



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

Date: December 20, 2022
Subject: ERA23LA053, Record of Conversation/Interview
Contact: Fernando Alvarado-Rivero, Pilot and Co-Owner of N30RK

Mr. Fernando Alvarado-Rivero was contacted by phone on December 19, 2022 at 1557 EST. He was called at [REDACTED] 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 was advised that any personal identifiable information (PII) such as cell phone number, e-mail address, address, pilot certificate number, etc., will be redacted and not viewable in the released document.

He provided an address of [REDACTED] White Settlement, Texas [REDACTED] His date of birth is [REDACTED] He holds a private pilot certificate with airplane single engine land rating, certificate number [REDACTED] re-issued on January 14, 2022, due to an address change. He was issued a 2nd class medical certificate with no limitations on January 17, 2022. He does not have an airframe and/or powerplant mechanic certificate.

He indicated that he and a couple partners in their flying club purchased the accident airplane, and the accident flight, from Swaids Field Airport (2GA2), Springfield, Georgia, to John Edwin Jones Sr Field/Metter Municipal Airport (KMHP), Metter, Georgia, was his first in that airplane. It was equipped with a Lycoming O-320 engine. He was sent to do an inspection of the airplane, purchase it, and then fly it to the ultimate destination San Geronimo Airpark (8T8), San Antonio, Texas.

He was asked the following –

Explain any preflight, engine run-up, and accident flight?

He arrived at 2GA2 about 1100, and performed a walk-around the airplane a couple of times. He checked the flight controls, lights, tires, brakes, and removed the engine cowling. He then checked the oil quantity, and also checked the oil hoses and radiator finding no leaks. He re-cowled the engine, pulled the airplane from the hangar, and the previous owner ran for engine for 4 to 5 minutes while he observed from outside the airplane. The previous owner did a normal engine run-up. After that was done, he and the previous owner went over the paperwork, with him indicated some of the maintenance records were missing, which he had previously known about, but the logbooks were present. A deal was made to purchase the airplane, and the Bill of Sale was executed. The previous owner said the airplane had about 2.5 hours of fuel on-board. Though he had never flown a Bushby Mustang II, he relied on the previous owner for information concerning stall speeds, etc. He (Mr. Alvarado-Rivera) had flown a low-wing RV, and Globe Swift which both had similar thrust to weight ratio and was not too concerned regarding the flight controls.

The total fuel capacity was 44 gallons, equally divided between the 2 wing fuel tanks. The previous owner had said that he had fueled the airplane a couple days before filling one fuel tank. He had then flown the airplane with the fuel selector on that tank. He indicated that the left fuel gauge indicated 1/4 capacity, or a few gallons of fuel, while the right fuel gauge indicated about 1/2 capacity, or about 10 to 12 gallons of fuel. Visually he inspected both fuel tanks and noted the left fuel tank had a few gallons and the right was nearly empty. He looked into each fuel tank towards the wing root area and noted a deeper level of fuel in the right fuel tank which is what he expected due to wing dihedral. The owner assured him that the fuel level he visually noted in the right fuel tank was ok. He planned to fly 20 to 25 minutes to MHP, where he planned to purchase fuel then fly 1 more leg that day.

He got into the airplane, started the engine, and taxied to the longest runway (13/31). While taxiing he checked the tailwheel steering and did an engine run-up. During the run-up he checked the suction, magnetos, and carburetor heat. He set his timer then departed at 1700. He initiated a climb to 4,500 ft mean sea level (msl). A few minutes after takeoff he switched to the left fuel tank to gauge how much time he would have with the fuel level in the left tank, knowing that he likely had that same amount of time based on the fuel level in the right fuel tank. He added that the fuel selector has left, right, and both positions. About 15 minutes into the flight the engine quit. He moved the fuel selector to the both position, and turned on the auxiliary fuel pump. He then proceeded direct to Statesboro-Bulloch County Airport (TBR), Statesboro, Georgia, and while descending at 3,000 ft msl was over the city of Statesboro. About 30 seconds later the engine had not restarted and he tried rocking the wings to get fuel to the engine, and switched the fuel selector to the right tank. He made a MAYDAY call but he was not sure if anybody heard his call. He turned off the master switch and maneuvered towards a field. He realized he would not reach the field and impacted a tree. He indicated that when he impacted the tree, the airplane lost energy and stalled. The airplane impacted the ground hard, and he lost consciousness. The airplane came to

rest adjacent to a house/car (Figure 1). The airplane came to rest about 20 ft from the initial ground impact point.

NTSB Questions Continued –

What were his injuries?

He was wearing the 4-point harness which he had tightened just before the crash, though his forehead hit the glareshield of the instrument panel and a flight instrument giving him a “U” shaped cut in the middle of his head. He got a few sutures and was ok. Because he lost consciousness he was airlifted to a hospital in Savannah, Georgia. He was released the same night after having several MRI’s performed.

Was there any fuel remaining in the airplane?

No, according to Federal Aviation Administration inspector Bean. The previous owner swears he has the fuel amount on-board that he told him. Inspector Bean later told him that there was no fuel in the fuel tanks and no fuel leakage on the ground. Although he lost consciousness, he woke up and remembered smelling fuel. The day after the crash he went to the site and did not smell fuel.

Was there any reason why he could not see fuel in the fuel tanks?

No, mostly it was because of the wing dihedral. The wing fuel tanks are fairly long at 5 ft.

What type of fuel was in the tanks?

100 low lead. While the airplane was in a 3-point position on the ground, the previous owner told him that all fuel gauges read less than the fuel tanks actually had. The right fuel tank fuel gauge displayed 1/2 tank capacity. The previous owner indicated that he had previously filled the right fuel tank, and flew about 1 hour performing touch-and-go landings. The left fuel tank gauge depicted about 5 to 6 gallons.

Was there 5 to 6 gallons in the left fuel tank?

I think so, guessing that amount was correct. The gauge read 1/4 capacity. For his 1st flight he calculated there were 18 gallons of fuel on-board.

Was the fuel to air ratio leaned during takeoff?

Yes. A couple of minutes after takeoff he reduced power and because it had a climb propeller installed was climbing at 2,450 rpm and 20 inches of manifold pressure. At cruise altitude he leaned the fuel to air ratio until the engine began to run rough then enriched it slightly.

At the moment of the loss of engine power what were the left and right fuel gauges reading?

I don’t recall. They were on the right side of the instrument panel and since the airplane was descending at 1,000 feet-per-minute descent he was flying the airplane.

Why did he not fill the fuel tanks before takeoff?

There was no fuel at 2GA2.

NTSB Questions Continued –

Could you see fuel in the right fuel tank during your preflight inspection?

Yes, maybe under 1 inch above the floor of the fuel tank. He looked into the tank and could see the level thicker towards the wing root due to the wing dihedral.

On the run-up was the engine operating ok?

Yes. The magneto checked perfectly, being very little rpm drop. The oil pressure was fine. The tachometer was ok. On takeoff the airplane climbed great with the engine operating at 2,650 rpm and 27 to 28 inches of Manifold Pressure.

On takeoff what tank where was the fuel selector positioned?

Both. He was talking with FAA inspector Bean after the accident and when the airplane was pulled from the hangar, it was in there in a left wing low attitude. There is one theory that the fuel migrated to the left tank and the right tank was empty.

Is there an interconnect between the wing fuel tanks?

I think so. Each wing fuel tank has an independent fuel vent.

How soon after switching to the left fuel tank did the engine quit?

About 13 minutes.

After the accident were any of the fuel lines in the engine compartment examined?

The engine compartment was banged up. He did not see any ruptured fuel lines. He thought there was a fuel leak while he was in the wreckage immediately after regaining consciousness, but he did not see any fuel stains on the belly of the aircraft postaccident.

As part of your preflight did you see any fuel stains behind either fuel cap?

No, there were none.

Is the airplane out of fuel?

Yes. From what we (he and FAA inspector Bean) could tell, it was totally out of fuel. The carburetor broke in 2 at impact. There was no indication of a major fuel leak.

Do you know where the previous owner got fuel?

I do not. He did say that it was nearby to 2GA2. It possibly could be Ridgeland-Claude Dean Airport (3J1), Ridgeland, South Carolina. He would have flown there, but it was in the opposite direction of his route of flight.

NTSB Questions Continued –

Do you have the phone number for the previous owner?

Yes. Swaid Rahn [REDACTED]

Was the airplane insured?

No.

Where was the airplane taken to after the accident?

He hired an individual to take the airplane to TBR a couple of days after the accident. It was bought by Larry Campbell who can be reached at [REDACTED]. A mechanic names Jeremy Hill disassembled the airplane at the accident site. He can be reached at [REDACTED].

The interview end time was 1650 EST.

The digest was e-mailed to him for review on December 20, 2022. He replied on December 21, 2022, at 2128 EST with, "Hello Mr. [Monville], I got a chance to read the report draft a couple times and all the information is, to the best of my knowledge, true and correct. Regards, Fernando." The FINAL digest was e-mailed to him on December 22, 2022.



Figure 1: FAA Digital Photograph. Right Forward Quartering View of the Airplane At the Accident Site.

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

Date: December 21, 2022
Subject: ERA23LA053, Record of Conversation/Interview
Contact: Swaid Rahn, Previous Owner of N30RK

Mr. Swaid Rahn of Indigo Aviation was contacted by phone on December 21, 2022, at 1140 EST. He was called at [REDACTED] and left a voice mail message. He returned the call the same day at 1240 EST from [REDACTED]. 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 was subsequently advised by e-mail that this document will not be released to the public until the investigation is finished and when it is published, any personal identifiable information (PII) such as cell phone number, e-mail address, address, pilot certificate number, etc., will be redacted and not viewable in the released document.

He indicated that he was attending airline ground school training. He was the previous owner of N30RK, but he did not build it. He bought it in 2021¹ from a friend, then sold it to the accident pilot (Fernando Alvarado-Rivera) on November 2, 2022. He did the last condition inspection in October 2021².

¹ According to Federal Aviation Administration records (Bill of Sale), Blueskys, Inc., bought the airplane on November 15, 2021.

² According to the entry in the engine logbook, the inspection was dated October 23, 2021. The tachometer reading on that date was 387.3, and the engine time since overhaul was 2,490.3 hours.

He was asked the following questions –

Since you have owned it, did you fly it?

Yes, but he did not fly it much. Maybe 4.5 to 5.0 hours.

When was the last flight you did in the airplane?

Probably a couple of weeks before the accident. He did a demonstration flight to another potential buyer on Saturday, October 29, 2022. He did not fly the airplane in November because the condition inspection expired the end of October 2022.

Was the October 29th flight the last flight before the accident pilot flew it?

Yes.

Prior to the October 29th demonstration flight, what were the fuel gauges reading?

The left fuel tank was reading 1/2 capacity and the right fuel tank was reading 3/4 capacity.

How long was the demonstration flight on October 29th?

There was a ceiling at 1,500 ft. He departed from his grass airstrip, flew around the traffic pattern and landing. He estimated the total flight time was about 15 minutes. With the taxi time, he estimated the total was .4 hour.

Would you have logged that flight?

Yes. With all the taxiing around he would have logged about .5 hour.

What were the fuel gauges reading before Mr. Alvarado-Rivera departed?

The left and right fuel gauges were reading 1/4 capacity and 1/2 capacity, respectively (Figure 1). When the accident pilot departed he (Mr. Rahn) thought he would fly 12 to 15 minutes to Statesboro-Bulloch County Airport (TBR), Statesboro, Georgia to get fuel. Rather, Mr. Alvarado-Rivero opted to fly to John Edwin Jones Sr Field/Metter Municipal Airport (MHP), Metter, Georgia. When Mr. Alvarado-Rivero bought the airplane, he (Mr. Rahn) wanted to make sure there was plenty of fuel. He (Mr. Rahn) told Mr. Alvarado-Rivero to top off the fuel tanks and then to see how much the fuel burn is. Based on the fuel gauge readings, he (Mr. Rahn) believed the airplane could fly 2 hours, which was the same consensus as Mr. Alvarado-Rivero.

For Part 23 certificated aircraft the fuel gauges are required to read empty when there is no usable fuel remaining. Were the fuel gauges of the accident airplane accurate?

He never tested the gauges. They seemed to be accurate with the reading vs. the amount of fuel added. Each wing tank has a total capacity of 22 gallons. The airplane's fuel selector has left, right, both and off positions. He told Mr. Alvarado-Rivero to takeoff and land with the fuel selector on both, then while en route burn off the fuel in the fullest tank not the lowest.

NTSB Questions Continued –

When was the last time the airplane was fueled and where?

At his house from a 80-gallon transfer fuel tank he had. He thinks it was fueled about 2 weeks earlier, or sometime in mid October. Since fueling he did 2 short flights.

Did that fueling fill both fuel tanks?

No. He filled the right fuel tank, and the left fuel tank to 1/2 capacity before the October 29th demonstration flight, giving about 32 to 33 gallons of fuel. He then did a short flight around his airstrip lasting about 10 to 15 minutes. The October 29th demonstration flight was about 10 to 15 minutes at power. During the demonstration flight he did 2 or 3 full-stop taxi back landings.

What kind of fuel was added?

100 low lead. His transfer fuel tank has a filter.

Did you have any fuel in the transfer tank when Mr. Alvarado-Rivero bought the airplane?

There was a little bit remaining.

Was there fuel remaining in his transfer fuel tank that Mr. Alvarado-Rivero could have bought?

Yes. There was probably 10 to 20 gallons that the pilot could have purchased. Based on the fuel gauges there was an adequate amount of fuel on-board for a 2 hour flight. It was more than enough to fly to TBR to get fuel. He told Mr. Alvarado-Rivero to stop 1st at TBR for fuel.

On December 21, 2022, at 1508 EST, Mr. Rahn was sent an e-mail requesting answers to the following questions. On December 25, 2022, at 1836 EST, he replied with the following:

Please advise how long you ran the engine on the ground for Mr. Alvarado-Rivero prior to the accident flight and what power settings were used?

"I ran the engine for approximately 5 [minutes] total on the ground. About 4 [minutes] to warm up at 1100 RPM and then 2000 RPM for a magneto run-up check. The run-up was normal. I then increased the engine to full power briefly (5 to 10 seconds) and then went back to idle for around 15 to 30 seconds before shutting down. All engine indications at full power also indicated normal. I had the tail tied down for security."

What is the unusable fuel amount in each wing fuel tank?

"I believe the unusable fuel in each tank to be around 1 gallon each wing for a total of 2 gallons total of unusable fuel for the aircraft."

How many fuel pick-ups are there in each wing fuel tank and where are they located?

"I am unsure of the total number of fuel pick-ups in the wings so I can't say with certainty. I don't want to report any misinformation."

A copy of picture of your pilot logbook showing the flight after fueling and the demonstration flight of October 29th.

"I am enclosing a picture of my logbook that shows both the September 24 flight and the October 29 flight ([Figure 1]). To recap the fueling history. On September 24, 2022, I added 10 gallons of 100LL avgas to the right wing which increased the quantity to indicate full on the right wing fuel gauge. The left wing fuel gauge was indicating 1/2, this gave the airplane 33 gallons onboard before the 9-24-22 flight. I made both flights with the fuel selector valve in the "both" position. I never had a reason to change positions of the fuel selector valve. I did not add any more fuel after 9-24-22.

Both flights together totaled 1.3 hours with a total of 7 take offs and landings between the 2 flights. All landings were full stops with taxi backs for the same runway direction take offs. There was a good bit of ground time involved with these 2 flights. When the new owner took delivery of the aircraft the right fuel gauge was indicating 1/2 and the left fuel gauge was indicating 1/4. I estimated the aircraft had 20 gallons of fuel which should have been approximately 2 hours of endurance which was adequate for dispatch to the intended airport. I suggested to the new owner to fly to Statesboro GA airport (KTBR) and fill both tanks. That would have been a 24 mile distance and approximately a 12 minute flight."

DATE	PILOT	ROUTE	FLIGHT	TYPE OF FLIGHT	ENGINE	WIND	TEMP	ALT	TIME	FUEL	CONSUMPTION	LANDINGS	TYPE OF FLIGHT	ENGINE	WIND	TEMP	ALT	TIME	FUEL	CONSUMPTION	LANDINGS
9-24	Mr. Rahn	KTBR	KTBR	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL
10-29	Mr. Rahn	KTBR	KTBR	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL	100LL
TOTALS										1.3	7	7	7	7	7	7	7	7	7	7	7

Figure 1: Photograph Provided by Mr. Rahn. View of his Pilot Logbook Showing Flights After Fueling.

On December 27, 2022, at 1541 EST he was sent an e-mail requesting an answer to the following question. He replied the same day at 1541 EST with the following:

For answer 4, when you added 10.0 gallons to the right wing, was the fuel spilling out onto the right wing, or was the fuel tank completely full?

"The fuel level came up to the bottom of the filler neck on the right hand wing when I put the 10 gallons in it. I remember turning the master switch on and seeing the right hand fuel tank indicate full and the left-hand fuel tank indicate 1/2 at that point in time."

The call of December 21, 2022 ended at 1308 EST.

The digest was e-mailed to him for review on December 28, 2022. He replied the same day at 1100 EST with, "Received, thank you. Mr. Monville, I read the attachment draft and everything looks accurate and correct to me as we have discussed. Sincerely, Swaid Rahn." The FINAL digest was e-mailed to him on December 29, 2022.

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

Date: December 29, 2022

Subject: ERA23LA053, Record of Conversation/Interview

Contact: Ronald Bean

Federal Aviation Administration inspector Ronald Bean was contacted by phone on December 19, 2022, at 1700 EST. He was called at [REDACTED]

He indicated that he was on-scene and there was no fuel anywhere during his initial or subsequent inspections. The engine was taken to a shop and there was no fuel found in the airframe fuel strainer, or fuel lines. It was total fuel exhaustion. He indicated that he would be working on December 21, 2022 if more information was needed.

Inspector Bean was contacted by phone on December 21, 2022 at 1047 EST. He was called at [REDACTED]

He indicated that he was on-scene the morning after the accident and he did not smell fuel at the accident site. There were no fuel stains on the airplane. Also, there was no evidence of fuel leakage at the scene, and no fuel stains on the ground. As part of his investigation he did take a photograph of the cockpit but not with electrical power applied. The airplane was recovered to Southeast Avionics.

There was no fuel in the fuel strainer

The digest was reviewed with him during the calls and he agreed with the content. The FINAL digest was e-mailed to him on December 29, 2022.



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

Date: December 29, 2022

Subject: ERA23LA053, Record of Conversation/Interview

Contact: Jeremy Hill of Southeast Avionics

Mr. Jeremy Hill of Southeast Avionics was contacted by phone on December 29, 2022, at 1051 EST. He was called at [REDACTED] He provided an e-mail address of [REDACTED]

He indicated that helped recover the airplane from the accident site. Because of the damage to the wings, he had to cut off the engine from the firewall forward. During that process he saw only drips of fuel.

With respect to the airplane, it was still in their hangar. He went to the airplane and noted the fuel tank in the right wing went from the wing root outboard 5 ribs. The leading edge of the right wing was damaged about 12 inches outboard from the center of the fuel filler cap opening (Figure 1). That location coincided with the outboard location of the fuel tank that was in the wing leading edge.

He indicated that there was no header fuel tank in the cockpit, no fuel tank behind the seats, and there was no evidence of a fuel tank in the wing center section between the spars for either wing. He took a photo of the wing root of the right wing (Figure 2).



Figure 1: Digital Photograph from Jeremy Hill. Frontal View of a Portion of the Leading Edge of the Right Wing. Note the measurement from the fuel Filler Opening to the Outer Most Rib of the Wing Fuel Tank.



Figure 2: Digital Photograph from Jeremy Hill. View of Right Side of the Wing Center Section. Note the absence of any fuel tank between the main and aft spars.

The phone call ended at 1115 EST.

The digest was e-mailed to him for review on December 29, 2022. He replied the same day at 2244 EST with, "Looks good, thank you." The FINAL digest was e-mailed to him on December 30, 2022.

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

Date: January 11, 2023

Subject: ERA23LA053, Record of Conversation/Interview

Contact: Chris Tieman, of Mustang Aeronautics

Mr. Chris Tieman of Mustang Aeronautics was contacted by phone on January 11, 2023, at 1140 EST. He was called at [REDACTED] He provided an e-mail address of [REDACTED]

He indicated that in reviewing picture IMG_9299 (Figure 1), the area behind the main spar is normally open, but with the sealed openings aft of the main spar, and the sealed fuel fitting boss aft of the main spar, that airplane had a fuel tank aft of the main spar and could be consistent with the reported 44 gallon total capacity.

He indicated that he talked with the owner in Georgia other than Swaid Rahn and was told the airplane was equipped with capacitance fuel quantity indicating system.

The phone call end time was 1148 EST.

The digest was e-mailed to him for review on January 12, 2023. He replied the same day at 2109 EST with, "I believe the information in this draft is correct and accurate." The FINAL digest was e-mailed to him on January 13, 2023.



Figure 1: Digital Photograph from SE Avionics. Photograph IMG_9299. View Depicting the Wing Root of the Right Wing. Note the Sealed fuel fitting Boss and other sealed openings in the Inboard Rib aft of the Main Spar. This is consistent with a fuel tank aft of the Main Spar.