is a federal agency mandated by Congress to investigate aircraft accidents, and NTSB has no authority to take any action against any individual. He was also informed that the purpose of an NTSB investigation is for safety only, and any person NTSB talks with has the right to representation; he agreed to the interview without representation.

He indicated that he and his wife are travelling RN's, and currently he was in Anchorage, Alaska. He provided a address on file with the Federal Aviation Administration of [REDACTED] Byrdstown, Tennessee [REDACTED]. He provided a date of birth and pilot certificate number of [REDACTED]. He holds a private pilot certificate with airplane single engine land, airplane single engine sea, and rotorcraft helicopter ratings. He has about 650 hours total flight time in fixed wing aircraft and between 130 and 140 hours in rotorcraft. Nearly all of that time (nearly 99.5%) were in the accident helicopter.

The accident helicopter was engineered by Sikorsky as S-52-3¹. It was manufactured in 2018, equipped with a Lycoming VIO-435-A1F engine. The fuel system consisted of an electrically

¹ According to [Sikorsky Archives | S-52](#). The S-52-3 lives on as an Amateur Built Experimental helicopter. In 1964

controlled auxiliary fuel pump (Weldon) and an engine-driven fuel pump. It was equipped with a Dynon EMS-D10.

He was asked the following questions:

Has there been any recent work done?

No. He did have on one occasion where the engine “burped” while on the ground. There was no capability to lean the fuel to air ratio. That was the only instance in the nearly 130 to 140 hours. The engine was overhauled with ECI cylinders, and pistons that provided 8.9:1 compression ratio. He had an Airflow Performance FM-200 fuel injection system installed. The engine was rated at 260 horsepower at 3,200 rpm.

What was the purpose of the accident flight?

He wanted to fly leisurely, because he had not been flying due to work and to “get some hours in.” A local pilot named Al Beardsley who was fixed and rotorcraft rated joined him wanted to go flying. He had flown 1 to 2 days earlier about 2 hours and there were no engine problems.

Explain the fuel load on-board at the start of the accident flight?

About 30 gallons at run-up. He went through the checklist, checked the clutch, split needles, checked the magnetos, and warmed up the engine at 3,000 rpm (takeoff is always at least 3,150 rpm and up to 3,275 rpm for 5 minutes full power takeoff. Ground taxi and flight requires at least 3,000 engine rpm). He used the checklist, lifted to a hover once the engine was warmed up and hovered by the hangars. He also hovered behind the hangars and ground taxied to the main tarmac, then hover taxied waiting for other aircraft to clear the airport traffic pattern. He practiced setting down and lifting up to a hover for about 10 to 15 minutes and reported there were no engine issues during that time. After the fixed wing aircraft had landed, he announced on the airport common traffic advisory frequency that he would be departing to perform pattern work. He started to takeoff and while heading north-northwest while between 100 to 150 ft above ground level (agl) passing thru effective translational lift (ETL), between 40 and 50 knots, the engine quit “completely with no burping”, and the needles split with corresponding yaw. He lowered the collective and rolled off the throttle but not completely and entered autorotation. When descending in a northwest direction at 70-75 ft agl at 50 knots, the engine came back on. He rolled on throttle and the engine went to full rpm, but as he pulled collective, the engine sputtered and quit instantly. He was in the shaded area of the height velocity chart. He slammed the collective down to gain energy in the main rotor, and when flaring he realized there was not enough inertia in the main rotor blades for a normal autorotative landing. He flared then pulled collective to perform an autorotative landing but knew there wasn’t enough energy to perform a normal autorotative touchdown. Subsequently the helicopter hit the 6° angled slope hard. Due to recent rain the terrain was soft. Subsequently, the main wheels buried in and were ripped off. The helicopter then rolled over onto its right side. The main rotor blades impacted the ground

Sikorsky sold all S-52-3 data and spares to Orlando Helicopter Airways, Orlando FL. In 1987 the Orlando Helicopter owner’s son founded Vertical Technologies in Sanford FL and manufactures kits for a Hummingbird 260L, a highly modified S-52-3 helicopter with a Bell 206 nose and a Lycoming IVO-435-A1F derated 260 hp engine. Ralph Alex, the retired Sikorsky S-52 Project Engineer, approved the use of the Bell [206] nose on the Hummingbird acting as an FAA Designated Engineering Representative (DER).

and stopped. He turned off the fuel and put the mixture control in idle cut-off and because the front doors were off, both undid their restraints and exited the helicopter. The auxiliary fuel pump was on for takeoff.

The tail rotor, and 2 of the 3 gear were damaged as a result of the hard landing, but more damage occurred during recovery.

He was in the right seat and was wearing the 4-point restraint. He was not injured. The passenger was in the left seat and was also wearing the 4-point restraint. He also was not injured.

NTSB Questions Continued –

He was asked to explain sputtering?

He indicated that means engine power is restored, and he applied full throttle with the engine responding to full rpm, then when he pulled collective, the engine backfired and quit. He reminded me that it was between 4 and 6 seconds between initiating takeoff and being on the ground.

Was the helicopter equipped with a collector fuel tank?

No. The fuel system consisted of a 57 gallons main bladder tank, which fed to a Weldon auxiliary fuel boost pump, then to a fuel filter, then to Airflow performance three-way flow valve/mixture control. The fuel then either goes to the engine-driven fuel pump, then to the airflow performance mechanical fuel injector FM200 with .49 fuel injector nozzle to spider flow divider on engine in Rich mode, or takes all fuel back to main tank through return line if mixture is at lean or what Aircraft technologies would refer as Fuel off position. You either have mixture control in full rich to run engine or mixture at cut off to stop fuel to engine for shut down. There is no leaning capabilities in their system. You fly full rich always with boost pump left on during all flight operations. With respect to the circumstances of the accident, he felt it could be a fuel related issue.

He was asked if he had any questions for NTSB.

Was he required to complete the NTSB Pilot/Operator Aircraft Accident/Incident Report?

Yes. Although it is required to be completed in 10 business days, since he is in Alaska without access to the maintenance records, let me know if he needed more time.

He further indicated that when they were recovering the helicopter, the sump drain valve of one fuel tank was pushed in because of one of the main landing gear wheels. The airplane was raised slightly to get the pressure off the sump drain valve.

Possible investigative action items:

1. With the Dynon EMS-D10 installed, check the fuel supply lines in the engine compartment to determine where there is fuel present.
2. With the Dynon EMS-D10 installed and the engine throttle at the full open position, pressure test the fuel supply system with the auxiliary fuel pump to see if there is equal flow out of each fuel injector nozzle. This is a timed test.

3. Operationally test the fuel injection system components at Air Flow Performance.

The call ended at 1713 EDT.

The digest was e-mailed to him for review on October 6, 2021. He replied on October 8, 2021, at 0159 EDT and again at 0212 EDT with comments that were incorporated into the narrative. The corrected digest was e-mailed to him on October 26, 2021. He replied with corrective comments on October 28, 2021, at 0053 EDT, that were incorporated into the digest. The corrected digest was e-mailed to him on October 28, 2021.

Timothy W. Monville
Sr. Air Safety Investigator
OAS-Eastern Region Aviation

Date: January 5, 2023

Subject: ERA21LA335, Record of Conversation/Interview

Contact: Russell Melton, Mechanic Who Examined the Engine For NTSB Investigation

Mr. Russell Melton was contacted by phone on January 4, 2023 at 1332 EST. He was called at [REDACTED] While leaving a voice mail message he called at 1333 EST from the same phone number.

He indicated that the helicopter rolled onto its right side, resulting in ground damage to the main rotor blades. Additionally, some skin on the right side of the helicopter was damaged as well as a tailboom mounting tube that was damaged (Figure 1). The tail rotor drive shaft was stripped out where the tailboom connects.

The call ended at 1342 EST.

The digest was reviewed with him during the call and he agreed with the content. The FINAL digest was e-mailed to him on January 5, 2023. He replied the same day at 1310 EST with, "That looks good and is accurate. Let me know if you need anything else."

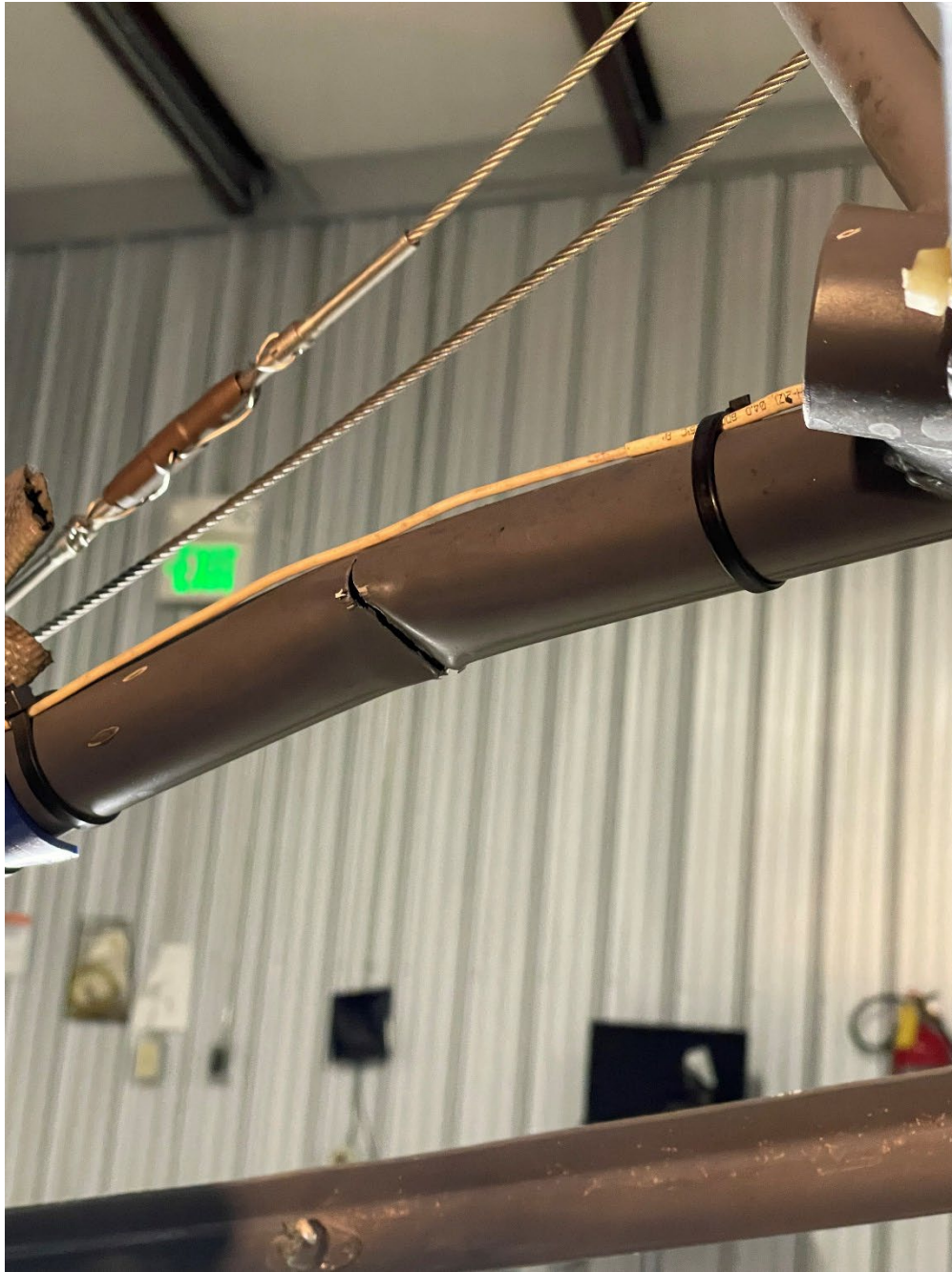


Figure 1: Digital photograph Provided by Pilot/Owner. View Showing the Damage to one Tailboom Support Tube Which Requires Repair.