

June 1, 2023 - N8074R - 1969 Bonanza V35A-TC - Pilot: Matthew Brinson - Accident
Weather VFR, Clouds Scattered at 4500, Baro 30.00

On June 1, 2023, I was located at the Statesboro-Bulloch Regional Airport, in order to test the function of the newly installed servos for the Garmin GFC-500 Autopilot and to fly N8074R for an hour in order to calibrate the fuel flow sensor.

At approximately 1330, hours I began my preflight of the N8074R using the checklist found in the plane. During this check I checked all of the lights on the N8074R, control surface movement from the exterior, fuel and oil levels, as well as making sure the tires were appropriately inflated.

Once in N8074R I turned the battery master switch on, checked movement of the yoke, to ensure I had full movement of control surfaces. Once all of the primary and secondary flight displays booted, I started the motor and listened to the Statesboro-Bulloch Airport AWOS. (Weather reported by the AWOS documented above.)

I then announced I was taxiing N8074R to runway 32 and began to taxi. At the end of the runway I used the checklist found in the N8074R to conduct a preflight engine run up which included, an increase in throttle for an RPM/Magneto check on both left and right magnetos, a cycle of the propeller pitch adjustment to ensure the governor has oil and is functioning, and another full range check of the controls/control surfaces to ensure nothing had changed since start up.

When my preflight check was complete I programmed the GFC-500 flight director and set a cruising altitude of 3000, with a pitch climb between 5 and 7 degrees, as well as setting my heading bug for the runway heading of runway 32. I made an announcement on the Statesboro-Bulloch Airport common traffic advisory frequency and began taxiing onto runway 32.

I taxied N8074R onto runway 32 and after checking the control movement again applied full throttle. Once I began rolling the controls felt slightly heavy so began rolling the ruddervator trim to nose up, using the electric trim switch, to lighten the controls and N8074R began to fly. Once off the runway I pulled the gear up, by lifting landing gear actuator switch, and after 500 above ground level I adjusted the manifold pressure to 28 inches and 2500 rpm and continued to climb. Somewhere near 1000 feet msl, I engaged the GFC-500 Autopilot and continued to climb.

N8074R continued to climb and the autopilot captured my previously selected altitude of 3000 feet. I then set manifold pressure to 25 inches and 2500 rpm and leaned the airplane to approximate best power by watching my airspeed. I attempted to close the cowl flaps and made a note the cowl flaps were stuck in the open position.

At this point I began to cruise, however I was still testing the functionality of the newly installed Garmin servos and autopilot, so I programed the Garmin 750 navigator to navigate to the Vidalia Regional Airport. I placed the GFC-500 autopilot controller in 'nav' mode, N8074R made a turn and began to fly toward the Vidalia Regional Airport. I then switched the autopilot function back into heading mode, set a timer for one hour and noted the fuel level in my right wing tank, which was flickering between 32-31 gallons. I began to fly in a rectangular pattern around the airport. While cruising in my rectangular pattern I noticed the N8074R would loose approximately 50' in a coordinated 90 degree turn.

During this hour I continually gave N8074R heading change commands and monitored the engine, while looking for any issue I could find with the newly installed Garmin G500 primary flight display, engine monitor, GI-275's, and 650/750 navigators. I was also documenting the fuel burn rate, so that after I landed the fuel flow sensor could be appropriately calibrated. I was unable to locate any further issues with the Garmin equipment with one exception, the two gps navigators did not seem to be communicating (things I programmed into the 750 did not transfer to the 650).

When the hour timer lapsed I cruised for several more minutes in the square pattern and noted the fuel level in the right wing at 16-17 gallons. I then programed the autopilot to descend to 2000 feet, at a vertical speed rate of 500 feet per minute. N8074R descended and captured 2000 feet and began to cruise in level flight without issue. Once at that altitude I began to slow the N8074R by reducing the power setting to approximately 19-20 inches manifold pressure and 2200 RPM's.

I then programed the frequency for the ILS into the Garmin 750 navigator, so that I could check to see the glide slope and localizer signals are appropriately displayed by the newly installed Garmin system. I also activated vectors to final on the Garmin 750 navigator to see if the GFC-500 autopilot would intercept the localizer and initiate a turn to intercept. (At no point was I going to allow the autopilot to fly an approach without first checking that it received the appropriate glide slope and localizer signals.)

At this point I was located in a high left crosswind for runway 32 and again selected a new altitude of 1800 (this is ILS intercept altitude for JUDIT a gps waypoint on runway 32's ILS) and selected a 300 foot per minute vertical speed and N8074R began to descend. At this point I turned the heading bug to place N8074R in a high and wide left downwind for Runway 32.

Once N8074R was flying east and past the JUDIT waypoint, I turned the heading bug to intercept the localizer at a 90 degree angle. Just before the turn onto my base leg I let the landing gear down and put the flaps at 10 degrees, and also armed approach mode on the GFC-500.

The GFC-500 autopilot on N8074R should have began making a turn toward the runway once the course deviation indicator began to move on the horizontal situation indicator, to intercept the localizer at a 45 degree angle. The GFC-500 autopilot did not make the turn to intercept the localizer, so I disconnected the autopilot, by hitting the autopilot disconnect on the yoke. I began to hand fly N8074R back to runway 32's extended centerline with the intention of landing and ending the flight. During this time my airspeed indicated I was approximately 130-135 indicated.

After flying back to the center line, I noticed the N8074R continued to descend and was now lower then where it was supposed to be. I applied some power and the nose of the N8074R pitched down dramatically, pointing me to the ground. I instantly pulled power back to the previous 19-20 inches manifold pressure and began to trim N8074R for level flight (moving the trim switch should also disconnect the autopilot). After running the trim to a more nose up attitude I re-applied power and the N8074R once again pitched down toward the ground. I know the GFC-500 was disconnected because I had free roll movement of the yoke.

I then attempted to pull the yoke back and was unable to move the yoke in any significant way, due to resistance, to increase altitude or even establish level flight. It should be noted, if I released the yoke, it would rebound toward the panel into a faster descent. I was only able to slow N8074R's descent without constantly pulling on the yoke. As N8074R continued to descend, I continued to roll the ruddervator trim to a nose high position in an attempt to

increase altitude, since I had been descending from the time I turned onto the runway extended centerline.

I reached over and rolled the autopilot vertical speed selection to a positive rate, even though the autopilot had previously been disconnected. It was still set on a 300 foot per minute descent from my second descent to 1800 feet. I re-engaged the autopilot with the new climb command, N8074R continued to descend and I again disconnected the GFC-500, by causing it to fault out through roll steering, pressing the autopilot disconnect button, and began to continue to roll the trim nose up through use of the trim switch. I was unable to reach the autopilot circuit breaker on the other side of the aircraft's fuse panel, because I was pulling the yoke back with both hands and if I let go the N8074R' nose would dip into a faster descent.

Now at about a three to four mile final, I began pulling the yoke with both hands to try and slow the descent. My arms began to fatigue and I slid forward in my seat to put my elbow under the bonanza yoke bar, wedged my feet in the rudder pedals and began to pull the Bonanza yoke bar back by lifting with my legs and arm wrapped under the bar.

During this time I checked my airspeed which was between 120 and 125. I also noticed a 'P.TRIM' warning flashing red on the primary flight display, 'AP' in yellow (which indicates the GFC-500 is armed and ready, but not running). I also noticed that the trim had been run all the way into a nose up position. The trim indicator showed a black bar which above which said 'STOP' I could see a 'U' under 'Stop', meaning I was out of nose up trim.

I continued to fight and pull the yoke back with every ounce of effort I could in order to get N8074R to fly. I continued doing this by pulling the yoke back with my left hand, by pushing with my feet and legs against the rudder pedals with my right arm wrapped under the bonanza yoke bar. I continued to steer toward the runway with my left hand. This continued for the last approximately three miles.

When approaching the runway on short final and realizing I was going to land short of the runway, I continued to pull on the yoke to extend the my range and get as much nose up attitude as I could make the plane give me. When I began to get closer to the ground I maintained wings level on the runway extended center. N8074R continued to descend striking a lead in light pole approximately 1000 feet from the end of the runway on the left wing. N8074R continued to the ground wings level just to left center of the runway extend centerline. When N8074R struck the ground just over airport property, it skidded sideways to the left, raising the right wing. N8074R came to rest on the ground 50 yards short of the threshold of runway 32.

After N8074R stopped moving, I exited the aircraft quickly through the passenger side door. I then jumped off the back of the right wing, got a safe distance from the aircraft, and called Jeremy Hill informed him of the accident. In a very short time period after that emergency services began to arrive.