



CPA FLIGHT LINES



Are You Invisible?

By Bill Marvel

No, I don't mean invisible like a ghost which cannot be seen in a mirror. Nor do I mean invisible as with a composite aircraft that cannot be seen on radar. And I don't even mean lacking ADS-B out, which makes an airplane invisible in that system. Nope, none of those.



Bill Marvel, the RV-14 guy in Grand Junction

What I am referring to here is not hardware but people. I am assuming that if you are a member of the Colorado Pilots Association (CPA), you probably have aviation as one of your passions, if not the primary one. I assume that as a CPA member, you want to be involved in aviation to some extent, whether that is flying airplanes locally, traveling cross country in them, working on them, learning about them, meeting others with similar interests, or maybe even building a real airplane that you can actually fly. Somewhere in your psyche must be an interest in aviation if you are paying dues to be a member of CPA. Is that not a fair assumption on my part? *(continued on page 3)*



President's Message



We had our annual meeting at KBJC on November 9 and had the very great pleasure of honoring two people who have served the Colorado Pilots Association tirelessly and well for over 40 years! Walt and Terry Barbo have done so much for us for such a long time that it would be hard to enumerate their contributions. Those include the annual preparation of our membership directory, hosting meetings, serving on committees, and just generally doing what needed doing. Now they have decided to pass along some of their responsibilities to others but are not stepping away completely. Terry will continue as the chair of our membership committee with Walt's help as always. You will hear from her if you are late renewing! Walt is an active pilot who told us at the meeting that he has been flying for 75 years! That includes flying P38's in World War II. He is an inspiration to us all!

We also elected new officers at that meeting. I am your new president after serving one year as "co-pilot" or VP for immediate past president Bart Jones. Without Walt and Terry's help, we did not do the election process as smoothly as usual, so we are still looking for active participants, particularly for the role of Vice-President. Having served that role for one year, I can tell you it is a learning experience, getting to know the Board members and gaining appreciation of what the CPA does. Please contact me at president@coloradopilots.org if you would like more information.

My focus this year with the board of directors will be on solidifying our operations, improving benefits for members, and growing the organization. In addition, we hope to increase the number of flight training scholarships we give and improve how they are marketed so members know they are available. Please make any student pilots you know aware that there is help available for the high cost of learning to fly. And encourage your pilot friends to join the CPA. Share with them our beautiful new website at www.coloradopilots.org and be sure to add any aviation events you are hosting to our calendar which we would like to be a complete list of all that is going on in Colorado each month. We are also on Facebook, Twitter, and Linked-In. Post your best aviation pictures for all to enjoy!

I also had the unique experience in November of working at our booth at the Adams County 8th Grade career fair. Over 8,000 students participated in the event at the Denver Merchandise Mart, and a good number of them stopped by to chat about careers in Aviation and/or to try our brand-new Redbird Flight simulator. Delta Pilots Jeff Hinkle and Gabrielle Hoekstra came in full uniform and drew lots of curious kids. A fun event that made me appreciate the stamina of those who have to stand up all day in their work!

Marty Brophy, CPA President



Invisible *(continued from page 1)*

So why are some of you invisible? Webmaster Brian Garrett tells me that right now, of the approximately 650 members of CPA, some have yet to open a single email from the organization. Others have never even visited the website. These are known facts because the electronics involved keeps track of them. Many members have never attended a fly-in event, which to me is a highlight of the Association. So back to my basic question – are you invisible? Or related to that, do you know a member who is?

I unashamedly ask that question because my wife Marti and I were once invisible also. We joined CPA shortly after moving to Colorado following retirement 13 years ago. Our intent was to be active in the organization but life got in the way. In our case it was the unexpected bankruptcy of a Boise, ID company through which much of our retirement funds were invested. That mess, over which we had no control, lasted 7 years and sucked away a great deal of our time, our enthusiasm and a lot of money. Plus, we live out here in Grand Junction where some well-known hilly terrain to the east separates us from most of you. That said, we eventually worked our way through those problems and started going to CPA fly-ins about three years ago. What a hoot! There are wonderful people in this organization and they do everything to help with your aviation pursuits. Some organize weekend fly-ins (or fly-outs if you prefer) which everyone can enjoy. Every fly-in includes events of interest aside from actually using an airplane to travel from A to B. Flight Lines, CPA's monthly newsletter, is full of information about aviation, much of it pertinent to our own flying out here in the west including its unique challenges and rewards. Our website contains current information on topics of interest and future planned events. There are lunches, meetings, mountain flying training, parties and other means of becoming acquainted with your fellow members/aviators. Marti and I have seen none of the “us” versus “them” mentality which separates newcomers from old heads in some organizations. We've been welcomed into the Association as if we were life-long buddies with folks we had never met. You've all heard the mantra, “There are people to meet, places to go and things to do.” Well, guess what? CPA is a centerpiece of all three and you are a member of it!

Back yet again to my original question – why are you invisible? Don't have an airplane? Don't know anyone who does? Don't know any other CPA members? Would like to attend fly-in events except you're not a pilot but only an airplane enthusiast? Money tight right now? Between jobs? New baby? Ill spouse? I get it – we all do! Life happens. But if you remain invisible, how are others in CPA supposed to know you exist? How can anyone in the Association who is ready, willing and able to do so advance your situation if you are operating in stealth mode?

Here's my suggestion – tell someone about it, turn on the landing lights, the strobes and squawk ident! Send a note to the editor and say you want to fly. Go to one of the monthly meetings and announce, “I want to be involved in CPA events and need some help to do so!” You will be pleasantly surprised at the response. Some planes on our trips have an empty seat or two. Splitting costs makes flying more affordable to everyone involved and gives members who may not otherwise attend an opportunity to do so. You will make contacts with aviation minded people, one of whom may later become a future co-owner of an airplane



with you. In real life, few good things happen on their own – you can make them happen if you simply step up and reveal yourself and your interests to others who may be in a position to turn a dream into reality.

One thing is almost certain. If you remain invisible, it is highly unlikely your interests in aviation will be served by your membership in CPA or in any other organization. Speak up and someone will answer. And then you will GO FLY somewhere!



And just in case he's wearing a hat & sunglasses when you happen-upon him, here's another shot of Bill, the RV-14 guy.



You're Proud of Your CPA Membership— You know you are!

What better way to show the pride you have in your flying accomplishments and membership in the Colorado's premier aviation-related association than to wear and display CPA logo'd apparel and other daily-living products? It's been several years since the launch of the CPA Store at Lands' End. Yes, you can put the CPA "flying wings" logo on almost all Lands' End high quality merchandise and it's easy! CHRISTMAS IS COMING! It's time to let your significant other know what's on your wish list. Send them to the Lands' End website and let their imaginations run wild. There's plenty there for them too.

Here's step-by-step instructions of how to complete a logo'd purchase. If you have questions or problems Lands' End reps are available to make your buying experience easy. Just give them a call. As a matter-of-fact, if you just want to skip the online buying altogether, you can even order on the phone. 1-800-587-1541

Step-by-Step:

Once you're signed in to your account on the CPA website go to **"About Us"** and then select **"CPA Logo Merchandise,"** from there you'll be asked to either sign in or create an account. (Make sure and to set up an account as you then receive highly-discounted offers via email). Once you've completed this step you'll be on the CPA Store page. Select the type of shopping you want to do "Mens", "Women's", or "Promotional Products" and stand back. The entire Lands' End inventory is at your door.





Land's End - CPA Merchandise

Let's buy a CPA ball cap as an example.

From the CPA website homepage:

1. Click **“About Us”** then select **“CPA Logo Merchandise.”** Or you can click on the picture of two shirts surrounded by holiday goodies in the upper right-hand corner.
2. Log in/set up your account.



3. Under **“Men”** select **“Caps”**. Select the style, quantity, and color you want and then select **“Apply Logo”**.
4. Pick your logo size and placement location on the cap and select **“Add to Bag”**. You can then continue shopping or check out.

Wow! How easy is that! Your Christmas and birthday shopping just got a whole lot easier. Enjoy the experience!

Tip: Watch for frequent discount offers in your email. They'll save you a ton! Also, some items can only be purchased in larger quantities so don't be dismayed when you run across something that's priced for larger lots. Shoot, give them a call (1-800-587-1541). You probably will still be able to buy singles of that item.



Rural Airports Vitrally Important to their Communities

by Taylor Albrecht, Airport Liaison for KAEJ and KANK

The last two years have seen significant wild fire action here in central Colorado. Last year we had the Weston Pass and Chateau fires. This year the Decker fire south of Salida burned within two miles of the city.



The two Chaffee County airports played a vital role in fighting all of these fires. Last year the Central Colorado Regional Airport (KAEJ) in Buena Vista played host to many teams fighting both the Weston Pass and Chateau fires. This year, Harriet Alexander Field (KANK) in Salida proved invaluable to fighting the Decker fire.

According to Airport Manager Zech Papp, the Salida airport had between nine and fifteen firefighting aircraft active during some periods. Enough activity that they had to consider closing the airport to general aviation operations at times. The fire started by lightning in the Sangre de Cristo Wilderness area about nine miles south of Salida. In early October, a Type 1 team was brought in because fire conditions significantly worsened. In mid-October the airport hosted six helicopters, two fixed-wing aircraft and about 120 crew members for the entire helicopter tactical base.



According to an article in the Ark Valley Voice, Papp said the fuel sales was several times normal, which is a great benefit for the airport. In the article, Public Information Officer Terry Krasko said, "Having the Salida airport in such close proximity with adequate fuel available was well suited for the needs of firefighters, and a huge benefit for them."

Papp and the Airport Board are working on plans to improve the airport. The most important project is to extend the taxiway to the east to eliminate the need to have taxi-back operations and open up land in that area for hangar development.



We invite all CPA members to enjoy the wonderful scenery and fantastic airport accommodations here in Chaffee County. Beware of potential busy fire operations during those pesky wildfires.



FAA Training in Oklahoma City

By Bill Marvel

If you recall from the November edition of Flight Lines, Bill Marvel attended an FAA Training in Oklahoma City, October 16th and 17th. His story continues below:

DAY ONE

Most of us stayed at the Fairfield Inn at the Oklahoma City airport as pre-arranged by Ray. A couple of others planned to meet us at the FAA visitor center at the 8:00 AM designated start time. Some drove, some flew in on the airlines and two flew their own airplanes. A quick lobby intro of the hotel group members the first morning was followed by a shuttle bus ride to the FAA facility about 15 minutes away, where the usual X-ray, metal detector and driver license inspection rigamarole followed at the visitor's center. Our names were checked off on the FAA's list, so they certainly knew who was coming. Everyone in the class, both CPA and others, met as a group after security checks and we then drove to the training center in several cars while following an FAA employee.

At the center we were led to the classroom and had a quick briefing on the location of water fountains, bathrooms and where the cafeteria was located once lunch time rolled around. The tone was decidedly friendly and helpful as the instructors made it clear this was our classroom and we were free to take pictures, ask questions and look around at all the various "toys" in the adjacent room. Little did we know we would soon be involved flying them...

FAA employees Brad Tucker and Roger Storey led the instructor team, which would later include several others as that day and the following progressed. These two were just great, with the ability to combine teaching and humor, personal experience and many examples pertinent to the subjects covered. They were personable and down to earth and set the tone that this was going to be both educational and fun for all of us.

Brad was the point man for Day One and covered aviation physiology. None of the academic portion went so deeply into details as to be overwhelming but did delve into pertinent topics like the nature of the inner ear and its structure, how spatial disorientation occurs and how lack of oxygen affects pilots in several different ways. He covered things like Boyle's and Dalton's gas laws and how they impact the transfer of oxygen from the atmosphere to our lungs and body tissues. He also talked about carbon monoxide, the fact it is odorless and tasteless, and recommended that every airplane have a CO detector installed.

He made the point that it is not the availability of oxygen at higher altitudes that causes hypoxia (oxygen starvation) but the loss of pressure as altitude is increased. He explained that although the percentage of oxygen remains the same as we climb, the partial pressure of that oxygen is diminished so that eventually instead of breathing just the air around us, we need 100% oxygen and then pressurized 100% oxygen and ultimately, as in the U-2, full pressure suits (those needed for more than just oxygen). He talked through the insidious effects of a slow decompression as well as the stunning impact of a rapid decompression and the effect of each.

Brad formerly worked with U-2 pilots and their pressure suits while in the USAF and offered many examples, both from personal experience and from videos he showed, of the dangers involved with both oxygen starvation and spatial disorientation. Incidents with the U-2, F-16, Learjet, 727, Cessna 414, Bonanza, 737, Piper Comanche and T-37 were presented, some very sobering. One particularly stunning video was of an F-16's Heads Up Display (HUD) on a night training mission over Arizona. A pilot new to the airplane was flying it and was on the wing of an instructor's F-16 when the event started. We watched the recorded HUD and listened to the pilot's voice as he made a planned break from his instructor's aircraft and then immediately



lost control of the airplane in roll and pitched straight down. You could hear his confused transmissions, some 4-letter words and his elevated breathing rate in the oxygen mask. The instructor immediately and calmly told him to disregard the HUD, go back to basic instruments, level the wings and bring the nose up. Still disoriented, he did all of that followed by several large pitch excursions before finally regaining control of the aircraft. This was a sobering event that had a successful outcome but several other examples did not.

Another video showed an Air Force pilot in an altitude chamber at 35,000 feet, where the time of useful consciousness is minimal. Mask off, he was asked to identify cards from a standard playing card deck. He did OK for the first few and then got to the 4 of spades. From that point on, every card was the four of spades even when he was asked to confirm one that wasn't. Getting loopy happens faster the higher you go and seeing it occur to someone on video is stunning confirmation. But I would be remiss if I did not mention a few intervening and humorous videos of pilots being tested for g tolerance in a centrifuge at Holloman AFB in New Mexico. At 9 g's, people conked out with the strangest antics!

So much for initial academics. Next came the fun! Before lunch break on the first day we went to the adjacent room with all the “toys”. Notable were several cockpit flight simulators where the pilot sat in a commonly seen enclosure. There was also a Barany chair that is used to demonstrate how inadequate the human inner ear is when it comes to determining attitude in an airplane and why eyesight is so important.

A volunteer was requested and one of the female K-State students opted to strap into the chair. This was just a demonstration and we weren't all going to do it. But both the protocol that would be followed, and the anticipated results, were explained to all of us. She would be blindfolded and have ear protectors on to eliminate both audible and visual clues. She was asked to use her thumbs to indicate the direction of motion. Initially she recognized rotation to the right but then as the chair stabilized at a constant rate her thumbs went up to indicate no rotation. But then as the chair slowed to a dead stop she pointed left even though the chair was not rotating at all. A couple of other scenarios were set up using different positions of her head to indicate how poorly we as humans can identify our positions in space without visual clues. It was an eye opener (no pun intended).

Next were those “flight simulators” which were the biggest surprise of all! These nasty boxes looked like the standard enclosure capable of moving in all three flight axes and contained a seat, controls and an instrument panel. But unlike a flight simulator, this was a spatial disorientation simulator where yaw, pitch and roll were not controlled by the pilot but by a computer which moved the sim in ways known to create disorientation in our senses. Inside it was dark with standard IFR instruments illuminated. Pilot control inputs were accurately shown both on the instrument panel to the pilot and on a control display outside of the simulator to the instructor, but had no bearing on the actual motion of the simulator itself. We would be flying the sim via ATC commands and also have audio contact with the instructor outside. Three planned pilot head movements were briefed. One was picking up a pencil on the floor. Another was looking up and to the right as if to operate an overhead switch. Both of these movements were supposed to be done at normal speed. The third was to look at a transponder with eye movement only and then slowly move our heads to look where our eyes already were. The sim had many available programs for different disorientation scenarios but for the sake of brevity with our large group, we each experienced only two in the same flight.

The initial ATC clearance was to fly straight and level on instruments. But the sim itself was commanded to spin in yaw quite rapidly as soon as the training started. Inside, we just saw straight and level flight on the panel. With pitch, roll and yaw of the simulator being controlled by the computer (and affecting our inner ears), we received an ATC instruction to climb and maintain some altitude and turn to a certain heading. With that underway, the instructor had us do the three head movements, with enough time in between to have our senses somewhat stabilize. What a shock! I've been flying for 52 years and have experienced many of the flight instructor induced aircraft motions that are supposed to cause spatial disorientation while under the hood. None of them ever did much to me but in this sim I felt like I was in a violet spin at one time and pitching almost straight up another time. Knowing I had to recover on



instruments, which were telling me to do one thing while my brain was telling me to do exactly the opposite, was the purpose of that nasty box and it served its purpose big time! I have never experienced anything like that in an airplane and based on our training, I never want to. It was very easy to see how spatial disorientation takes so many lives when you get a chance to fly in this simulator. As an interesting aside, a camera focused on the pilot's face sometimes actually shows his head leaning in one direction while moving the controls in another as he fights off the tendency to follow body commands instead of panel commands. This is powerful stuff. But no, none of us got sick at any time in case you're wondering.

And it was only lunch time! The afternoon would feature our trip to the altitude chamber to experience hypoxia first hand, to learn our own symptoms, to undergo a rapid decompression and to see the immediate effects of getting back on oxygen again as it pertains to visual acuity and color recognition in a dark environment.

Lunch complete, we went to another floor in the training building for the “altitude chamber” ride. But this requires a bit of clarification.

In the past there was only one type of chamber – one that actually reduces pressure just as you would experience in climb in an unpressurized airplane. Such a device is heavy and complex, as it requires strong structure, thick plate glass windows, powerful compressors and tanks with numerous valves and safety features. There is also some physical risk to participants involved because of the rapid change in pressure that takes place. That is why an altitude chamber ride is about two hours long and starts with 40 or so minutes at normal surface pressure breathing 100% oxygen. Doing so removes nitrogen from the blood to avoid the same problems scuba divers might experience if they ascend too fast. Such chambers are still used for most military pilots but as far as I know, only one is available for those of us in the civilian world – the one in Oklahoma City. Everyone in our class was scheduled for this chamber, with the exception of three whose qualification requirements for their work did not need such training. Their needs were met by PROTE (Portable Reduced Oxygen Training Enclosure). In this device, there is no pressure change but oxygen is removed to simulate the effect of flying at about 29,000 feet without pressurization, just breathing ambient air. It never deviates much from that altitude and participants enter and leave through double doors to keep ambient air from entering. Because it is portable, PROTE is taken all over the country, including to Oshkosh and Sun 'N Fun and in early 2019 was at Centennial airport in Denver. Both devices allow one to determine his hypoxia symptoms but PROTE does not have the capability of doing additional things that can be accomplished in the chamber. But it can move through a large number of participants in a short time period, one of its most beneficial features. In five minutes, the entire flight has been accomplished since at 29,000 feet, only Sherpas from Nepal are not going to be without significant hypoxia symptoms. And since instructors in each device monitor the oxygen saturation levels of each participant via a sensor clipped to a finger, no one is allowed to stay off oxygen for longer than it is safe to do so. As was emphatically stated to each of us, this is not an endurance test to see who is macho enough to be the last one in the chamber to go back on oxygen. It is to learn one's hypoxia symptoms so that later on in our flying lives, if such a situation occurs, each participant knows he is getting hypoxic because he has detected one or more of those symptoms.

Finally seated in the altitude chamber with the door locked and sealed, we were each paired up with the student sitting directly across from us. We had seats, an individual quick don mask, oxygen controls for that mask and a mini headset through which to hear instructions. We also had a clipboard and pencil on which to record information later on. We were fully briefed on what was going to take place so there were no surprises. Two instructors were in the chamber with us and two more were outside watching through windows and operating controls. The walls contained color charts we could use to assess any loss of color vision or colors blending together as our time off oxygen increased, or conversely how quickly vision returned once oxygen did.

As mentioned before, our ride started with 40 or so minutes of just sitting in the chamber with masks on, breathing 100% oxygen. If needed for any reason, a student could select a switch position which forced pressurized oxygen through the mask since its normal operation required



a slight bit of suction to pull in each breath. A video shown through one of the windows taught us more about what we were doing and used up some of those 40 minutes.

Still on 100% oxygen and with everyone giving a thumbs up OK sign when requested, operators announced they were climbing the chamber at 3000 FPM to 6000 feet. Established at 6000 and with everyone confirming again that all was OK, we descended at 3000 FPM back down to ambient pressure. This quick climb and descent at a high rate assured that no one had any ear or sinus blockage problems affecting them. A level off sign from anyone at any time was enough to stop all altitude changes until instructors could help with any ear clearing problems.

Back at surface pressure, we removed the masks, knowing what was in store next – the rapid decompression. The chamber climbed again, also at 3000 FPM, to 8000 feet and stopped. This is a typical cabin pressure altitude in a pressurized aircraft. We all knew the 8000 foot stop would be followed very soon, without notice, of a decompression where chamber pressure was dumped, leading to an ascent to 18,000 feet in a matter of seconds. When that happened, we were told there may be a bang, that fog would form in the chamber, that it would cool rapidly and that the first task was to get our masks on right away. When the decompression actually occurred moments later, I don't recall any bang but did hear the sound of rapidly rushing air, followed by fog in the chamber and it getting very cold! We had 5 seconds to put the masks on but it took much less than that since the quick don system is designed to go into place rapidly just as its name implies.

With instructors there to confirm all was well with each of us and that oxygen was flowing properly, the chamber was climbed another 7000 feet, to 25,000, where we would get our first taste of hypoxia. Everyone on one side of the chamber removed his mask and the instructors started a timer. Each minute we were to use that clip board to record both our heart rate and oxygen level from the clip-on sensor on our fingers, show that sensor to our partner and then do some adding, subtracting, multiplying, crossword puzzles or a couple of other things printed on the clip boards until the next one minute interval approached. Our partner was to monitor us and write down anything he saw in our functioning that warranted being brought up later. Instructors watched our oxygen levels, with 60% being the lowest allowed before oxygen had to go back on. Someone may have lasted the full five minutes but most did not as once a level below 70 was seen, that person was told to go back on oxygen. But it was clear that even at 25,000 feet there were a few minutes where one could function before starting to get symptoms. One thing of note was that those of us from Colorado generally lasted longer than did those living at lower altitudes. But regardless, each one-minute check showed lower oxygen saturation levels and increasing heart rate as our bodies tried futilely to make up for lack of oxygen by flowing more blood.

After 5 minutes, everyone off oxygen was back on it and when normal oxygen sensor indications returned, the other half of the chamber removed their masks and the process was repeated.

With the 25,000 foot tests complete and everyone back on oxygen with normal levels, the chamber was lowered to a more forgiving 18,000 feet. All masks were removed (except instructors!) and we settled in for 5 more minutes with reduced lighting to monitor our color and dim light vision. Individual eye charts for everyone were noted for close up vision and for distinguishing between different colors. Yellow and orange and blue and green tended to blend together for many and yellow appeared to be off white to others. As the chamber lights were gradually brought up some improvement was noted but the big change was when we again donned masks and went back on oxygen. Colors were bright and smaller lines of print could be more readily seen.

Once back “on earth” we returned to the class room to discuss the experience and to have any lingering questions answered. We were cautioned that the chamber may leave us weak and likely to go to bed early. We were also not to do any significant exercise the rest of the day. Before heading back to the hotel, we were briefed on the next day's events – land and water survival training. *(continued on page 13)*



**Federal Aviation
Administration**

**What Over-the-Counter (OTC) medications can I take
and still be safe to fly?**

**It's cold and flu season.
Do you know what meds are safe to take as a pilot
when flying?**

During our training to become pilots, at least somewhere along the way we've heard the acronym IMSAFE. The IMSAFE acronym is meant to be a self-check of sorts to make sure we are in a condition where we are able to fly safely. To refresh your memory, the IMSAFE stands for Illness, Medication, Stress, Alcohol, Fatigue and Emotion. Recently the FAA released a document bringing special focus on the Medication aspect of IMSAFE, specifically for Over-The-Counter (OTC) medications.

This document provides a much more granular, and very informative take on what they are focusing on with regards to OTC medication. The document "What Over-the-Counter (OTC) medications can I take and still be safe to fly?" provides a good outline to determine if you're sick (think cold/flu for example) and recently taken medication. The document also goes into detail on how to read the medication labels, as well as guidelines on how long after taking them before you are safe to fly. If you're interested in adding this tool to your flight bag, the CPA is providing the PDF from our website by going to the "Members Only" menu, selecting the "Documents" option and then under "Safety Documents" or from the FAA site at: https://www.faa.gov/licenses_certificates/medical_certification/medications/



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DAY TWO

CPA member Jay Sarason had borrowed an SUV from a friend so he volunteered to take us back to the hotel and then return us to the FAA facility the following day. This meant we could all go together and did not have to schedule the hotel van. One topic of conversation was underwear – we knew we would be in the water so some opted to bring along a dry pair, some a swimming suit and some chose “au natural” since we had been informed we’d be wearing flight suits or some other type of coverall. But we had no idea for certain what we would be doing.

The day started a bit differently at the visitor’s center as the security checkpoint folks recognized all of us from the prior day and opted to skip some of the formalities. We also noted that only our CPA group and one FAA employee from Atlanta were there as everyone else had apparently scheduled for just the physiological training course and not survival training. Whether they even knew the second day’s training was available is unknown but I cannot imagine doing one without the other once you are in the area.

FAA instructor Roger Storey headed up this day and was helped by Brad Tucker just as Roger had helped Brad the prior day. Today was survival training and before we even got to Lesson One, it started with a challenge. Roger broke us up into three small groups and gave us this scenario: you have taken off at 6 PM in January from a small airport on the upper peninsula of Michigan. After a few miles the engine fails and you crash land and survive. No one knows you are there. Then he said you now have two minutes to make a plan and we’ll discuss those plans when you are done. Go.

Not surprisingly for pilots, each group came up with the same basic ideas but with different priorities. Clearly getting shelter and warmth, emergency signaling, food, water and first aid were all in everyone’s list of important items. Those results were discussed and the pros and cons of each were evaluated. Ultimately, instructor feedback led to the chosen order of first aid, shelter, signaling, water and food. The main criterion which led to this order was how much time you had available to accomplish a task before it became too late. Clearly, first aid has to be done right away but people can live for a few days without water and a week or more without food.

One important issue infrequently considered is the question of who should be in charge of the situation. After more discussion and evaluation, it was concluded the PIC is automatically first on the list, even if the company president is one of the passengers. Should the PIC not be available due to injuries, then someone else has to step up but it should be one person and not a committee.

A helpful acronym was suggested for use after an aviation accident – STOP. It decodes into Sit, Think, Organize and Plan. This simple concept gives structure to what is at best a very confused and chaotic situation and possibly much worse. Frame of mind was emphasized, as the will to survive is far more important than any equipment carried with you and is frequently the single thing that makes the difference between life and death. Several examples were cited, most notably the solo Utah hiker who several years ago was pinned under a large rock and had to amputate his forearm in order to survive.

Roger then discussed a major question which is often asked. Just what should be in a survival kit? But he started by posing an entirely different question -- where should that kit be located? After all, if it sinks to the bottom of a body of water or burns up with the airplane, what it contained is no longer of any use. This led to a comprehensive discussion of what to have on your person, in a survival vest, so that it is with you if you survive a crash and manage to get away from the airplane. Many products, including tools, signaling devices, first aid components, shelter, food and water were then shown to us. Items like parachute cord, laser flares, tube tents, trash bags, signal mirrors, sports energy bars, multi tools, flashlights, blast match, metal match and rigid knives were discussed as to their pros and cons and in many



cases, multiple uses. Also emphasized was the importance of actually using each of these devices so you know exactly how they work and what they can do. A fire starter, for example, is useless if you don't know how to start a fire with it.

As lunch time approached, we went to another floor in the training facility to experience the cold chamber. This was a deep freeze kept at 10 degrees F and contained the fuselage of a cabin class twin engine aircraft, a life raft with a closable top and several space blankets. In groups of three, we spent one minute in the aircraft in normal street clothes with no jackets, hats or gloves, followed by another minute in the raft and a shorter period of time with the space blanket. The airplane was the coldest since it was just cold soaked aluminum with virtually no insulation. The point was clear that without some type of better shelter one could not expect to stay there long at 10 degrees without risk. The life raft, being enclosed with fabric and not aluminum, may have been a little better but to me anyway, wasn't noticeably so. The surprise was the thin space blanket. Placed over our upper bodies and especially over our heads, there was a tangible improvement in warmth.

Back out of the deep freeze, our next stop was outside so that each of us could actually start several small fires with different devices. The most fascinating was simply a 9 volt battery, some very fine steel wool, a cotton ball and a tube of chapstick. With a slice of the latter folded into a cotton ball and steel wool placed against the cotton, a 9 volt battery caused the steel to glow red hot, which ignited the cotton ball as supplemented by the petroleum based chapstick. In an instant a small fire was started. A second method used the same flammable material but was started with both a metal match and with a blast match – each of us learned and used all three techniques.

We then moved into an area of bright sunlight to learn and practice with a signal mirror. Unknown to most of us, a signal mirror can be very accurately aimed using a built-in sight that is calibrated by first aiming the sun's reflection at your hand. This in turn reveals a bright aiming dot that magically appears in the mirror's sight. This is not just any mirror but one specifically designed for distress signaling. Our subsequent assault of mirror flashes onto a nearby office building was coincidentally timed to occur when most were out of the office for lunch!

And finally, just before the lunch break, we went into the smoke chamber. It is a long tubular structure sitting outside on the lawn and looks exactly like an airliner once you are inside. The configuration we saw was a single aisle with three seats on each side. However, it can quickly be changed to many different configurations and seat spacing and is used to test evacuation times with a full complement of passengers of various height, weight, gender, etc. Different interior lighting colors and designs, as well as illuminated signage, are also tested and can be varied from full bright to darkness. Six smoke generators have the ability to cause cabin visibility to drop to virtually zero. For us only one of the generators was used and as it operated, moving clouds and lightning appeared in the cabin windows. It was quite realistic. Following lunch, the grand finale of our second day began. That was two hours in the heated pool in our classroom building for water survival training. And it would include an optional event that likely has spooked some students in the past – being strapped into a simulated cockpit seat with seat belt and shoulder harness and then being submerged to learn how to escape while under water, inverted and with eyes closed the entire time. Even though it was optional, everyone in our group did it.

We all donned either flight suits or coveralls prior to the pool session. The fact the water was about 80 degrees made the two-hour stint quite comfortable in depths ranging from three feet to fifteen. We started out simulating leaving an over wing airliner exit while wearing a standard inflatable life vest. However, ours were intentionally missing one of the two CO2 cartridges to simulate a malfunction in the vest. That way we would have to manually inflate the second chamber once we were in the water. On the other end of the pool was our life raft. We inflated our vests with the CO2 cartridge before jumping in, and once in the water used the raft's tether to pull ourselves toward it. Boarding the raft was more difficult than we thought even though it was a newer design with a longer fabric ladder. We learned how best to board, especially in an empty raft where no counterbalance from other occupants exists. Once in the raft, we



immediately jumped back into the pool so the next person could board. We never had more than one person in it at a time.

That complete, we simply floated around the pool, manually inflated the second chamber in our vests and waited for the next phase. Instructor Roger Storey was in the water with us and said we would now learn how to avoid drifting apart or if apart, how to regroup. This involved getting everyone into a circle and either holding ourselves that way for a short duration or clipping the vests together for a prolonged stay. Keeping legs straight, crossed and together and upper arms against the body was a technique to slow heat loss. We later placed a simulated injured person into the center of the group to offer both warmth and protection. The hardest part of that configuration was movement, as in toward a raft, island or shore. It took two adjacent members on one side of the group to push it along and movement was very slow even in a calm swimming pool, let alone an ocean. There had to be a better way to move and we learned that next.

By lining up single file, laying on our backs and grabbing the person in front around the waist with our legs, each individual could use his arms to paddle. The small cross section of a single person at the front of the line resulted in more rapid movement with everyone sharing the workload. We went around the entire pool in this configuration quite easily.

Next was individual survival if separated from a group or if just alone in the water. One technique for staying warm was the same as for group survival – keeping your legs straight, crossed and together and pressing upper arms against your body. In the alternative, by keeping one's legs up against our chests in a fetal position, heat loss was also minimized. But in a real surprise, by simply placing our fetal formed bodies into a large trash bag filled with water, and then pulling the bag up over our heads, it was significantly warmer. The plastic bags acted like a wetsuit.

Still separated from each other, we were taught how to rescue an unconscious person by towing him to a better location. This involved approaching from behind, using our feet to grab the individual under the armpits, and then swimming backwards. It was a basically a two-person version of the single file group swim we had just completed. The technique would only be employed after confirming the person was unconscious and thus not likely to be in a dangerous state of panic.

At the end of that exercise we were each extracted from the water, as if by helicopter, but actually via a winch in the ceiling and a cable to a rescue basket floating in the pool. We were taught how to enter the basket safely, how to signal the crew we were ready for ascent, the importance of keeping all body parts fully inside the basket and of offering no “help” whatsoever to the crew as they pulled us aboard the helo. We went up maybe 5 feet or so before being lowered back into the water so the next student could ride the basket.

And that led to the final event -- ***underwater escape training...***

As with everything else in the course, this was generic and not aircraft specific. The trainer is a welded aluminum tube structure which allows simulating escape through the top of the cockpit or through a left or right door. Each student told the instructors how they wanted to leave based on the type of aircraft they normally flew. The structure has a single seat with seat belt and shoulder harness and has floats which allow it to be stable in either an upright or inverted position. It was manipulated manually by both instructors, Roger and Brad, who were in the water fore and aft with masks on so they could intervene as safety divers if needed.

A pre-brief was thorough and emphasized one factor of primary importance – reference points. Following a ditching when you are underwater, likely not able to see well if in darkness or murk and at a minimum, stunned, you have to know reference points by feel in order to get out. Reference points vary from aircraft to aircraft and in this simulator changed depending on how the student planned to exit. They are important because reference points do not change position but your body may well do so depending on such things as seat belt and shoulder harness tension, cockpit distortion, etc. But the general concept was to know how to move your



hands slowly, by feel and with eyes closed, from the starting position when firmly strapped into the seat. That starting position was holding on to both shoulder harnesses for impact. From there, one hand was to move toward the reference point of a door latch or canopy release mechanism that would be involved in your aircraft. This hand movement was not just out into open space but along a known path down the shoulder harness to the seat belt, then to the seat belt anchor point and then along structure to the final reference point destination. That hand would hold onto the reference point and then the second hand was moved along a similar path to release the seat belt and harness and then reposition to another reference point to frame your escape hatch or door. It really takes longer to explain than to actually do.

After a couple of practice trial runs while sitting upright, we were told the sequence we'd do next – take a deep breath, impact, be rolled inverted, count to three for deceleration time and then start through the process to escape. I don't think anyone took more than 10 seconds to do this but several came up coughing because of water entry into your nose when upside down. But as with everything else we had done, this training gave each of us real life experience in doing something few even think about, let alone actually practice.

CLOSING COMMENTS

First off, a big thanks to CPA's Ray Hawkins for setting this up and to FAA instructors Roger Storey, Brad Tucker and their crew for the excellent training we received. I am as guilty as anyone of having used the joking comment, “We're from the FAA and we're here to help you,” but believe me, these guys really are!

Second, this is hands on training where you spend minimal time in a class room listening to lectures and instead actually do everything individually. There is no better way to learn than to be told of a concept and then go out and do it. This is what happened all day during each of our two very comprehensive training days. And learning your own personal hypoxia symptoms in a geographical area where many of us fly at high altitude all the time, sometimes without oxygen, is critical.

Third, the spatial disorientation simulator alone is a life saver. Especially for instrument pilots, there is nothing else you can safely do that will cause massive disorientation while you are actually flying an airplane on instruments. We all know to disregard body sensations and stay on the gauges but with this training those words are replaced by motion that actually causes sensory confusion instead of talking about it. You simply cannot do this anywhere else and survive the experience – and what an experience it is!

Finally, I have taken the time to write this extensive article because I think CPA members should avail themselves of the training opportunity and most do not know it exists. Training classes for our members can be set up and Oklahoma City is not all that far away. As pilots, it is one of the best things you can do and since it is free, you cannot beat the price.

FAA's Civil Aerospace Medical Institute (CAMI) can be reached at 405 954 4837. I have no idea right now how group classes are arranged or what schedule CAMI maintains. But given adequate lead time, I am confident this can be done. Ray Hawkins will likely help point interested people in the right direction.

To view Bill's photos of the FAA Training event, go to: www.coloradopilots.org and click on the Photo Gallery.



Here's that Bill guy again.

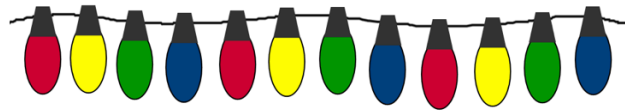


2020 Fly-In Planning Meeting

Join us for a fun morning of "fly-in magic" on **Saturday, January 11, 2020 at 9:00 a.m.** in the meeting room at the Colorado Division of Aeronautics at Colorado Air & Space Port (Front Range Airport). Address is 5126 Front Range Pkwy, Watkins, CO 80137.

(Note: This is a new location for us since the folks at Rocky Mountain Metro opted to charge an arm and a leg for the use of their terminal building meeting space). We'll even have some morning snacks and drinks if you arrive at 8:30.

*The Board of Directors and Chairpersons wish you all
a safe and Happy Holiday Season!*



Happy
Holidays!



If you have a flying story to share with the Colorado Pilots community, please forward it to:
newsletter@coloradopilots.org



Other important email addresses:

Marty Brophy, President: president@coloradopilots.org

Bart Jones, Vice President: vp@coloradopilots.org

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