CASCADE FLYER

Website: http://co-opa.rellim.com/ **December 2004, Vol. 04, Issue 12**

PRESIDENT'S MESSAGE:

Ho, Ho, Ho, Merry Christmas! For some it might also be Chrismukka, Chrismahanukwanzakah or maybe just the Yuletide season. For us it is the annual CO-OPA Christmas Party!

For the Pot Luck the chapter will provide the main dish of Ham. That frees up the members to bring an abundance of salads, side dishes and desserts for our annual feast.

After the Pot Luck we'll conduct out usual Chinese Auction gift exchange. Seems like everyone has a slightly different view of the rules so we will decide on them at the meeting. What we can all agree on is that everyone needs to bring a gift of vaguely aviation nature. New or used is fine, but it must wrapped. Many of us have goodies buried in our flight bag that have not seen the light of day in years. This is the time to pass them around and make someone happy.

The OPA board has asked me to put the a question to the membership. State dues have not risen in many years, but costs continue to rise. The OPA board proposes to raise the annual dues from $20/yr to not more than $23/yr. It seems like a very reasonable plan to me, but the OPA board would like to have a consensus from the entire membership before making the increase official. We will take a quick poll Thursday and I'll pass the results back to the board.

The City of Bend had a Thank You party for the Bend Airport Ad-Hoc Committee. All the members received personalized aerial photos of the airport. That will be a reminder of their service to the city and soon will be a reminder of how far the airport has changed as a result of their efforts. CO-OPA was well represented on the Committee by Ed Endsley, Dale Evans and Ken Sandine. With luck the City will follow one of the Committee's recommendations and appoint a permanent airport committee to continue the fine work.
You can see some of the results of the Ad-Hoc Committee's efforts in the recent changes at the airport. That work you have seen on the east side of the airport is the installation of utilities and a road. The city's goal is to be ready for ground breaking of a new factory on the east side by January or February. With luck maybe even a developer can be found next year to partner with the city and open up the rest of the east side.

The Nelson Road relocation is nearing the final stages. The plan is to remove the old road, pipe the irrigation canal, and grade the area for a proper safety zone next year. Not having to worry about traffic on Nelson Road will landing on 34 is a big relief to me.

I would like to thank again our last month's speaker John Taylor for coming out to our meeting. John spoke on his aviation business course and the general MHCC plan to turn students not only in to qualified pilots, but also into qualified aviation professionals. Aviation is about a lot more than just piloting.

Also at the November meeting we conducted our annual elections. The entire board was returned to their positions. David Sailors will continue on as Secretary/Treasurer and Nancy Lecklider will continue as Vice President. Proving there is no accounting for taste I was re-elected as President. Dave and Nancy contribute a lot behind the scenes and deserve the thanks of all of us.

If you have any ideas for speakers, or presentation topics, please forward them to me. Bend seems to be just full of aviation stories waiting to be told.

Calendar:

16 December - Monthly Meeting and Xmas Party
18 December - Monthly Flyout

20 January - Monthly Meeting
22 January - Monthly Flyout

17 February - Monthly Meeting
19 February - Monthly Flyout

Christmas Project:

For the third year in a row, our group has decided to sponsor a deserving child at Pilot Butte Middle School. As a group we want to make a real difference in one child's life this year. Also, for the first time this year, a portion of our donations will go into a fund the PBMS staff can use to pay activity fees for a few deserving students.
Don and Norma Wilfong are coordinating this with some of the staff at the school. This has worked out very well for all concerned the last two years and surely will work well this year. You can reach them at: 389-1456 or at dwnw@bendbroadband.com

We raised about $250 dollars at our November meeting. That is a good start and surely we will do better as the word gets out. School is out this coming Friday so now is the time.
To make donations you can reach David Sailors at: 617-8936, or at dandt@deschutes.net

Old Wives Tales and other dis-information:

A lot of the practical knowledge of aviation is passed from pilot to pilot. One of the benefits of the CO-OPA is to provide a time and place to share our experience so that all may learn and benefit from it.

Sometimes old wives tales and plain old ignorance gets passed around as well. I am guilty of passing on some ignorance lately and wish to atone for my error. Recently I was pontificating to a few members about VFR-over-the-top. The FARs define it as "the operation of an aircraft over-the-top under VFR when not being operated on an IFR flight plan".

Given the way the clouds pile up on the top of the Cascades this is an important operational detail. Often the weather is clear in the Willamette Valley and in Bend, but not on the crest of the mountains.

I was under the impression that VFR-over-the-top was legal for Multi Engine Airplanes but not for Single Engine Airplanes. This is not true. After several weeks of discussion on AvWeb an FAA representative proclaimed that as far as he could tell VFR-over-the-top is legal as long as you are flying Part 91. If it takes FAA personnel weeks to decide how a rule like this applies I do not feel too bad about having had it wrong before.

Web doings:

Check out the CO-OPA website if you have missed the recent newsletters: http://co-opa.rellim.com

Regards, Gary

SUPERSONIC SURVIVOR:
By T. Karr, President Carolina Aero Club

Hanging in the straps of his parachute and feeling the cold night air on his face, Brian Udell felt as if a freight train had collided with his body. As he struggled to inflate his life preserver before plunging into the icy waters of the Atlantic Ocean, he realized it had shredded with the force of the supersonic windblast.

With his teeth and one functioning arm, Brian feverishly retrieved a one-man life raft that hung from a fifteen-foot lanyard off his right hip only seconds before entering the water. After popping back to the surface like a bobber on a fishing line, the salt water made him painfully aware of the open wounds, cuts, and scrapes that were strewn over his broken body. The thought of blood pouring into the water inviting sharks for a late night meal motivated him to attempt to get into the partially inflated raft.

As he kicked his legs, Brian's lower limbs felt as though only a thread attached them. Exhausted and unable to enter the raft, thoughts of death quickly consumed his mind. Knowing he would be unable to survive the night under the extreme conditions, Brian began to pray. The next several hours of survival and the many months of excruciating rehabilitation make an almost unbelievable story.

Brian holds the record for surviving the highest speed ejection from a U.S. Fighter Aircraft at nearly 800 MPH. He survived four grueling hours 65 miles off the Atlantic Coast in 60-degree water, 5-foot seas, and 15 MPH winds at night. Brian's determination, perseverance, faith, and sheer will to survive is unparalleled. His story of survival, recovery, and return to the Strike Eagle is an inspiration to everyone.

Brian is a very accomplished aviator. He began flying at age nine and took his first cross-country flight at age ten. Since that time he has accumulated over 4000 hours in a variety of both civil and military aircraft. He was one of only sixty candidates across the United States selected to attend the Euro-NATO Joint Jet Pilot Training program. Brian graduated number one in his class and was awarded the Air Training Command - Commanders Cup Trophy. Brian was one of the first Lieutenants selected to fly the F-15E Strike Eagle. He graduated from Strike Eagle training and received the top academic award. Brian went on to his operational unit where he became an Instructor, Mission Commander, and Air to Ground Top Gun winner. He has flown over 100 combat missions in Southwest Asia and logged nearly 2000 hours in the Strike Eagle. Brian received four Air Medals and three Aerial Achievement Medals for combat missions over the skies of Iraq. Brian's military career spanned ten years.
Brian left the Air Force in 1999 and he is currently a pilot with Southwest Airlines. "Brian Udell kept us spellbound for 45 minutes. You could hear a pin drop, except when he made everyone laugh."

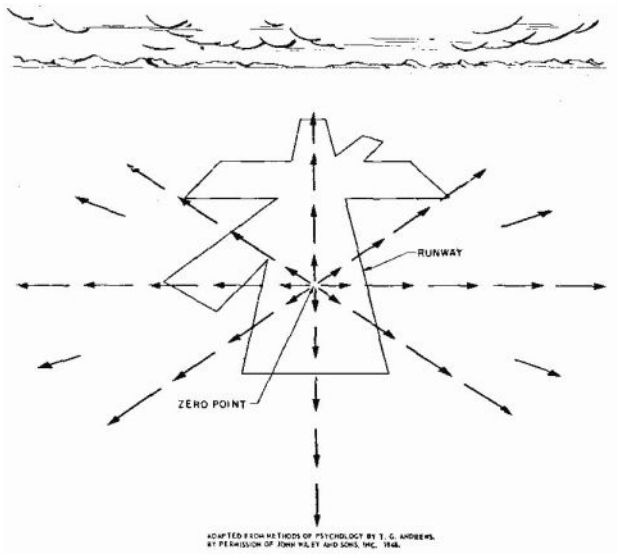
SAFETY CORNER: by Joel Premselaar

Spear a passing fish while you're standing on the shore. Missed, huh! Just in case you'd like to know, that's refraction at work. What's that got to do with flying (no, it wasn't a flying fish)? Puffing up and flaunting my ego, I'll deign to tell you. Let's start with the windshield. You can find G.A. aircraft with half-inch windshields that are installed with a significant slant. This translates into more thickness that you're looking through than a half-inch thick piece of windshield. Couple this with curvature and what you're looking at just ain't where you see it. Now fly several different aircraft and you have a good excuse for your lousy landings. If you think that's difficult to cope with, pity the poor naval aviator who's trying to hit a target or making a carrier landing. He/She has to peer through a highly sloped extra thick bulletproof flat glass plate. Aside from the carrier landing, the problem is compounded during supersonic speeds. Light rays bend as they pass through the optically denser air in shock waves. Low frequency vibrations (about 40 cps) blur your vision as you pass through the sound barrier. Be sure to keep all this in mind as you rip through the airways in that hellion of the cosmos, the Cessna Skyhawk.

The expression "Oculogyral Illusion" is as ugly as the illusory phenomenon it defines. In layman terms, it simply means the dizziness you experience after spinning around. As a child, my contemporaries and I used to spin around to see who could remain standing after x number of turns. I discovered that I would not topple if I aimed an extended finger pointed at a distant object; try it - it's fun. As a consequence of performing successive rolls during airshows, I regularly experienced oculogyro illusion. I was able to cope with it by aligning a piece of airframe with a distant reference point. Of what interest is this to those of you who do not do aerobatics? I have to tell you that maneuvering to escape a mid-air collision can induce the subject phenomenon. Worse yet, turning your head at night or during instrument flight can induce it. I guarantee you that if you turn and bend over to pick up a pencil or whatever during night or instrument flight, you'll subject yourself to an oculogyro illusion experience.

Now on to the "Gibson Effect." Many, many times you have watched even experienced pilots make a beautiful approach to a landing only to see them <u>suddenly</u> flare too high then --- uh oh, <u>kerplunk</u>! Of course this never happened to you so I'll try to explain why it happens to those other guys. First, keep in mind the case where while driving a car, near objects along side appear to pass rearward considerably faster than distant objects. Approaching a runway on let's say a 3° glide slope, there is a point that doesn't move; we'll call the aim point. Surrounding it will be some marks; e.g., tire marks, oil spots, painted runway markings, whatever. Now recall the car driving analogy. Closing on the aim point, the various markings in one's visual field appear to expand and, at a specific distance the markings will seem to <u>explode radially</u> from the fixed aim point (see the figure below). Those "other guys" will react in a predictable manner;

I repeat ---uh oh, <u>keplunk!</u> Try this. Hold your thumb and index finger about half an inch apart and move them toward one of your eyes at a constant rate. Just before you touch your eyelash, your fingers will appear to jump apart. Do this in private or you'll find yourself surrounded by people in white coats carrying a straight jacket.



ADAPTED FROM METHODS OF PSYCHOLOGY BY T. G. ANDREWS, BY PERMISSION OF JOHN WILEY AND SONS, INC. 1948.

Figure 12.2. Expansion Pattern During Final Approach

The zero point is the direction of flight of the aircraft. The arrows show the direction in which details in the retinal images will move as the aircraft continues to approach. (after Andrews, T. G., 12-11 Methods of Psychology)

What should that "other guy" do to remedy the problem? I know the FAA types won't like my solution; make a flatter approach to lower the perspective and the range rate to the aim point. Let's consider the concept of the aim point as it relates to the actual touch down point. Even on a navy type "no flare landing" on a runway, the main mounts do not hit the aim point. In fact, conducting a carrier landing in an aircraft with a long fuselage, such as the F8 Crusader, the eyeball's aim point to tail hook distance is what we had to consider.

Since we're on the subject of landings, I guess it would be appropriate to treat the subject next month. I will present my way and the reasons for my techniques. Note that I use technique in the plural. I will address the landing techniques I use to cope with differing circumstances. My ways are heavily flavored with those of Uncle Sam's Navy. Don't try to pass an FAA check ride the way I advocate landing. I insist that they are considerably safer and less labor intensive. Aside from the FAA ride, remember that menus exist is because different people like different things. There are as many ways to land an aircraft as there are pilots, so if you're happy with the way you're doing it, it must be safe since you're still alive. I'll simply suggest ways to make it safer.

Space Ship One

This is the best write-up I have seen on the flight that won the "X-Prize". I have added a few photos – Ed
There is also a video (5.3MB, no audio) from Scaled Composites that really gives you a feel for the ride. You can download the video from:

http://www.scaled.com/projects/tierone/video/X-Prize-flight-2.wmv

Mike Melville on Space Ship One

-- A report from Thomas Wall

I just had the extreme pleasure of speaking with Mike Melvill yesterday, the pilot of SpaceShipOne's first two flights above the Karman line of 100 km. MSL, and with his wife. He gave a 45-minute presentation to the Aircraft Owners and Pilots Association conference in Long Beach on Thursday, and got a several-minute standing ovation. I was able to speak with him for a short while after his talk.

Since he was speaking to pilots, he didn't have to translate for the "general public" or pull many punches. He spent almost half of his time going over the flight controls and the entire cockpit layout inside of SpaceShipOne, explaining how it is flown. I think this is the first time this has been explained publicly in such detail, and it was amazing. There are actually four separate flight regimes, and each is flown differently. Just after launch, it flies like a piper cub, using a joystick and rudder pedals with mechanical linkages to the controls (no hydraulic assists). When it goes supersonic, the aerodynamic forces are too high to be able to move the stick, and the controls are subject to flutter. So they use an electrically powered trim system, flown using the "top hat" switch on the joystick and a couple of grips on the arm rest of the pilot's seat. (There are backup switches to the left of the instrument panel, which had to be used on one flight.) This moves the entire horizontal stabilizers, not just the elevons on the trailing edges.

Eventually, they get high enough and the air gets thin enough that they can again use manual controls, although the response is totally different than lower down. But that goes away as they exit the atmosphere; the Reaction Control System nozzles are then used for maneuvering in space. Coming back down, the pilot has to reverse the sequence. There is no automated switchover of control systems; the pilot has to remember to move from one system to the next at the right times.

The rudder pedals are not linked. Each controls one of the two vertical stabilizer rudders separately. You can push both rudder pedals at the same time, and get a fairly effective speed brake, with both rudders canted outward. Push both fully forward and they engage the wheel brakes. But these are not very effective and are only really useful for steering input during rollout. The real brake is on the nose skid: a piece of maple wood, with the grain aligned down the centerline of the airplane. He said it was the most effective braking material they could find.

We talked about G forces on Tuesday, and I got some of it wrong. He says that he gets hit with about 3Gs kicking him backwards as soon as he lights the rocket motor. He's supersonic within about 9 seconds later. But he immediately starts to pull up into an almost vertical climb. So he also gets over 4.3Gs pushing him down into his seat just from that maneuver. The combined force is "very stressful" and Mike says it's "important not to black out" at that point. He's going 1880 knots straight up within 70 seconds. On re-entry, the aircraft goes from being absolutely silent while in space to generating a deafening roar as it hits the atmosphere again. He's going about Mach 3.2 by that time, and has to survive about 5.5Gs for over 30 seconds, and lesser G forces for longer than that, as it slows back down. It sounds really intense, both as he explains it and on the radio.

A couple of interesting side notes: SpaceShipOne has a standard "N" registration number; but it is licensed as an experimental "glider". Apparently there was a huge bureaucratic hassle trying to license it as a rocket powered spacecraft, which they just sidestepped by calling it a glider.

I asked him if it had a yaw string; he laughed and said that would have burned off. By the way, the registration number is N328KF, where 328K is the number of Feet in 100km. (White Knight is N318SL - Burt Rutan's 318th design.) Mike says that the flight director system (called a TINU) was developed completely in-house by a couple of 28-year-old programmers, and is absolutely fantastic to fly. That's why they don't need a yaw string. But I had heard over the radio that Brian Binnie had re-booted the TINU just before the landing approach during the X2 flight, and it took quite a while for it to come back up. So I asked Mike what that was about. He says that during re-entry, the TINU loses its GPS lock. So it keeps trying to go back to catch up, re-interpolate and compensate for the missing data, and this keeps it a little behind in its actual position calculations.

The pilot has no straight-ahead vision at all, so they have a real issue landing: they can't see the runway!
The way they do it is to fly directly down the runway at 9000 feet; then they do a (military style) break and fly a full 360-degree pattern right to the landing. The TINU gives the pilot a "blue line" to follow and a target airspeed (which produces a given rate of descent). If the pilot follows the blue line, right to the break point and through the two 180 degree turns, it will put him right onto the runway at whatever touchdown point he selects. But the TINU has to be absolutely current when this is going on. So at something above 15,000 feet they reboot the TINU and get it re-synched with the GPS satellites again before setting up for the landing!

He also talked in detail about the rocket motor, and had photos of its insides after firing. The nozzle throat actually ablates as the motor burns, enlarging the interior throat diameter as the burn progresses. He described the problem they had on the June 21 flight: The rocket motor nozzle was skewed by about 1?2 degree to one side. This generated a surprisingly high lateral torque trying to turn the aircraft. If it had been up or down pitch rather than lateral, the controls could have handled it; but the lateral yawing forces were too great for Mike to compensate as the atmosphere thinned. The result was that he was pretty far off course.

Mike says he reached apogee, rolled the spacecraft over, and was surprised to see the Palmdale VOR directly beneath him. That was 30 miles away from Mojave and a long glide home. He says it's amazing how fast a relatively small deviation can produce large distances when you're going Mach 3!

For one of the static burn tests, they had fire and safety crews all standing a mile away, ready to duck if anything went wrong. In the middle of the test, Mike and Burt Rutan walked up to the front of the motor assembly and felt the pressure vessel that contains the N2O. Mike knew he was going to have this same thing strapped onto his back soon, anyway, and he wanted to know how much it vibrated, how hot it got, and how loud it was. It was deafening, literally. It turns out that, with the nozzles they use at high altitudes, it's actually not that noisy inside the spacecraft. But he still wears hearing protection.

Scaled Composites seem to have fabricated quite a bit of the rocket motor themselves, including the N2O tank (which is also the structural core of the spacecraft) and the nozzle casings. It would be interesting to hear from Michael's friend exactly what parts SpaceDev designed and what they manufactured.

I took lots more notes. Very interesting stuff.

W. Thomas Wall

STAY REAL!

"Before you become too entranced with gorgeous gadgets and mesmerizing video displays, let me remind you that information is not knowledge, knowledge is not wisdom, and wisdom is not foresight. Each grows out of the other and we need them all."
-Arthur C. Clarke

NAMPA, IDAHO FLY-OUT !!

Sat. Nov. 20....It was cold, crisp and frosty with blue skies over Bend as we rolled our plane out of the hangar at Pilot Butte International and flew out to Bend where the other brave and hardy souls were gathering for the scheduled fly-out to Nampa, Idaho.

Mike and Ann Bond (Cardinal RG N2123Q), Curtis and Jackie Turner (Apache N4387P), Bill and Betty Witt (Skylane N9944E), Ed Endsley (Ed rode with the Witts) and Don and Norma Wilfong (Skylane N20757) made up the stalwart group of flyers ready to break the surly bonds of earth and head East into the rising sun. I understand that Joel Premselaar was going to join us but had some problems with a frozen lock and couldn't get his plane out of the hangar at Sisters. "Sorry Joel" we missed seeing you and that pretty Bonanza.

Ed Endsley has been duly warned that he is going to be in deep trouble if he doesn't start bringing his wife Sherry to the potluck/meetings and fly-outs so some of us can meet her....I have spoken with her on the phone and she seems very nice....I think she must be a remarkable woman to put up with Ed...snicker snicker !!! By the way Sherry...if you are afraid to fly with Ed you can ride with some of the rest of us....

A little after 0900 hrs (1000 hrs Mountain time) We headed for Nampa and encountered a bank of broken clouds from the Burns area on East almost to the Idaho border. This presented no problem as we cleared them at about 9500 to 10,000 feet. The Turners in their very recently and "beautifully" refurbished Piper Apache (this was their first cross country since the refurbishing) just about turned into ice cubes as their heater refused to function. As they went "way up" the temps went "way down"....I am not sure but I think I saw frost in their eyebrows when they landed at Nampa.

The trip over was fairly uneventful and very pleasant until we (the Wilfongs) were on short final at Nampa, we were just off the end of the runway at about 100 to 150 feet when a C-152 cut right in front of us...(H
e was not on the radio at all) I exclaimed "OH MY GOD" and it scared the "heck" out of Norma. I was able to pull up and to the right, add power and go around...we avoided an accident with the plane but I am not too sure about Norma...she was "pretty scared"...

We (all 9 of us) went to the S67 Café, which is upstairs above the FBO and ate, they serve breakfast all day so even though it was noon in Idaho (Mountain Time) some of us were able to have breakfast. We enjoyed the food, the service was good (she never let your coffee cup get empty) and the setting was great as you could look out and watch the planes come and go. It as a good place to stop and eat and fuel prices always seem to be a little lower at Nampa.... 100LL was $2.92 a gallon.

There was a cold wind blowing as we walked the short distance down to the Warhawk Air Museum. We were behind a cyclone fence with locked gates and couldn't get to the entrance of the museum....I pounded on a back door while Ed crawled through a very tight spot, at the gate, so he could get to the front entrance....by this time they opened the back door for us and Ed had to squeeze back through the fence again. We all entered and paid the nominal fee... $5.00 for adults and $4.00 for Seniors...(of course we were all much too young to qualify as Seniors)

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This is a very interesting Museum with a lot of mostly World War II memorabilia both from Aviation and non-aviation. You could spend hours looking at all the planes, jeeps, cars, displays and much more. They havea continuous movie going, with Bob Hope and others from the war years that would be interesting to sit and watch. It is also available for purchase. They have a gift shop with all kinds of stuff if you are interested.

This is the second time some of us have been there and it was still just as interesting as the first time....I would strongly recommend it as a place to visit if you are looking for a place to go for the proverbial $100.00 hamburger and while you are there be sure to visit the museum.

This P-51 is being rebuilt … there is an F-86 Sabre outside, or at least pieces of one!

The Turners had to leave a little before the rest of us as they had guests and family showing up....their heater still didn't work on the way home....I bet they get that problem solved before they make the next winter cross country.

After a bit the rest of us decided it was time to head for home so we walked back to the planes, checked things out and headed West. The broken clouds were still there and the Witts (with Ed) climbed above them and flew back at 10,500 or so. The Bonds tried it above the clouds for a while and then decided to come on back down, below the clouds and join the Wilfongs.

The Turners were not the only ones who got cold on this trip...the Bonds had a malfunction with the pilots door and it popped open, it was getting mighty cold in the plane so they landed at Burns where they thought they had the problem solved...but....the door soon popped open again and they found that if they slowed down to about 100 or so they could manage without totally freezing. It took them a little longer to get to Bend but they had more time to appreciate the scenery.

Everyone arrived home safe and sound, but in some cases cold...it was a great trip and one we will probably schedule again in the future...We missed those of you who couldn't make it and we will look forward to seeing you on future fly-outs.