



Higher Living

We have great news to announce. Cessna 172L N3816Q is finally back flying with us and with an interior hardware facelift that you will all appreciate. First, there is a new Garmin IFR capable GPS, considerably better than the old one, which was very unusable. In the center of it all are two new Garmin G5 displays. One for attitude and the other to replace the directional gyro. Also added is a new intercom panel and the whining in the headsets is finally gone for good. ADS-b in and out is added, finally, so that you can take the airplane anywhere and ATC will be happy with you.

Since BQ1, my favorite fly in restaurant, is open again, we do a refresher review of density altitude and the effect on the performance charts and

additionally a review of calculation of weight and balance. Also, we look at the decisions we must make when deciding if we should leave on a flight and when we make the flight but decide to return home.

We are back to a really nice time of year to fly. The weather is warming up and spring is underway. There is pollen and unsettled weather with one day windy and the next rainy, but temperature is moderating and it's great to get out and fly.

Come fly with us.

- David Williams, Editor

Contact Us

Phone: 919-897-8882

Schedule your next aviation adventure at www.ExecFT.com

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Airplane & Instructor Rates

Wet rate for rentals. Tax is included.

Cessna 182 N1303S \$210/hr

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Warrior N41669 \$185/hr

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Cherokee N720FL \$165/hr

Cherokees N515DH,
N711FL \$155/hr

Cessna 172 N3816Q \$170/hr

Instructor time \$50/hr

CFI/CFII training \$60/hr

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NASA Kennedy Space Center



In March I visited the Kennedy Space Center near Titusville, Florida. It had been about 20 years since I was last there. I don't remember the previous ticket price but now they start at \$80.25, which includes a full day of activities. Everything is located at the main visitor complex except for the building housing a complete Saturn V rocket which is included on a bus tour. The bus tour, which leaves about every 20 minutes throughout the day, of the Saturn V and the launch complex is included in the ticket price, so it's easy to do. Both Space-X and Boeing Starlink have space hardware on exhibit.

Located at the space center are several full motion simulator rides including a shuttle launch simulator which is rather intense.



You board with a group of people and then go through the simulation of a launch and entry into orbit. Other simulators include a ride to Mars and a trip to some potential unexplored planets outside the solar system. There is a very good IMAX film about how to attempt to keep Earth safe from asteroid impacts.

Not to be missed is a very nice display of the Space Shuttle Atlantis. Seeing Atlantis means I have visited every shuttle available to be seen. Shuttle Discovery is at the Udvar-Hazy Air & Space Museum near Washington DC, Shuttle Endeavor is at the California Science Center in Los Angeles and Shuttle Enterprise is at the Intrepid Sea, Air & Space Museum in New York City.

It's easy to spend a full day there and perhaps two if you take a more leisurely approach.

Cessna 172L N3816Q



N3816Q has been away for a long time now and it is planned to return soon after this newsletter is published. It is getting a nice panel upgrade. Included in that will be dual Garmin G5s for attitude and heading, a new

intercom, and a new Garmin transponder with ADSb In and Out available. Also included is a new Garmin GPS. All those items will greatly enhance the utility of N3816Q.

I encourage any of you who have in interest in flying a Cessna 172 to give this, now well equipped, airplane a flight of your own. Discuss with your instructor if you are unfamiliar with the use of the new hardware.

Weight & Balance



You may use an automated method of calculating weight and balance and you may or may not remember how the automated method is handing the math. Let's take a review of how it is done. I'm sure you remember what a seesaw looks like. For me an image of a seesaw brings back memories of the time I was knocked totally breathless, gasping for air in the dirt, when the person at the other end jumped off when I didn't expect it and I was slammed to the ground. Hopefully your memories are more benign.

In a seesaw the center of balance is fixed at a point halfway between the ends. Balance can be achieved by either adjusting the weight at the ends or by adjusting the distance the weights are from the center. Math goes like this. Multiply the weight on one end of the seesaw by the distance that weight is from the center. Then do the same for the other end. If the two results are the same, then the seesaw should be in balance.

In an airplane you are working the same problem but a bit backwards. In the case of an airplane the location of the center balance, called the center of gravity or CG, isn't obvious and that is what we need to calculate. The weight will be determined by what we are loading, and the position of the CG will be determined by where the weight is placed. In an airplane the positions where weight can be placed are fixed. We have the front seat, back seat, perhaps a storage area, and the position of the fuel in the tanks. We also have the weight of the empty airplane itself. We measure the positions of all those items from a fixed point, called the datum, selected by the manufacturer. Normally this position is at the front of the airplane, so all positions are positive numbers, usually in inches, back from the datum. It is also important to know that the distance from the datum to any of the fixed weight points is formally called an arm.

Let's do a real example with an airplane with front seat, back seat, fuel, and the weight of the empty airplane.

Position	Weight	Arm
Airplane	1303	86
Front seat	200	85.5
Rear seat	10	117
Fuel (pounds)	300	95

Now we calculate the value called moment, measured in inch pounds, which is just the weight multiplied by the arm. The result looks like this.

Position	Moment
Airplane	112058
Front seat	17100
Rear seat	1170
Fuel (pounds)	28500

In the next step we sum the weights giving us 1813 pounds. Also, we sum the moments giving us 158828. If we then divide the total moment by total weight the weight unit falls out of the equation, and we are left with 87.6 inches. That is our center of gravity. So now we have the two figures we were looking for. A weight of 1813 to check against information in the POH to determine if that is within limits. We also have a CG of 87.6 inches which we also check in the POH to determine if that is within limits. Normally there is a chart with CG on the X axis and weight on the Y axis which we use for that purpose. If we are within the bounds of the chart, then we are properly loaded. If not, we will need to make an adjustment

which will usually involve leaving some weight behind or moving it to another position.

Any time you decide to fly with people in the back seat or extra baggage you should be sure to check the weight and CG. You may be surprised that small airplanes can't always fly safely with every seat filled, so make sure you do the math before flying.

BQ1 and Density Altitude

The Pic-n-Pig restaurant at the BQ1 airport near Carthage is open again. YAY! So, let's have a look at the performance charts because BQ1 is short (2538 feet) and narrow (36 feet) and when it is hot or windy we might not want to go. Also note that runway 31 has a 300-foot displaced threshold so the length is reduced to 2238 feet. The weather might let you land but a look at the runway length needed for takeoff might surprise you.

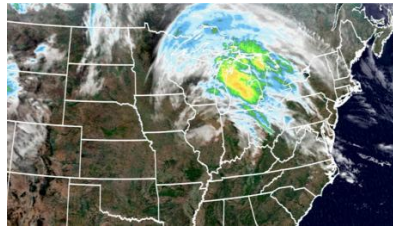
Landing at BQ1. First thing to do is remember how short and narrow BQ1 is. BQ1 is 60% shorter and 64% narrower than TTA. Can you routinely land on runway 03 at TTA and get off at the A2 taxiway? That point is a bit more than half the total length of BQ1 so if you can't seem to get off the TTA runway 03 until A3 then you need to practice. Do you usually land on the centerline or off to the

side. You must be in the middle at BQ1, and you need to work on making sure your approach speed is correct as well as your approach altitude. If you are too high or low or too fast or slow, then you should practice on a longer and wider runway first.

Taking off from BQ1. This is an opportunity for showing off your best short field take off technique. The trees are close, and you need to follow the procedures to make sure you climb quickly enough. Just follow the procedure as you were taught, and you will be fine. All of our airplane can land and take off just fine at BQ1 but you have to follow the procedures. BQ1 can be tricky if it is hot. Checking the takeoff performance chart for the Cherokee 140 shows that on a very hot day the runway will be just long enough to depart and clear the trees. So, make sure you check the performance charts in the POH for hot day performance to make sure that a 2200-foot runway with trees at the end will be adequate.

One last thing to consider is that the runway there is turned about 90 degrees from the runway at Sanford. Therefore a wind straight down the runway at TTA will likely be a crosswind at BQ1. Since BQ1 doesn't have a METAR available the best place to check before going is the METAR for Pinehurst (KSOP).

Knowing When to Not Take Off



You should never feel pressured to make a flight. There will be times when the weather could go either way. The TAF says it will get worse at 1pm but your flight should be back by noon. The destination airport has clouds at 2000 feet but the TAF says it will get better about the time you are to arrive. You may feel that you can't wait for the perfect day and will attempt the trip only to find yourself landing early or trapped at your destination.

The best way to not feel pressured to take off is to make sure that:

- 1) Make the decision to drive or fly early enough that you can drive if the weather isn't working out.
- 2) Make sure to tell anyone you may be flying with that the decision to drive or fly is yours and will be made as per rule #1.
- 3) Never take off unless you are feeling fine about the entire trip. Remember the hazardous attitudes that push you into a

decision that you later regret.

If you do those things, then pressure on you will be reduced and driving to a destination will always be an option should the weather look bad.

Knowing When to Turn Around



When on a cross country trip and the weather ahead is looking questionable do you continue, or do you turn back? When do you make the decision? Sometimes with our best effort at reviewing the upcoming weather we find that the TAF just isn't working out and the weather is worse than expected. Really the only safe decision at that point is to either turn around or make a landing at the nearest airport and call for a ride. Neither of those are easy, psychologically, to do. We have probably promised ourselves or others that the trip will be completed as planned.

One day about 15 years ago I was flying my wife and another couple to Florida. The TAF called for the

weather to be VFR all the way. In Florida there was a possibility of storms crossing our path, but the exact time of those storms wasn't certain. So, we launched towards Florida. About the time we reached Savannah it began to look grey ahead and since I didn't have any radar picture in the plane, we called Flight Service and asked about the weather on the route. Turned out that the possibility of Florida storms was now a certainty, and I chose to not continue. The forecast had gotten worse rather than better. So as a consolation prize, we landed at Savannah, had lunch, and flew back home.

It wasn't what we wanted to do but it was the right choice. You must be prepared to make a change like that and in my case the couple flying with us had been alerted to the fact that the weather might be a factor.

Scenario Based Flight Training

The idea of scenario-based flight training (SBT) is to attempt to make flight lessons with a goal. You must learn to fly the maneuvers to the required standards to pass a checkride but when you are flying in the real world you must mix the ability to fly with the ability to work in the restrictions of the moment. You need to be able to make decisions as a flight progresses and to make

a reasoned and realistic response to unexpected events. We use cross-country flying to unfamiliar airports to allow a wider range of experiences so the instructor can assess the pilot's ability to cope with a changing environment.

As a student you are asked to make decisions about the weather for a cross-country flight. Any cross-country flight where the student is the main decision maker for altitude, route, destination, and pattern entry allows the student to work through a scenario of possibilities. Your instructor may have you fly into the traffic pattern of an unfamiliar airport and ask you to make all the decisions.

If you are an instructor, then scenario-based training is something that you probably already do without realizing it. Every time you ask a student to plan a flight or fly you around the traffic pattern or even just taxi to the runway you are using the opportunity to see how the new pilot adjusts to the situation and makes the right decisions. Development of pilot judgement requires that the pilot make decisions that are not rigidly guided by the instructor.

Probably the main skill to be taught and tested is situational awareness. Early flight training is goal based, it's just the development of a particular maneuver. Once the maneuver instruction is done and mostly

mastered then situational awareness becomes dominant.

Some questions to ask for placing more SBT in a flight include:

- Should we fly today? Why not?
- How would you use the GPS to get us to X?
- How would you use the VOR to get us to X?
- Our navigation equipment has failed. How could we get to X?
- If the airport lights fail while flying at night, what would you do?
- How much runway will be needed to take off, or land, if the temperature is X?
- If something goes wrong on your next solo cross country flight, what would you wish you had done in advance? What would you wish you had in the plane with you?

As student pilots we need to be able to use technology to our advantage, be competent to make decisions and fly with a safety mindset with our head both inside and outside the airplane.

Question of the Quarter

What year did commercial jet service begin? Two extra points for the airline and the type of plane.

Answer:

On May 2, 1952, the British Overseas Aircraft Corporation (BOAC) began the world's first commercial jet service with the 44-seat Comet 1A, made by de Havilland, flying paying passengers from London to Johannesburg. The trip took 23 hours and there were five stops. A ticket on one of the flights cost a staggering, \$8,000 (in current dollars). Unfortunately, this type of airplane suffered three high profile crashes caused by structural fatigue. All were grounded. In 1953 the Comet 2 was launched and in 1954 the short-lived Comet 3 followed soon after by the Comet 4 with

commercial flights resuming in 1958. The Comet 4 (cabin pictured below) was replaced by most operators by the new Boeing 707 or Douglas DC-8.



You just learned something new.

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