



**T-CRAFT  
AERO CLUB**

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MAY

2015  
**NEWSLETTER**

Volume 12, Issue 5

## Density Altitude

Article Provided By Jim Hudson

### Density Altitude

## Turns Bold Pilots into Old Pilots .... If you Survive !!

It's that time of the year as the temperatures warm up to review the nemesis to us pilots— **Density Altitude**. It won't be long before we were in the 90's and a couple years ago it had almost reached 100°F in early June. At that time, Caldwell was reporting a Density Altitude of 5200'. McCall reached 77°F at 6 PM, resulting in a DA of 7150'. Many of you have seen the effects of DA (along with some poor decision making) in the 2012 Bruce Meadows accident on YouTube. If you want to see a great example of the effects of DA, watch this video: [Bruce Meadows Accident](#)

Here are some things to keep in mind as Density Altitude goes up:

- Power is Reduced
- Lift is Reduced
- Prop performance is reduced

Resulting in:

- Longer Take off Distance.
- Climb performance reduced
- Longer Landing distances
- Lighter loads. Carry loads appropriate for the mission, may need to be less than gross.

A normally aspirated engine loses approximately 3.5% BHP per 1000' increase in DA from Sea Level. So if you were leaving McCall at DA 7150', the 230HP C182 would be putting out 75% available HP on take-off or 173HP. Our 160HP C172's would be at 120HP, just barely higher than a C152 at sea level. That assumes that you are leaned for maximum performance.

### Takeoff Rules of Thumb:

- A 10% increase in gross weight results in 20% increase in takeoff distance.
- A 10 % decrease in power will increase takeoff distance by 20%
- At a given gross weight, each 1000' increase in DA will cause a 10 % increase in takeoff distance. Continued on page 2.

Continued on Next Page

### SCHEDULED EVENTS

#### MAY/JUNE

| S  | M  | T  | W  | T  | F  | S  |
|----|----|----|----|----|----|----|
| 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 1  | 2  | 3  | 4  | 5  | 6  |
| 7  | 8  | 9  | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |

#### ⊕ General Membership Meeting /

*Last Membership Meeting for the Summer*

May 26, 2015 @ 7pm

Location: T-Craft Hanger

#### ⊕ T-Craft Board Meeting

June 9, 2015 @ 7pm

Location: T-Craft Hanger

#### ⊕ Garden Valley Fly-In

Saturday June 13th 7:00 - 13:00

Garden Valley Airport

**WELCOME  
NEW MEMBERS!**

Jason Jesser  
Len Buchanan  
Duane Widmyer  
Warren Kouba  
Brian Paige

#### NEWSLETTER CONTRIBUTIONS:

Please send your photos & flying stories to [1berto@cablone.net](mailto:1berto@cablone.net) for inclusion on future issues.



Membership Status

**73**  
MEMBERS

Sponsor a  
New Member  
& Recieve  
1 Hour  
Flight Credit  
(C152)



"There are old pilots and there are bold pilots, but there are no old bold pilots."

## Membership

By Jim Hudson

Membership: Some members have asked why our membership has been on a dramatic increase of 16 new members so far this year. Well, I'm not sure, but here is a brief summary. We've had three members who fall into the category of "rusty pilots", have flown several years ago and decided its time to get back into the air. We've had four new student pilots. Two members were former T-Craft members who are able to join again. Three others are current pilots moving into the treasure valley. Most new members have found us via our web page, and a couple others have been referred by current members. There are at least four potential members who have contacted me with serious interest,

that fall in similar categories. I believe the improved economy is definitely helping. The Champ has definitely sparked some interest and the word is getting around that we have it. We have one new student member that will be using it for his primary trainer. We have a great club, great aircraft, and reasonable rates. The best marketing tool is word of mouth, so keep telling your friends, associates about our great club.

## Garden Valley Fly-In.

Saturday June 13th 7:00 - 13:00  
depending on weather  
Events: Club sponsored Breakfast,  
Spot Landing and Flour Bombing  
Contest's, Free BC instruction  
(depending on instructor and aircraft  
availability).

The event starts on a unofficial basis  
Friday afternoon or early evening for  
those who fly or drive up to camp  
out. Only tents are allowed in the  
camping area.

## DENSITY ALTITUDE

Continued from page 1.

Don't forget to lean properly for maximum power and also proper tire inflation – every little bit helps. We have a compressor in the hanger and a tire gauge near the squawk sheet clipboards.

This is the time of the year to dig out the POH and review takeoff, rate of climb and landing performance numbers and the appropriate takeoff and landing procedures and speeds, especially at higher elevation air strips. If you haven't flown with a plane at or close to gross weight, grab some bodies or gear and load it up. Then try some take-off's, landings where you know you have plenty of room and see the difference. Compare your calculated distances to the actual you obtained. Also if you've never done stalls near gross weight, try it, you will notice a more abrupt break, and more vertical feet lost in the recovery. We should become very familiar with our aircraft in all conditions, so now is the time to refresh your skills with respect to DA and the hot weather coming.

Were all getting old enough – let's not be bold also.

A quick reference chart provided by the Idaho Division of Aeronautics. This reference chart "should" be in each aircraft, providing they didn't grow legs.

See density altitude chart at the end of the newsletter .

# SQUAWKS AND Rates

Always check current squawks on Master Schedule & Hanger Wall

**N1227G**

\$55 / Hour



Lots of activity with the new little bird.

**N67375**

\$61 / Hour



An economical and fun aircraft for two.

**N4464R**

\$83 / Hour



The best initial training craft for the private pilot license.

**N13686**

\$85 / Hour



A great IFR training bird.]

**N1891X**

\$123 / Hour



Back on line after a winter of hibernation.

**N9989E**

\$126 / Hour



A beautiful bird to fly.

**N7593S**

\$126 / Hour



This is a long range aircraft. With the Garmin 430 and the autopilot this is a comfortable aircraft to fly any where.

**SPECIAL THANK YOU**

A special thank you to LAURA DAWSON ROSS for her assistance in the creation of this news letter.

**Monthly Membership Dues \$70**

**WORRIED?**

Aircraft late?  
Didn't call as planned?  
Did not arrive at their planned destination?

**Call Idaho State Communications  
208-846-7600 or 800-632-8000**

1. Ask for Aeronautics.
2. Tell Dispatcher: "I wish to report an overdue aircraft."
3. Leave your contact information.



**FLOWN PILOTS  
FLOWN PLANES  
BILLED PLANES**

**Top 3 Most Flown Pilots**

1. Preston Rufe
2. James Patterson
3. Bill McGlynn

**Top 3 Most Flown Planes**

- |           |          |
|-----------|----------|
| 1. N4464R | 35.5 hrs |
| 2. N13686 | 30.3 hrs |
| 3. N7593S | 26.0 hrs |

**Top 3 Most Flown Pilots**

- |           |        |
|-----------|--------|
| 1. N7593S | \$3276 |
| 2. N4464R | \$2947 |
| 3. N13686 | \$2576 |

**MAY 2015**

**COMPLETED BFR'S**

**ACCOMPLISHMENTS**

## THE NEW AERONCA CHAMP

Aeronca 7AC Champ, Checkout at T-Craft  
April 20, 2015

James Patterson



Figure 1: 7AC in the hangar, ready to go...

I had the opportunity to check out in the Aeronca 7AC Champ this month with club-approved instructor, Jerry Terlisner. I have a modest amount of tailwheel time in several different types, including the Champ and Citabria and have flown with Jerry many times, so I felt pretty comfortable in the checkout. Weather for the day was bordering on *ideal*. Temperature was about 70 degrees, barometric pressure according to the AWOS was 29.83, and winds were out of the Northwest, 330 at approximately 5 – 7 knots.

Not having had an orientation previously to the club's champ, N1227G, I arrived early with the POH and checklist and proceeded to do a fairly thorough walk-around inspection. I was impressed with how nicely the aircraft has been prepared by the mechanic / maintenance group. Everything looked very good – all controls operating properly and every nut, bolt, and kottter pin was in place where I expected. Everything was pretty clean, although some dust had accumulated on the windscreen, etc. so I cleaned those up. The interior cockpit layout had a few new items for me – location of the carburetor and location of the magneto selector switch. There was an underneath location of one of the fuel drains which took a little energy to check.



Figure 2: Fuel port, underneath the engine cowling

I was pleased to find a tailwheel configured tow-bar. My experience with tailwheel aircraft such as the champ is that they *can* be maneuvered using just the handgrip on the aft portion of the starboard fuselage – but that a tailwheel tow-bar is much easier and safer – it is easy for the ground-handler to observe both wingtips simultaneously while pulling the aircraft into the hangar. Also, it leaves the tailwheel in the proper position without having to maneuver the tail inside the hangar to get the tailwheel into a trailing position.

Once situated in the aircraft for engine start, the process was fairly straightforward and familiar. Master Switch was checked off... heel brakes were confirmed "on" with heel pressure. Carburetor heat was set cold (the location of the carb-heat control is on the back, left side from the pilot, near the main fuel shutoff) I then set the magneto selector to "BOTH" and the mixture was set to full rich. I primed twice and set the throttle to about ½" inch open, called "Clear" and switched both sides of the master to "on." The start button, located at the top left of the panel was pushed with my right hand, so my left hand could manipulate the throttle. The starter was quite strong, sending the prop around very quickly and capably. After one quick pump with the throttle, the engine started easily. I noted the oil



Figure 3: Panel and cockpit layout

pressure came up to between 30 and 50 very quickly, and stayed there for pretty much the whole flight. I set the RPM to about 1000, and that seemed to be a good balance between the right “sound” for the engine and a nice walking pace taxi to the runway. I leaned the mixture for taxi (this ended up being about “two fingers” extension on the mixture control) and proceeded toward Runway 29.

Observing for the wind, I took the opportunity to do a few S-Turns to check the responsiveness of steering, which was very easy and predictable. At this point, I did notice that the airplane seemed to be sitting a bit low on the right oleo strut. It wasn't very pronounced, but was noticeable. I assumed it was a compression issue that would right itself once the weight was off of the strut and the airplane was in the air. Later, that would turn out to be a bad assumption. (Note, the spring in the right strut was found to be weak.

Both right and left strut spring/shock assemblies have

been replaced) Runup was also brief and straightforward. Controls were free and correct with plenty of room for the stick to maneuver. On the ground, the elevator was very light and moved freely. I set the overhead trim to a slightly nose-down condition (just forward of neutral) in anticipation of take-off with an adult



Figure 4: Lower port side panel layout

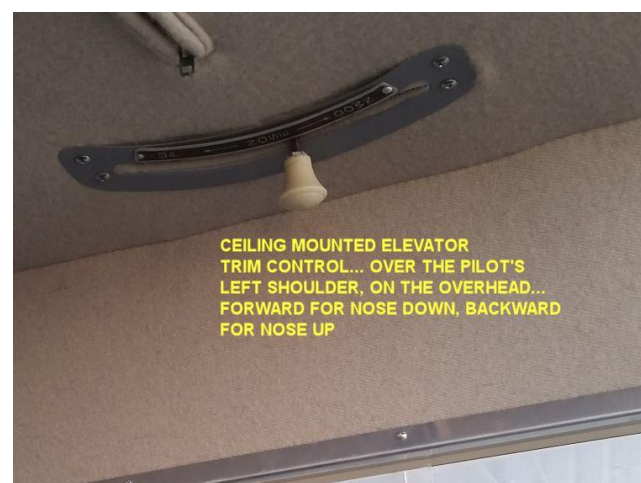


Figure 5: Overhead elevator trim control

passenger in the back seat (and 10 gallons of fuel in the main tank). Adding a little mixture, I ran the engine to 1,700 RPM per the checklist while ensuring we had good brakes on. After a normal engine check, we returned to 1,000 RPM and prepared to depart.

Incidentally, it's worth noting here that the radio intercom and radio communications in the aircraft were very clear and easy to operate – no problems at all with operating the small COM unit or the PTT (push-to-talk) switch in the stick. I did a radio check and two responders answered 5 by 5, L/C.

On the runway, I centered up and checked the direction of the wind... still gently out of the North, so I added some right aileron to counteract any breeze and began a smooth advance of power with the stick forward. As the speed came up quickly I noticed that there was a tendency to drift right, even with more neutral aileron and active feet on the rudder. The tail came up at about 33 to 35 mph, and rotation at 45 mph was very smooth and natural – really, the plane simply flew off of the ground and we began a gentle and slow climb at

about 55 mph. There were few surprises here – the Champ was very stable and predictable, but generally responsive to control inputs. I did need a small amount of right rudder during the climbout, but nothing unusual.

One thing I noticed *right away* was that at full power, I had to keep a close eye on the elevator trim as it continued to creep back toward a neutral position. This was even more pronounced in cruise flight at 4,000 MSL. At approximately 2300 RPM, I had to hold my hand on the elevator trim to keep it forward, or I would have to push forward with more force than I cared for on the stick. It was discovered later that the friction knob for the elevator trim is accessible through the zipper access in the headliner next to the trim control.



Figure 6: attitude in a falling leaf stall

Following a series of stall and slow flight maneuvers, I proceeded on to several coordinated turn practice attempts, dutch rolls, and some simulated landing patterns on a farmer's road to the South of Nampa. During the steeper turns, it was very easy to keep the aircraft level and coordinated, but as expected, it did take a fair amount of rudder.

Finally, we proceeded to Caldwell for several passes around the pattern for landing practice and familiarization in the Champ. I won't say that the Champ

is difficult to land... nor is it easy – but it does demand a lot of attention to all of the controls at once.

Once in the practice area, I slowed the plane to about 45 mph and then began a series of slow flight maneuvers and stalls. The very gentle break in the stall seemed to occur at about 35 to 38mph, although I couldn't keep a close eye on it as I was focused on the coordination of the maneuver. The handling characteristics were very predictable and docile. In one case, I was able to hold the airplane in a neutral, falling leaf stall with very little effort and with easy rudder management, there was no tendency to fall off to one side or the other. In the falling leaf stall, the nose was only about 5 degrees down below the horizon, very gentle indeed.



Figure 7: Turns to left and right were natural



Figure 9: On final for 30 Caldwell

Flying the pattern was very straightforward. By midfield on the downwind, I had the power set at approximately 1800 RPM and was indicating 68 to 70 mph at that point. I had carburetor heat on and slightly nose up trim set. Everything at that point was very stable and easy to fly. Just beyond the numbers, I began pulling back the throttle until it was really idling at about 1300 RPM, at which point a comfortable descent rate was established. There is no vertical speed indicator, so I was just flying the wing and sight picture. By the base leg turn, I had targeted 55 mph indicated, and by final I had reduced this to about 50 mph with a little addition of nose up elevator trim. Over the numbers the throttle was essentially at idle and I was using

pitch for speed control, targeting 45 mph. In the flare, we settled to a three point configuration and touched down at about 40 mph. Here we ran into a little trouble with the oleo strut on the right side – or maybe it was the left...

essentially, the aircraft seemed to initially touch down evenly, but then seemed to settle on the right main gear more heavily – causing a bit of yaw in the rollout. A little shake of the stick brought the left oleo down as well, but there

remained a noticeable cant to the right. With this bit of information still in mind, we proceeded to fly several more landing approaches and “Stop & Gos” without any real difficulty. The wind was very favorable, which is always a nice thing for a tailwheel flight.

Finally, we wrapped up our approaches at Caldwell and returned to Nampa – after the long, wide runway at Caldwell, the Nampa runway certainly looked a bit smaller and narrower, and there was a bit more crosswind, but not enough to really make a difference. It was a fairly similar landing process at Nampa.

In all, the aircraft was a real pleasure to fly with few surprises and was frankly quite forgiving to mistakes. It is, of course,

ssllloooooowwww... The trip from the practice area to Caldwell gave Jerry and me plenty of time to catch up, and for Jerry to talk me through all of the landing procedures several times. And that was all before crossing Lake Lowell... At cruise power (about 2300 RPM), our fastest indicated airspeed was 80 mph, and during that period I was manually holding the nose-down trim just about all the way forward. The forward nose trim may have been needed due to our weight / balance, but I had to hold it forward manually or it would creep back. Again – this could be an operator education opportunity from more experienced Champ pilots. The wing fuel tanks are still not being used until further notice, so we only had the 10 gallons in the main front tank. I checked the fuel after the flight (1.3 hours on the Hobbs) we had about 5 gallons remaining, for about 4 gph fuel burn. I had expected about 5 to 6 gph fuel burn, so this lower burn was a surprise. I had leaned using a standard approach (RPM drop, then richen the mixture until just over peak). The EGT was reading very high for that procedure, so I was probably flying a bit richer than I thought necessary, but still had a very low fuel burn compared to expectations.

I put the plane away and gave it a bit of a post-flight rubdown/bath. It’s a beauty – I really enjoyed flying her !  
Follow-up comments – Jim Hudson.




Figure 8: 3 Point Attitude

rookie

Subsequent flights by myself and Gordon Hall have found the fuel burn to be in the 5 gph range during training flights, lots of touch and go's. From the C150 POH (same engine that we have in our Champ) sustained cruise flight at 71% BHP, with proper leaning, results in a fuel burn of 5.5 gph.

The wing tanks fuel flow issue has been resolved and now we are able to use the wing tanks, for an additional 5 gal/tank. Tailwheel Currency requirements are stated in our policy. Members are required to self police this policy if you fly the Champ. In order to help track your currency, a field has been set up in Schedule Master to enter your expiration date. In SM, click on the top bar "My Account", then My Profile, then the Status tab. Enter your expiration date in the Tailwheel Currency Expire box. You will be notified 15 days prior to your expiration date.



|          |            |               |            |      |
|----------|------------|---------------|------------|------|
| Schedule | My Account | Resource Info | Group Info | Help |
|----------|------------|---------------|------------|------|

**User: My Account** Save Refresh

|         |                |        |             |          |
|---------|----------------|--------|-------------|----------|
| Contact | Pilot/Personal | Status | Preferences | Password |
|---------|----------------|--------|-------------|----------|

### Club-Defined Fields

|   |  |  |   |
|---|--|--|---|
| <b>Backcountry Level</b><br><input type="text"/>              | <b>Membership Class</b><br><input type="text" value="Class II"/> | <b>Upgrade Date</b><br><input type="text" value="01/09/07"/> | <b>Resignation Date</b><br><input type="text" value="1/10/2009"/> |
| <b>Membership Fee</b><br><input type="text" value="800.000"/> | <b>Inactive ? 1 = yes</b><br><input type="text"/>                | <b>Social Member? 1 = yes</b><br><input type="text"/>        |   |

### User Status

*(Blank dates will be handled as expired unless marked Not Applicable. Any fields in red will prevent user from scheduling.)*

|   |   |   |
|---|---|---|
| <b>Flight Review</b><br><input type="text" value="7/31/2016"/><br><input type="checkbox"/> Not Applicable | <b>Medical</b><br><input type="text" value="6/30/2015"/><br><input type="checkbox"/> Not Applicable | <b>Tailwheel Currency Expir</b><br><input type="text"/><br><input checked="" type="checkbox"/> Not Applicable |
|---|---|---|

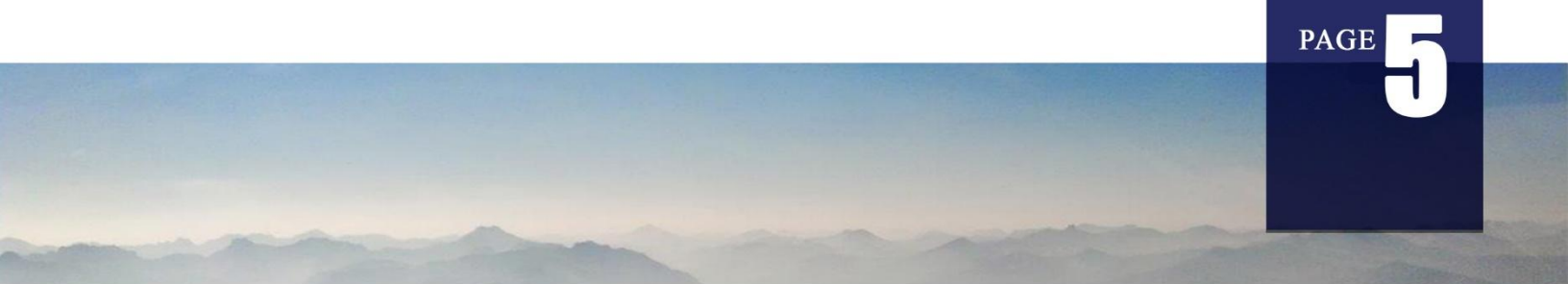
### Suspend/Retire

Suspend from All access  Suspend from entering new

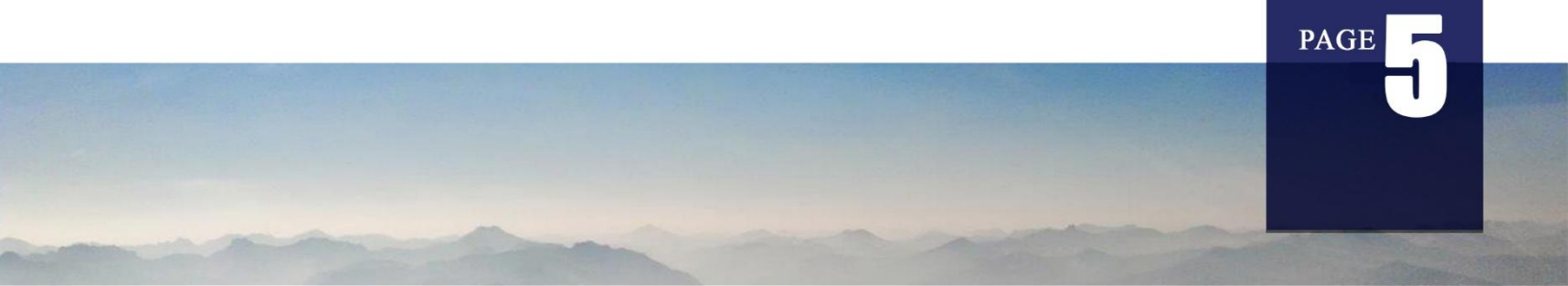


A special thanks to everyone who turned out for the plane wash. I have included a few pictures of the participants and will add more as space allows. Even if your picture is not here, your efforts are appreciated.









# DENSITY ALTITUDE:

*Have you checked your performance today?*

(OAT)  
Outside Air Temperature

| * (PA)<br>Pressure Altitude Ft. | 0C   | 5C   | 10C  | 15C  | 20C   | 25C   | 30C   | 35C   | 40C   |
|---------------------------------|------|------|------|------|-------|-------|-------|-------|-------|
| 2000                            |      |      |      | 2480 | 3080  | 3680  | 4280  | 4880  | 5480  |
| 3000                            |      |      | 3120 | 3720 | 4320  | 4920  | 5520  | 6120  | 6720  |
| 4000                            |      |      | 4360 | 4960 | 5560  | 6160  | 6760  | 7360  | 7960  |
| 5000                            |      | 5000 | 5600 | 6200 | 6800  | 7400  | 8000  | 8600  | 9200  |
| 6000                            |      | 6240 | 6840 | 7440 | 8040  | 8640  | 9240  | 9840  | 10440 |
| 7000                            |      | 7480 | 8080 | 8680 | 9280  | 9880  | 10480 | 11080 | 11680 |
| 8000                            | 8120 | 8720 | 9320 | 9920 | 10520 | 11120 | 11720 | 12320 | 12920 |

Density Altitude (in red)

**Rule of Thumb: For every 1 degree C, Density Altitude increases 120ft**



*How will a hot and humid day affect your airplane?*

- It will increase your take-off distance
- It will reduce your climb performance
- It will increase your landing distance

Refer to the performance section in your airplanes Pilot Operating Handbook (POH)

**Enjoy your Fight in Idaho.....safely!**

*Always Safety First!*

Density Altitude Calculator

Derived from US National Weather Service Formula

\*Obtain PA at airport by setting 2992 in the Kollsman window of the aircraft altimeter

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