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HOW DOES DENSITY ALTITUDE AFFECT YOU?

By Marjorie Bachman, ATP, CFII, MEI

This is the season of high Density Altitude. When we listen to the weather before takeoff, we are often told the density altitude is around 1,600 feet at WVI. What does that mean to the general aviation pilot?

Density Altitude is defined as the pressure altitude corrected for nonstandard temperature. From a practical standpoint, **DA is the altitude your aircraft "feels" like it is operating at.** Density Altitude is the important number for determining aircraft performance.

Three factors increase Density Altitude:(1) increased elevation, (2) increased temperature & (3) increase in water vapor in the air. All three factors cause increased spacing between the air molecules, resulting in thinner air (decreased air density), and increased Density Altitude. The wings need to fly at a faster True Airspeed to produce the same lift and Indicated Airspeed. Therefore, with increased DA, we fly our regular IAS but the increased TAS results in a greater Ground Speed,

↑ elevation, ↑ temperature or ↑ humidity cause ↑ spacing between air molecules
⇒ THINNER AIR (↓ air density) ⇒ ↑ DENSITY ALTITUDE

High Density altitude adversely affects the performance of the engine, prop, wings, and control surfaces. Normally aspirated engines lose significant power. Control surfaces are less responsive to control forces.

Increased Density Altitude results in the following:

- (1) **Increased ground run** distance on takeoff
- (2) **Decreased performance** on climb out
- (3) **Increased landing rollout** distance
- (4) **Faster groundspeed** in the traffic pattern

To calculate the effects of increased DA, enter your POH performance charts with Pressure Altitude (field elevation corrected for nonstandard pressure). The charts normally take into account the effects of increased elevation and temperature, but not increased humidity. **High humidity can reduce power by as much as 7%.**

Prior to departing a high-density altitude airport in a normally aspirated engine aircraft, you should lean the mixture to achieve the optimal fuel/air mixture. Check your POH. **While preparing to land at a high density altitude airport,** remember that your increased Ground Speed, due to increased TAS, may cause you to overshoot final, putting you in a **potential low altitude, stall/spin scenario.** Start your turn early to final or fly a slightly wider downwind.

How to beat increased DENSITY ALTITUDE:

- (1) fly early or late in the day when temperatures are cooler
- (2) fly as light as possible

To help you understand Density Altitude, go to the following website and take the Density Altitude Quiz:

<http://www.aopa.org/Education/Safety-Quizzes.aspx?ipp=100>

MONTEREY BAY ACADEMY AIRFIELD (CA66); Update

Information provided by Bob Carr

Ocean Shore Aviation, the organization behind the airfield at the Monterey Bay Academy, added an extra 400 feet of grass in September, and report that the current airfield has been growing in nicely. With the help of donations from Bob and Karen Carr, and others, 160 sprinkler heads and associated pipe were added in an effort to ensure a healthy airfield for many years to come. Ocean Shore Aviation also formed an advisor board called the *66ers Flying Club*, named after the titled airstrip-CA66. This group was formed to manage future events anticipated to take place on the bluff, and make flying here even more fun. Ocean Shore Aviation would like to remind people that this is a private airstrip, is open to people who are in good standing, and hope to provide an airstrip for pilots and their friends to come and share in many good times. Things are coming along, but they're doing it in a low-key fashion. They just want pilots to come and be a part of their pilot community.

WAAC Meetings and Progress

Dan Chauvet

WAAC Member representing WPA

The **Watsonville Airport Advisory Committee (WAAC)** meets quarterly. It's a conduit for communication with the City Manager. It's a forum for exchange of information and ideas between members and their constituents, and the Airport Manager. The WAAC is a committee that gives advice; it's not a commission that has a decision-making role. The bylaws include safety and noise issues, operations and airport economics. Members are airport supporters from the three aviation organizations, a representative for fixed based operators, a City of Watsonville resident and one from the County. Members of the public are welcome to attend meetings and share their views. Next meeting: 10/09/13, 1630 hours at the EAA/WAEC building.

The last WAAC meeting agenda (July 10th) included the airport budget, removal of a metal building and power-line on the approach end of runway 2, trimming trees north of runway 20, municipal code updates, and more. Some specifics are:

Airport Budget

The airport budget was discussed with the focus being on the new 4.7 million dollar airport debt and the \$223,501 consolidated services item. Of the 4.7 debt about 10% can be accounted for. The remainder needs to be documented as to when, how much and what for. According to records, the final 2006-2007 airport adjusted approved budget, it was 2.1 million in the black. So 4.7 million accrued since then? A past diversion of airport enterprise funds to the general fund, amounting to 1.6 million plus interest (est. 2.4 million) could offset a debt, or should be paid back.

Consolidated services include charges to the airport for human resources service, risk management, billing for rents and leases and other services. Almost a quarter million dollars is a lot of money. The WAAC needs to see an itemized list of estimated costs. When the cost to enterprise funds rise, rates go up for citizens; it turns into a quasi-tax.

At the September 10th council meeting, staff proposed a charge of \$100,000 to each of the enterprise funds to update the city financial management system. The council vote 6-1 to approve that. If it were prorated according to the whole city budget, the charge would be about \$45,000 for the airport enterprise fund. So wouldn't the \$55,000 difference be a loan to the general fund (at 2.1% interest)?

Airport Safety

Several years ago the city installed two metal storage buildings, one off the departure end of runway 20 and another off the departure end of runway 26. The State's Airport Land Use Planning Handbook contains detailed data regarding accident-location. The buildings are both located in runway safety zones 2, in high-risk areas.

Some years ago FAA grant money was provided to purchase land south of the airport, across the freeway. The purpose of the grant was to enhance safety, to put the land under airport control. The city installed a metal building on the airport's approach end of runway 2. When you take the Airport Boulevard Exit coming from Santa Cruz you can see the building on your right. A security fence surrounds it (installed after a break-in). After planned runway extension, that building on the approach end of runway 2 will be located in runway safety zone 1, or runway protection zone (RPZ). No buildings are supposed to be placed in the RPZ. Then a power-line was run from the building to the golf driving range.

Airport Manager Rayvon Williams said the building on the departure end of runway 20 would be removed in September. That includes the power-line running from the building to the golf driving range. The wire crosses the aircraft departure path and approach path. An aircraft departing to the south had an engine failure. On the forced landing, the aircraft hit this power-line. Luckily nobody was killed, but the aircraft sustained considerable damage. *(Editors note: The metal building has been removed since this article was originally submitted).*

In addition, the Airport Manager said that wires off the approach end of runway 20, along Buena Vista Drive, plan to be run underground. A Cessna 310 hit these wires some years ago. Anytime airport safety is improved, it's good news.

This focus on prioritizing and accomplishing projects that improve safety and

improve utility is a positive. The airport enterprise fund budget situation is unresolved and needs further examination and resolution.

Current Status of the General Plan 2030 Update Litigation

Dan Chauvet
Secretary for Legal Affairs

The lawsuit (December 2012) involving the General Plan 2030 update could have been resolved by a decision of the city staff and then the Watsonville City Council, based on the May 15, 2013 mandatory pretrial settlement meeting. After interchanges between attorneys, staff and council, they decided not to do a settlement agreement. Then the staff and council proposed mediation. After more talks between attorneys, staff and council, they decided not to do that either. So today it looks like litigation will proceed. As you can see, it's a moving target. "Status" indicates not much movement.

Way down the road, in the end, final approval of the general plan will be by the County Superior Court, as required by the previous court decisions. Somewhere in this process is another important prerequisite; that's the pending Caltrans Division of Aeronautics' general plan review, and possible content revision. In general, the litigation involves the same issues as the original 2006 lawsuit. In mid-2012 WPA representatives worked with the city-planning department staff and large improvements were made in text of the general plan. But differences of opinion in plan update content remained, and could not be resolved. These pertained mainly to land use on private parcels in high-risk areas, essentially on the airport, in runway safety zones 3 and 5.

Part of the update disagreement could emanate from differing views of the application of the appellate court decision. City staff and their consultant see the court requiring adherence to the general criteria in the California Airport Land Use Planning Handbook; whereas the Pilots Association's view is that only the best practices in the Handbook be contained in the general plan; and that reflects the appellate decision, as it applies in Santa Cruz County. This is based on wording ("no discretion" and "no pick and choose") in the appellate court decision. The city's decisions are based on obtaining their objectives—getting as much development as possible, anywhere. That appears to be staff policy. Part of that is getting break-even development (or more) west of the airport in Buena Vista. Some time ago, two former council members were overheard discussing plans for Buena Vista development. They agreed that neither the constraints of a voter initiative, or a court order, would cause them to vote for less than a break-even number of houses (approximately 2000). The General Plan 2030 passed in 2006 provided for 2,250 units. The staff wants a high number of houses, which means getting past constraints, such as voter initiatives and court-ordered alternative numbers. Not in the city formula is the health, safety, and welfare of existing residents and airport users. The current council majority seems to rubber-stamp what staff wants. For that reason the Pilots Association and Friends of Buena Vista are opposed to an

annexation. Solving the problems of development around the airport requires highlighting and deleting from the 2030 General Plan the proposed urban sprawl just west of the airport in the Buena Vista area. This revision would eliminate future conflicts involving building on prime farmland, environmental impacts (and new EIR), the impending water shortage, and not creating new noise and safety problems. Deleting Buena Vista is a solution that the vast majority of community members could easily support.

In essence, it's a simple choice. For the Buena Vista area just west of the airport, which do you choose: (1) maintain county jurisdiction with zoning for agriculture and very low-density development or, (2) the proposed future city zoning with high-density housing. With city zoning, runway safety zones would be surrounded with development; and pressure to infill would be immense. Based on upper city staff statements, they and developers are not changing their urban sprawl policy. That's even with city voters crushing Measure T (another annexation) by 75% to 25%. So let's not be naïve. Should the current general plan with Buena Vista annexation move forward, the future of the airport looks bleak, requiring high-level vigilance and continued bouts of expensive lawsuits.

Grants and Partnerships Fund Construction at Watsonville Municipal Airport

Rayvon Williams, Airport Manager

Projects ranging from building renovation to runway and hanger reconstruction are underway. The funding sources for the projects include grants from the Federal Aviation Agency and the State of California, as well as investments by private leaseholders.

During the past year, the Airport staff established successful working relationships with Federal and State agencies including the Federal Fish and Wildlife Service and California Department of Fish and Game to ensure endangered plant species found on Airport property are not adversely impacted. Staff also partnered with local environmental advocacy organization Watsonville Wetlands Watch. These partnerships led to a new Tar Plant mitigation strategy that allows airport construction projects to move forward while protecting critical habitat for an endangered species.

Taxiway Charlie Reconstruction

"The Watsonville Municipal Airport has three important construction projects in the pipeline over the next few months." said Airport Manager Rayvon Williams. "Chief among these is an \$800,000 reconstruction of a vital access point to the crosswind runway. Reconstruction of Taxiway "Charlie" is an important safety action which has been delayed for some time due to environmental challenges." The crosswind runway is used when weather conditions on the main runway are unfavorable for safe take-offs and landings.

The Watsonville Airport is home to the largest remaining population of fully protected species, the Santa Cruz Tarplant. The new multi-agency agreement allows for reconstruction of the 1,350 foot paved taxiway that meets FAA design standards while ensuring that critical habitat for the Santa Cruz Tarplant is not adversely impacted. "What's different this time around is the Airport has taken a dual approach to ensure we commit habitat mitigation and preservation while enhancing airport safety." Williams explained.

In January of this year airport management completed a formal FAA application for an Airport Improvement Program (AIP) grant specifically for infrastructure projects. Project specifications were developed, bid packets made available and by mid-August, Granite Rock Company dba Pavex Construction Division was awarded the contract by City Council for the taxiway reconstruction project. The work is slated to begin in October with estimated completion in December 2013.

The Watsonville Municipal Airport is home to the largest remaining population of the Santa Cruz Tarplant, which has bright yellow flowers, a sticky resin on its leaves to retain moisture and blooms in late summer after most native meadow plants have died back. The successful partnerships among regulatory and environmental agencies will ensure that both the City's Airport and its Tarplant population will have conditions to thrive. The new mitigation plan includes habitat protections measures such as sharing the Airport's seed bank population with Watsonville's Wetlands Watch "Tar Plant Hill".

United Flight Services

Within one hundred yards of the taxiway reconstruction is the planned new construction of a 14,500 square foot maintenance hangar by United Flight Services (UFS). UFS is investing \$600,000 in the building, which will be constructed on land leased from the Municipal Airport. The planning and permit preparation for the new hangar facility have been in the works for several years but as of late August the long-standing environmental concerns related to old underground fuel tanks have been resolved and the site is cleared for construction. Construction permits are close to final approval.

United Flight Services general manager Laura Mohler said the new hangar will replace the old trailer the business is using as an office and will enable mechanics to work on aircraft with a roof over their heads. "Getting the hangar built will be a huge advantage to all of us," Mohler said. Not only will the new facility improve the working conditions for our mechanics but is also expected to attract more business. Many pilots prefer to see their planes locked inside at night, Mohler said.

"We see the new United Flight Services facility as a key maintenance FBO (Fixed Base Operator) strategically located at the center of the airport." said Williams. "The new hangar and offices round out the offerings to based tenants, and will continue to bring maintenance dollars and employment to Watsonville. The UFS facility will continue to offer a range of aviation services, including aircraft inspections and maintenance, aircraft rental and flight instruction, but now in a modern and spacious facility.

Pacific Golf Centers

For over ten years the Airport Driving Range, located at 101 Ranport Road, has served as the only full service golf driving range practice facility in Santa Cruz County. The Driving Range serves a dual purpose as a recreational offering land as a clear zone or "safety buffer" during aircraft take-off or final approach to land at the Airport.

In an effort to bring more value and capacity to the Driving Range facility, airport management determined a different operating model was required. In previous years, the Driving Range partnered with various individuals to manage the facility. The results of these efforts were mixed and as a result airport management determined an outsourcing to a professional golf operation would be beneficial.

By "outsourcing" the driving range facility the Airport can achieve two important goals. Primarily, airport management can focus on its core responsibilities and reassign resources to day-to-day airport operations. Secondly the airport division can reduce operating and maintenance expenses and the on-going resource commitments.

In June of 2013 Airport Management developed a comprehensive Request for Proposal (RFP) to solicit interested parties to recommend the best solution to manage the Airport Driving Range facility while maintaining the "clear zone" property area. A number of interested parties requested copies of the proposal and surveyed the facility during a "Property Review" meeting.



"19th Hole" Tap House.

Pacific Golf Centers (PGC) was awarded a long-term ground lease by the Watsonville City Council and will begin a \$250,000.00 renovation project this October with a planned opening date of December, 2013. PGC will renovate the existing site resulting in a completely new and upgraded golf practice center, a golf-teaching academy, golf retail shop and a

"Pacific Golf Centers is excited to be in Watsonville. Our commitment to the community is not only identified by our level of investment but our willingness to sign a long-term agreement. We expect to be a partner with the Watsonville Airport for years to come," stated Pacific Golf Centers General Manager, Patrick Dean.

Reconstruction, construction and renovation--- that's a lot of activity commencing at the Watsonville Municipal Airport as the autumn season begins. By year-end, the airport will be safer, offer additional services and continue to be an economically viable part of the city, county and the national airspace system.

Events you may have missed over the past 3 months

Watsonville 49th Annual Fly In and Air Show (August 30 thru Sept. 1):

2nd Saturday continues to be popular...lowest fuel prices within 50nm; discounts at Props and you can get an opportunity to have your aircraft's personal property tax exempted.

Coming Events

WPA meetings & WINGS Seminars

- **OCTOBER 30** Managing West Coast VFR and IFR Weather
- **NOVEMBER** No Meeting or Seminar. Fly Safely. Enjoy the Holidays. ☐
- **DECEMBER** No Meeting or Seminar. **Work in progress towards a joint dinner with EAA, CAP, and Monterey Bay 99s.**

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