# From the Desk of Jon D Melby

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To: Millicent Hill (NTSB Aviation Accident Investigator)

Re: **Statement of events regarding Harmon Rocket Registration Number N88XK** incident from 8/17/2020 – 8/18/2020

This is a statement by Jon Melby, to the best of my recollection, regarding the delivery of the Harmon Rocket (N88XK) to Patrick Danaher (new owner of the aircraft) located at Finleyville, PA (G05).

I arrived at airport G05 with the Rocket on early Monday afternoon (August 17, 2020) after a two-day relocation trip from Phoenix Arizona. The approach to the field was normal, although I did notice that the runway was inclined (rwy 32) and with a steeper than normal approach than thought after reviewing the airport diagram prior to arrival. I knew that the field was about 2,500 feet in length. Previous landings for fuel stops enroot from Phoenix, I was able to easily stop the aircraft within 1,500-1,700 feet with full flaps and a normal approach.

Upon arrival, I taxied the aircraft to Patrick's hangar. I noticed that the taxiway was barely wide enough to accommodate the width of the wheelbase. In addition, visibility while taxiing was more obscured taxing towards his hangar as it was "downhill". My thoughts were immediately that I would not have chosen this location because access into and out of his hangar location was not easy. It was a small field with fuel, bathroom facility, and a runway. But not what I am accustomed to with airports I typically fly to or out of.

Once I shut down the aircraft, we moved the aircraft into his hangar out of the sun. Obviously, Patrick was excited to sit in the cockpit of his new plane as it had been several months since he had seen it. Patrick powered up the master and avionics and brought the GTN-650 and associated G3X's online. After flying the aircraft the past few days, I had a good understanding on how the avionics worked. Patrick mentioned prior to arrival that he never had a chance to "figure out" how the autopilot worked. So while in the hangar, I showed him how to access the auto-pilot features on the G3X and also some of the info pages on the right G3X.

After we spent some time reviewing the electronics, I showed Patrick some "squawk" items that he would need to fix someday. This included the canopy needing some sort of guide placed in the left rear to help close the canopy more effectively. Overall, the aircraft was in great shape and no major items that I found while flying the aircraft across country.

Patrick wanted to take the airplane out that afternoon for a flight. The weather was perfect, partly cloudy skies with cloud bases around 6,500 feet MSL. Winds were light and simply a good day to go flying. Patrick mentioned that that week was a great weather week because the previous few weeks had a lot of storms and overcast skies. Patrick wanted me to show him how the autopilot worked and how use the GTN-650 for navigation. I showed him what I could on the ground, but it would be better to have him fly the plane and I could prompt him from the back seat on what buttons to push. In addition, Patrick had installed a Garmin "Connext" system which uses blue tooth to upload/download information to/from the GTN-650 from a portable device (Phone/Tablet). I am accustomed to using this as it is installed on my Beechcraft Bonanza and I wanted to help him save a few steps by showing him how prior to a flight and using a tablet/phone in flight for traffic alerts and as a primary digital map.

We pushed the aircraft out of the hangar onto the taxiway. Patrick got into the front seat and I climbed into the back seat. I had never flown in the back seat of a Rocket. I was amazed at what little control you have in the back seat. It has a control stick, intercom for my headsets, rudder pedals that were 2" wide, short, and vertical, and a "push rod"

device that connected to the throttle in the front. I assumed the pushrod throttle device was used by the previous owner to ensure at least there was some throttle control from the back seat if needed. However, I am very tall and with long arms. The throttle linkage bar was very awkward to use (for me) because I think it was made for someone shorter and with shorter arms.

Patrick went to start the aircraft and the battery was drained to the point that the engine would not crank over. At that time, we got out of the aircraft and put the plane back in the hangar and put the battery tender on to charge the battery.

That afternoon we left the airport and went to Patrick's house. We went to dinner and enjoyed talking about his time in the military as an F-16 pilot, decision to go to medical school, and ultimately to become an ophthalmologist. We talked about the number of surgeries he performs each day (20 to 40) and how having an airplane would be a nice distraction from the day to day work that he does in surgery.

We went back to Patrick's house and I went through some of the items that I think Patrick should have as a new aircraft owner. Plus, I wrote up a list of items to purchase in my opinion would help in everyday airplane ownership. We also talked about how to use his Garmin Pilot app or Foreflight to flight plan from home and push to the GTN-650 for ease of flight planning.

The next morning, I woke up a little early and wanted to create some sort of checklist to use. Patrick said he found one on the internet for a Rocket, but I created one based upon what I used mentally to preflight and fly the aircraft. The plane is very similar to my Pitts S-1-11B in terms of basic pre-flight and checklist items. Additionally, after our evening discussion, I learned that Patrick really needs a checklist from his military training. It seemed that having a checklist would make the transition better for him.

That morning, we stopped by the local printer shop and he printed out the mini-checklist I made for him and had it laminated for a better reference.

We then went to the airport. We pulled the plane out of the hangar and proceeded to climb into the cockpit. I did mention to Patrick that I have no brakes and only minimal controls in the back seat. So, he would need to handle everything from the front seat including all braking and I could not help. I could only give input if he had questions. He started the engine and we taxied to the fuel pump. There Patrick topped off both tanks and I watched as he filled each of them. Ensuring they were full and that he placed the fuel cap on properly after I showed him earlier how they work.

We then got into the plane once again, started the engine, and taxied to runway 32. He went through the engine run-up procedure. When checking the propeller, he brought it all the way to low RPM and left it there for a few seconds. I mentioned to him that he needs to cycle the prop and not a good idea (in my opinion) to bring the propeller so low for many seconds. Once the engine run-up was complete, I suggested that we climb out and turn to a Southwest heading and climb to 3,500 feet. Reminding him that the plane climbs fast and he could bust the Pittsburg airspace easily. Patrick took the aircraft off without incident and turned left and climbed to 3,500 feet.

Once we got to 3,500 feet, I suggested that for now, he establish a cruise flight until outside of the airspace. Again, I had no controls, no visuals on airspeeds, engine monitoring, or GPS location from the back seat. The first thing Patrick did was pull the mixture to idle cut-off. I know because you could hear the engine quit….different from pulling the throttle back. So I said to him to push everything full forward. Set the plane up (in case he forgot) to 24", 2300 RPM, and about 20 GPH for now. He then brought the propeller back to a very low (like maybe 1500 RPM). I mentioned to ensure the RPM is around 2,300. He corrected it and brought it back to 2,300 RPM. We reviewed where all the instruments were when he sat in the front seat. So he was familiar with where the engine monitoring information was located in the far right G3X. So I am not sure why he pulled the mixture so far back or why he pulled the prop back to low RPM in flight. At that moment, I was concerned because I was told by the aircraft seller that he worked with Patrick with many landings in the Rocket back in December. He also soloed in his Piper Cub. The seller even said that he thought he was a good pilot to fly the airplane. I had asked the seller prior to delivering the airplane because I was curious about his

Rocket experience only. That once I delivered it he would take care of the new plane because I think the plane is gorgeous.

Once we got out of the Pittsburgh airspace, we climbed up to 8,500 or so feet. Patrick created a flight plan on his Garmin Pilot app and pushed it to the GTN-650 before takeoff. I mentioned to him before we flew that he should look for an airport 45 or so miles away. Mainly because he wanted to know how the autopilot worked (from our discussion the night before) and we needed some distance to engage the A/P and track. Once we got on the A/P we made it to the waypoint and then turned back. I had asked him how far are we from the next waypoint and how many minutes. He said he could not see it on the GTN-650. I asked him to move his head to the right. I loosened my shoulder straps and leaned forward to see the GTN-650. The flight plan was missing. I said just punch in direct to the field he wanted to practice some Touch and Goes at (Ross field I believe the name to be). So, we went direct to Ross Field.

I could tell while we were flying that Patrick would focus on the electronics and wasn't looking around using Situational Awareness techniques. I mentioned that he should be looking around because in that VFR airspace I thought it could be very busy. He said he had an issue with "fixating" on things. I said that will "kill you" because you have to multi-task flying these kinds of planes. He then said, "I know…it's something I need to work on".

We made it to the Ross field downwind. I mentioned to always put the flaps down at 120 indicated. When we were getting into the pattern, I knew he was a little behind the plane. I mentioned that I could attempt to make an approach from the back seat, but I never have flown from back there. Then he could get a perspective for when he flew the approach. He said that would be great. I shot the visual approach asking him to call out speeds and to apply flaps as needed. I told him that I would level out around 50 to 100 feet, then we can go around. At 50 to 100 feet, I said full power and bring the flaps up. We then climbed and got back into the pattern. I said, "if you want, I can attempt this first landing so you can feel what it is like in ground effect". He said that would be great. So, once again he ran the inputs for flaps and the radio calls and called out speeds. I made the approach but told Patrick to move his head to the right because I could see the runway. He moved his head to the right, and I brought the plane into ground effect and landed on the main gear. I asked him to bring the flaps up and I said going full power. I could use the make-shift throttle bar, but it was difficult to determine where the throttle was at. The only thing that bar is good for is full power. After that, you don't really know where the throttle is at.

Once again, I said bring the flaps up and full power. Patrick then attempted the next landing. I could see he brought the flaps down and on final they were full flaps. He put the aircraft into a three-point position. We landed in the three-point position and bounced twice. I said, "my aircraft – full power – flaps up". I was concerned that the angle of attack was getting to great on the second bounce, so I wanted to ensure we pushed the nose down. Then I said it is your aircraft once it was stabilized. He then went around for attempt number two. He lowered the flaps and made the approach. Prior to the landing, I said to him "don't do a three-point landing in this plane until you have a lot more experience". He said, "I know, Eric (seller) told him the same thing". He made the approach and set up to land on the mains. Once we got close to the ground, I don't know why but we went past ground effect and hit the mains on the runway and bounced up in the air…twice. I said, "Full power – flaps up". I suggested to Patrick that he let the plane settle into ground effect and slow it down maybe 5 knots. That was what seemed to work best for me. He then got on downwind and went to deploy the flaps. But they did not work. I could visually see that neither flap worked, and I guessed we were under 135 airspeed. But could tell for sure. After the incident happened, I did call the builder of the Rocket and he said that flaps are limited by airspeed only. That even at 200 knots the flaps would come down about 15 degrees. We should have seen some flap movement, but we had none. I suggested to Patrick that he cycle the flap switch and look for a popped circuit breaker. He said he cycled and didn't see a circuit breaker for the flaps.

At his point, I was thinking this wasn't good. Patrick can't land the airplane. We could have landed at Ross field and I would have taken an Uber to the airport with a pre-purchased airline flight departing over 4.5 hours from that time back to Phoenix. If I did that, he would get the flap fixed by someone, but then he would probably fly the plane back to his home field by himself. During this entire process, I noticed it wasn't easy for Patrick to ask others for help…. about

anything with aircraft ownership. He had chosen a difficult field to get in and out of for a home airport. Bad location on the field for a hangar. No real services on the field to assist him. The list goes on.

So, if he got the flap fixed, I knew he would have balled up the plane flying it back by himself. He may have done better without me on board, but he didn't demonstrate any of the proficiencies that the seller said he had nor matching up with the civilian tailwheel endorsement and commercial endorsement that Patrick said he had.

Consequently, I thought the best thing to do is attempt to get his plane back at his home airport. Once there, he could hire a mechanic to work on this plane and take some time to get some help in it. But there was no way he was able to do a no-flap landing back at his airport. I suggested to Patrick that we take it back to his home airport and attempt to land it there. I said that the strip is shorter, but uphill and gong into the wind. That I got the airplane down within 1,500 feet with flaps and a cross wind, we surely could get it into the field with 2,500 feet.

I said I will get the mains on the runway and that he will need to do the braking once the tail is lowered since I had no brakes in the back seat. We agreed we would try it 3 times and after that go to Ross field. I asked him to call out airspeeds to me, so I knew ballpark speeds for final. The first attempt got to fast because of the hill at the end of the approach to rwy 32. We bounced the first time and gave full power to go around. Then tried again but slowed it down more (mostly by feel after the first approach). Once again, we bounced and started a go around. I said, "ok this is the last one" and Patrick agreed. I slowed the plane a little more and aimed for the 32 number. During the approach I said keep your head to the right so I can see the runway. Once we were in ground effect, I brought the mains on to the runway and started bringing the tail down. Patrick brought his head to center and I lost total contact with the runway. Additionally, his normal sized rudder pedals were over taking any inputs I had with the small rudder pedals. I had to help Patrick keep the plane on the runway by looking to the left side and keeping pavement (runway) in view. Moments later, Patrick said "end of runway!". In my mind, I was thinking we had another 1,000 or so feet, but really didn't know our distance from the end. Moments later, I could see the runway threshold and we went down a hill. I think we were probably going about 20 MPH or so, but hard to tell from my view as we passed the threshold.

We then came to a sudden stop. I asked Patrick if he is okay and he said yes. I then said I am opening the canopy (easier for me to reach from the back) and for him to turn off the fuel selector valve. I also reminded him that we don't know if there is fuel leaking…so don't touch any switches. We got out of the plane, asked him again if he is okay. Then looked and smelled for fuel leaks. Saw none, so I turned the master and avionics power off. Then, I was reminded that we probably have the ELT going off. So, I turned the master/avionics back on and plugged in my headset. Dialed the GTN-650 to 121.5 and could hear the ELT. That's when I mentioned to Patrick, we need to get a screwdriver to access the ELT and turn it off.

I told Patrick I am so sorry that this had happened. Maybe we should have just landed at Ross and dealt with the consequences. I mentioned that if he would apply the brakes too hard before I got the tail down, all kinds of bad things could of happened. Much worse in fact. I did say that I believe that plane was way beyond his capability for now. That for the airport he was based at, that he needs a Cessna 182 or something. If he was at that Ross field, it would be better because it is a normal airport and better for him in the Rocket. He said that airport was the only place with hangars around. He had no choice.

Some guys showed up and said they can get a forklift to move the plane. Meanwhile, I got called by the Air Force Rescue teams. I told them that everyone is okay, and we ran off the end of the runway. They said the seller of the airplane was still registered with the ELT and he was the one that gave mine and Patrick's phone number to the Air Force when they called him. Patrick tried calling the FSDO and other sources to notify them of the incident. But there were no responses at any of the places he called. About this time, it was around 1:00 PM in the afternoon (8/18/2020). Since there was no property damage and nobody was hurt, I mentioned to Patrick that I would prefer getting a ride to the Pittsburg airport so I can catch my flight back to Phoenix at 3:58pm. There wasn't anything I could do there, and any information can be gathered remotely. Patrick obliged and gave me a ride to the airport.

On the way to the airport, I reiterated to Patrick to not give up flying, but try to get into a simple plane to fly first. Something his wife and him could enjoy plus get used to flying in the system again. Something like a Cessna 182. I said we are okay and that the plane can be fixed. It just will take some time to fix the plane and heal the mind from the event.

Looking back at it is like Monday night after watching a Sunday Football game. There are several issues here that I didn't see until we were airborne, and Patrick was having difficulty understanding basics of flying this airplane. I knew then that he would hyper-focus on things and that his overall experience as an aviator was lacking. My assumptions of his skill level prior to our flight was that he was a "good" pilot and could "handle" the rocket as stated by the seller (who is a flight instructor). Also, Patrick stated he felt good flying the airplane when he was in Phoenix. The only thing he never had time to learn was the auto pilot….the purpose of our flight for the day and to help Patrick make a smoother transition into the plane with any input I learned during my few 10 hours flying the plane prior to arrival at G05.

Lessons learned is that I needed to have better proof of the experience level before I get into the plane with someone. That there are no controls in the back of the plane other than 3-axis. That I am not a flight instructor and do not know how to teach someone to fly a plane. The only thing I can do is to help keep us both alive by assisting to manage the aircraft from becoming a major mishap. That communication is king. We communicated, but I think the difference was I thought he knew more than he did and he thought that with my experience I could just take over for him. But the truth is there are only a few things you can do from that back seat. The true pilot in command always is that front seat unless you have significant training flying from the back seat and you have brakes, throttle quadrant, and better rudders.

Jon D. Melby