CHAPTER
613
October 2006

(Chapter 613 web site)
www.eaa-chapter613.org

News and Views: Tom Edwards

This weekend has been beautiful and I should be flying instead of writing. I will be heading out real soon!

Sad news this month as another long time member has GONE WEST. Anita Taylor, wife of Young Eagle Coordinator Don Taylor passed away on October 2, 2006 after a long illness. Our condolences go out to Don. I will always remember the great time my wife and I had with Anita at Cabin Fever Frolic!

Keep your calendars open for October 29, 2006 for our first gathering on the coming season. It is important for all to attend so we can come up with a slate of officers for the upcoming year. I will be giving up my positions of Secretary and Newsletter editor as I have too many irons in the fire at this time. Two years of writing the newsletter has keep me fairly busy and I'd rather fly a little more and write a little less.

***** SHELBURNE POTLUCK *****

By Marge Butterfield

It's that time of year again –with Fall in the air and Halloween just around the corner – it's time for the annual Chapter Potluck which will be held on Sunday, October 29th at 1:00 p.m. the Shelburne Airport. This will be a great time to socialize and visit with friends you haven't seen in a while, in addition to scarfing up some delicious home cooking. So bring yourselves --- along with your favorite dish (and I don't mean your significant other!) Decaf coffee will be provided. If you prefer something else, bring it along ….there will be a bucket of ice to keep your refreshments cool. A short Chapter meeting will follow. Hope to see you there!!

Flight Advisor Corner: Hobie Tomlinson

Flying with Floats – Part V

Last month we discussed <u>Normal Takeoffs</u>. This month we will continue with the following types of seaplane takeoffs:

- **Crosswind**
- **Downwind**
- **Glassy Water**
- **Rough Water**
- **Confined Area**

Crosswind Takeoffs are sometimes required when operating from narrow water areas such as rivers or canals. Departure path considerations may also dictate a crosswind takeoff on larger water areas.

The objective in a crosswind is the same for both seaplanes and landplanes; it is to cancel the drift and minimize the side loads on the landing gear.

Crosswind operations in seaplanes present some operational dynamics which are not present in landplanes. Specifically, the lifting force on the upwind wing which is produced by a crosswind will push the downwind float deeper into the water and increase its drag. This tipping tendency is greater than the tipping tendency in a landplane because, while the ground will support the additional weight on the downwind tire of a landplane, water allows the downwind float of a seaplane to partially submerge. The partially submerged float now resists the sideward drift being caused by the crosswind, consequently further submerging the float, tipping the seaplane and lifting the upwind wing. (Sideward drift in a landplane is prevented at low speed by tire friction against the ground.) The lifted upwind wing now exposes more vertical surface to the wind, increasing the crosswind lifting force and intensifying the problem. Without quick pilot intervention, the tipping can continue until it capsizes the seaplane. During idle taxi the seaplane has to be angled into the wind to control this tipping tendency. As with landplanes, the lower the wing loading of the airplane, the greater the problems with wind!

The allowable crosswind component of a seaplane is usually far less than its landplane version. This is due to the much stronger weathervaning tendency of the seaplane as well as the above mentioned dynamics! During strong crosswinds, weathervaning forces during takeoff can cause an uncommanded turn into the wind to begin. When this is allowed to continue, centrifugal force will combine with the above mentioned tipping forces, rapidly submerging the downwind float to the point were the wingtip strikes the water. If a wingtip strikes the water, a waterloop will occur. This has the same dynamics as a groundloop in a landplane but is far more disastrous! The seaplane will be severely damaged and probably capsize! If rudder authority is insufficient to maintain heading (or the upwind wind starts to lift) during a crosswind takeoff attempt, the takeoff must be promptly aborted!

Determining drift during a crosswind takeoff on water can be more difficult, as there are no clear reference markings for directional guidance as on runways. Waves give the appearance that the water is moving sideways, but it is not. The waves are only an up and down motion of the water surface caused by the wind. Although the wind moves the wave's location, the water itself is nearly stationary! To maintain a straight path through the water, pick a point on shore as the aim point and then keep it in a constant (lateral) location in the windshield ~ just as in a landplane.

Techniques which can aid in crosswind takeoffs:

- Controlled Weathervaning
- Downwind Arc
- Use of Water Rudders

Controlled Weathervaning is a technique used in light crosswinds. It allows for the weathervaning which will occur between the time the water rudders are retracted and the seaplane obtains sufficient speed for the aerodynamic rudder to be effective. The seaplane is aimed slightly downwind from the desired takeoff path with the water rudders. (Approximately 10 to 20 degrees ~ depending on the wind.) Try to estimate a downwind angle such that when the water rudders are raised and power applied for takeoff, the seaplane will weathervane to the desired takeoff heading during the time it takes for air rudder and ailerons to become effective. As the seaplane transitions to the plowing attitude, the front of the floats will rise out of the water. This adds vertical surface to the front of the seaplane and lowers the weathervaning tendency. Start the takeoff with full aileron into the wind and keep enough aileron input to keep the upwind wing from lifting. Once the seaplane is on the step, use the ailerons to lift the downwind float out of the water. Be careful not to let the upwind wing touch the water and remember that opposite rudder will be required to keep a straight takeoff path. Contrary to landplane technique, extra takeoff speed is not desirable in seaplanes due to the extra pounding the floats are subjected to. As soon as the downwind float lifts out of the water, apply slight backpressure and lift off. Once airborne, transition to a crab for wind correction while ensuring the seaplane does not recontact the water, then adjust pitch to achieve the desired climb speed.

Downwind arc is a technique used in stronger crosswinds. This takeoff starts angled into the wind to lower the crosswind component and associated weathervaning. As the seaplane comes up on the step, a turn is started toward the downwind creating a curved takeoff path. The radius of the turn is now varied so that the centrifugal force created by the turn will overcome the tipping force of the crosswind. As a constant centrifugal force is desired, the turn will start tighter at low speed and then shallow out as speed increases. The final portion of the takeoff is the same as described above. Sufficient takeoff path curvature to cancel strong crosswinds on narrow rivers is possible.

Use of water Rudders to assist the air rudder during takeoff is the least desirable technique. It subjects the water rudders to high dynamic water pressure and could cause damage. If using this technique, remember to retract the water rudders after takeoff. The actual takeoff is conducted the same.

Downwind takeoffs may be warranted because of departure path, water current, or noise considerations. Because downwind takeoffs require higher water speed (float drag increases at the square of speed), a seaplane's downwind takeoff distance increases dramatically more than its landplane equivalent. In light winds with smooth water and plenty of space, it may simply be more convenient and presents little problem.

When departing a river or other water with a current, it is desirable to takeoff with the current even if downwind. The current has the effect of cancelling any tailwind component up to the current speed. Only when the wind is much stronger than the current is an upwind takeoff against the current considered.

Glassy Water Takeoffs present two additional challenges. The first is that glassy water provides absolutely no depth perception. So exactly like a "black hole" night takeoff or a low visibility instrument takeoff, it is very easy to fly right back into the water. Insuring that a positive rate of climb is maintained after takeoff (regardless of sensations/perceptions) is vitally important.

The second challenge is that the smooth water surface increases float drag and actually feels like water suction on the float. Normal water surface roughness introduces air bubbles and water turbulence between the float bottoms and the water, reducing float drag. Glassy water flows smoothly along the float, creating extra drag.

A heavily loaded (under floated) seaplane may have difficulty getting on the step because the floats are pushed deeper into the water and have more wetted area (drag). This drag may prevent the seaplane from obtaining the speed necessary for hydrodynamic lift to raise the floats out of the water. If sufficient water area is available, the seaplane may be coaxed upon the step by rocking it. After the nose reaches maximum nose-up position with full aft elevator (plow phase), release some of the back pressure allowing the nose to drop. If after a few seconds the nose starts to rise again, reinforce the rise with full aft elevator and repeat the cycle. Each repetition will increase the nose height and speed. After several repetitions, push the elevator forward and hold it there until the seaplane gradually flattens out on the step. If the seaplane will not come up on the step, takeoff is not possible and the attempt must be aborted.

Once on the step, the glassy water takeoff calls for a slight right turn while using ailerons to lift the right float out of the water. A right turn uses centrifugal force and engine torque to help lift the right float. Once one float is out of the water, float drag (and suction) is halved and the seaplane should accelerate to liftoff speed.

Another aid to glassy water takeoff is using the seaplane wake to help roughen the water. In this procedure the seaplane is taxied around in a circle, and then the takeoff path is made across the seaplanes own wake.

Rough Water Takeoffs are best left to experts and probably cause more seaplane accidents/damage than anything other than gear down water landings with amphibians!

The general rules for rough water takeoff limits involve wave spacing and wave height.

- Takeoff should not be attempted if the spacing between wave crests (wavelength) is more than ½ the length of the floats. When the wavelength becomes longer than this, the floats are supported by only one wave at a time instead of two. This creates dangerous pitching moments.
- Takeoff should only be attempted by experts if the height of waves from trough to crest exceeds ½ the height of the float from keel to deck.
- When evaluating water with a current, remember that wind blowing against a current will create the same wave conditions as a wind velocity equal to the wind and current speed in still water. (i.e. A 15 kt. wind against a 10 kt. current will produce the same waves as a 25kt. wind on still water).

- The size of the seaplane, wing loading, power loading and the pilot's ability may dictate even less intense conditions than those specified above.

Begin a rough water takeoff by setting takeoff power just as the floats begin rising on a wave. This will prevent the float bows from digging into a wave and help protect the propeller from spray. Use maximum up elevator to raise the nose higher, keeping the float bows clear of the water.

Once on the step, use smooth elevator pressure to prevent the nose of the seaplane from pitching up as it begins to bounce from wave to wave. If this pitch up tendency does not stop, abort the takeoff. (If the aircraft is allowed to pitch up, each wave face will be struck with increasing severity until the floats are damaged ~ or the aircraft is tossed into the air, stalls and then digs in the float bows.) Maintain elevator pressure to keep a constant pitch attitude as the aircraft bounces across each successive wave crest while speed is increasing. This is important to prevent the float bows from being pushed under water or the seaplane being tossed into the air with a high pitch angle and low airspeed. Fortunately, rough water is usually accompanied by a strong wind which lowers the water speed necessary for takeoff.

Confined Area Takeoffs are different than a short field takeoff in a landplane. In a seaplane the takeoff track is altered rather than the takeoff profile. This is done by bringing the seaplane up on the step while heading downwind and then making a step turn into the wind to complete the takeoff.

Extreme care must be used while making the step turn back into the wind as both the crosswind component and centrifugal force are acting together to lift the upwind wing. In stronger winds increasing the radius of the turn lowers the centrifugal force component but requires more water area.

Strong winds preclude this type of takeoff but may allow a normal upwind takeoff in even a confined area. In calm wind the turn may be tightened as much as centrifugal force will allow. When the radius becomes to tight, float drag will increase to the point where speed actually decreases.

A confined area may also be created by high terrain surrounding a larger water area or by high obstacles along the shore. These may block the wind which creates glassy water conditions and may cause areas of lift, sink and/or wind eddies. This is especially dangerous when combined with high density altitudes. Seaplanes can be landed in much less distance than is required to takeoff. Careful departure planning is necessary before landing in these areas. In some instances it may be necessary to wait for the cool temperatures of morning or offload some weight and make multiple trips. When high terrain encloses a water area, make a circling climb to a safe altitude over the water before proceeding on course.

That completes our discussion of seaplane takeoffs. Next month we will continue with seaplane landings. The thought for this month is **"The best safety device is a well trained pilot!"** So until next month, be sure to **"Think Right to FliRite"!**

Young Eagles News

As the Fall flying season hits full swing, the EAA Young Eagles office reminds you that this is a great time to organize a flight rally. Children are back on a more regular schedule and the weather -- and scenery - can be quite spectacular. Many Chapters have scheduled events this Fall, but we want to encourage all Chapters to participate as they can to ensure a strong finish to 2006. This is also a good time to make sure all your Chapter's pilots reach 10 for 2006. Those reaching this level of participation during the calendar year earn credits that can help send a young person to one of EAA's Air Academy summer camps next year.

As you are planning your event, remember the Young Eagles office has many resources to help the process. From the Flight Rally planner to a sample news release, these resources are just a click or call away. Visit the Young Eagles web site Volunteer section for these tools and many others at http://www.youngeagles.org/volunteers/

Young Eagles: Donald Taylor

We have only five pilots reporting YE flights for this month.

John Butterfield	1
George Coy	4
Donald Taylor	7
Don Nowakowski	2

Total Y. E. Flights so far this year is 196 with 104 left for this years goal!

Donald Taylor	61
Steve Couzelis	5
Bill Yendrzeski	39
Don Nowakowski	5
George Coy	15
Mike Pecue	31
Ron York	30
John Butterfield	1

The Young Eagles Fly in and Barbeque at Franklin County Airport was not a s large as expected but we did fly 14 Young Eagles and 12 adults! One flight had 1 Young Eagles, his mother, and grandmother. Everything went OK and the barbuque was great and FREE! The food was donated by members Don and Anita Taylor!

Our next Young Eagle Fly-in is at Springfield, VT on Thursday , October 19 at 9:00. If you can make it please call Don Taylor. 802-868-3809

Safety Tip by Tom Edwards

I can only say Big Bird does fly! My brother-in-law and nephew were training in their new 206T in Kansas and another pilot had a run-in with Big F. Bird. During the migration season, right now, we need to be on the look out for flocks of Snow and Canada Geese.

Any volunteers to try this? This article and following pictures were sent to me, author unknown, but I thought this story might be of interest to the club. The History Channel logo is in the pictures so I think there might be a show about the story.

A simulated dogfight training took place between two F-15D's and four A-4N Skyhawks over the skies of the Negev, Israel ... "At some point I collided with one of the Skyhawks, at first I didn't realize it. I felt a big strike, and I thought we passed through the jet stream of one of the other aircraft. Before I could react, I saw the big fireball created by the explosion of the Skyhawk. The radio started to deliver calls saying that the Skyhawk pilot has ejected, and I understood that the fireball was the Skyhawk that exploded, and the pilot was ejected automatically. There was a tremendous fuel stream going out of my wing, and I understood it was badly damaged. The aircraft flew without control in a strange spiral. I reconnected the electric control to the control surfaces, and slowly gained control of the aircraft until I was straight and level again. It was clear to me that I had to eject. When I gained control I said: "Hey, wait, don't eject yet!" No warning light was on and the navigation computer worked as usual; (I just needed a warning light in my panel to indicate that I missed a wing...)," My instructor pilot ordered me to eject. The wing is a fuel tank, and the fuel indicator showed 0.000 so I assumed that the jet stream sucked all the fuel out of the other tanks. However, I remembered that the valves operate only in one direction, so that I might have enough fuel to get to the nearest airfield and land. I worked like a machine, I wasn't scared and didn't worry. All I knew was as long as the sucker flies, I'm gonna stay inside. I started to decrease the airspeed, but at that point one wing was not enough So I went into a spin down and to the right. A second before I decided to eject, I pushed the throttle and lit the afterburner. I gained speed and thus got control of the aircraft again. Next thing I did was lower the arresting hook. A few seconds later I touched the runway at 260 knots, about twice the recommended speed, and called the tower to erect the emergency recovery net. The hook was torn away from the fuselage because of the high speed, but I managed to stop 10 meters before the net. I turned back to shake the hand of my instructor, who had urged me to eject, and then I saw it for the first time - no wing!"

This is definitely a testament to modern combat aircraft design. I figure the fuselage acting as an airfoil, a high thrust to weight ratio and two engines (differential thrust) helped in this impressive feat.








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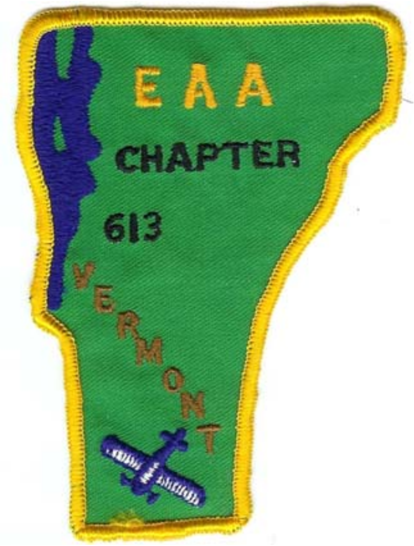
FIRST CLASS MAIL



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