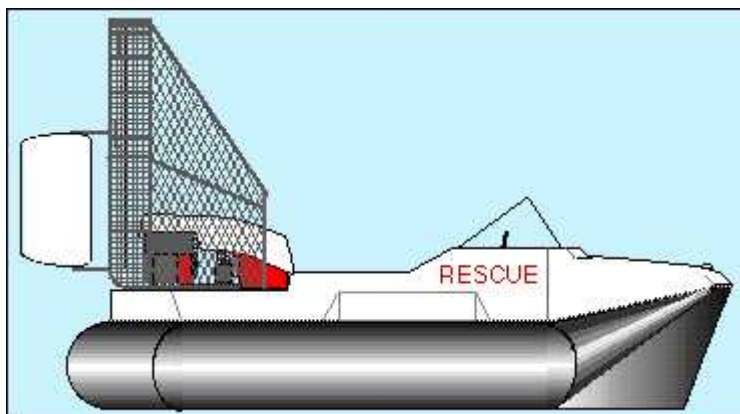


# Surveyor

## Hovercraft Enthusiasts, here comes Surveyor!

**Surveyor, a new design from Sevttec, Inc.** This sev features a 4 place capacity with just 40hp. The prototype, which borrows heavily on Vanguard sev experience, and has been operational since the spring of 1998.

Operation of the single engined Vanguard sevs over a five year period has shown that finally, there is a small 4



cycle engine that is reliable enough to use on a two engined craft. The new Surveyor uses a

20hp Vanguard horizontal shaft engine for thrust. A vertical shaft Vanguard engine provides power for lift. Reliability is enhanced in that the engines can be manually started even if the battery has gone flat.

Both engines are placed aft and the cockpit controls are arranged so that the same ease of operation, low noise and low spray of single engined craft as in all other Sevttec designed craft is maintained. Fan breakage associated with front mounted lift fans of other's craft is eliminated with the Surveyor rear mounted lift fan.

Aft location of the engines also allows for a huge cockpit space. The cockpit has a flat, unobstructed floor. With its stand-up or sit down helm, this vehicle is ideal as a search and rescue craft as well as a long distance cruiser for exploring or even activities such as fishing. This sev has sufficient room for fishing, camping, or other gear for comfortable overnight stays, or can be used overlong trips by the more adventurous.



The sev is now sold as plans and kits for a single or two engine craft under the name Surveyor. See Sevttec and follow the Surveyor link. Engine options are a single 25hp Kohler to the Kohler plus a 16hp Vanguard for lift. Other engine combinations may be used. (Note use of the Kohler requires an operational electric system.) Check with Sevttec or [Amphibious Marine](#) for additional information.

# Surveyor Report

**April 20, 1998 Update:** Surveyor has been run on its first operation, an over water trip of over 25 miles. The purpose of the operation was to run its new engines at reasonable power levels and look for functional problems. No test data was taken.

**May 2 1998 update:** Surveyor was run on a trip of 120 plus miles, out into Puget Sound and return.

**May 12 1998 update:** Another Surveyor run has been made, 48 miles, within the local river system.

**May 15, 16 and 17 1998 update:** Surveyor prototype was trailered to Anacortes to be shown along with the Explorer of Bryan Phillips at the Anacortes Waterfront Festival. Since it was blowing 10 to 15 mph it was a good day to prove the mettle of Explorer and Surveyor, and it could be seen that the 20 foot Explorer is easily superior to the 15 foot Surveyor for handling seas which were running about a foot plus.

Although there were lots of people at the festival the interest was not directed our way, but Bryan gave a few people, mainly locals, some rides. Surveyor was operated some 3 1/2 hours in the rough conditions, with Explorer also operating almost the same amount of time. Also, both craft were successfully run at low speed through the marina environment, (with lots of expensive boats just waiting to stick their bowsprits and pulpits through a propeller), a process that requires careful operation with little air blowing over the rudders.

The Surveyor and Explorer were then trailered, along with Dave Crawford and his Vanguard, to Harrison Bay, near Chilliwack, British Columbia, for a Canadian Hoverclub event. Aside from spectacular scenery, the location provided a short way under a low bridge into the Fraser river. Bryan had to "duck" under the bridge, with his single rotor Explorer, by going under with the rear of his cushion deflated, if not for overhead clearance, but so he could breathe easier. Of course Surveyor could just buzz under, but only after the Explorer had gone under.

The Fraser was swollen and roiled with glacial till, and the site offered the opportunity for a beautiful cruise on calm clear waters up the Harrison river, to where it expands into huge Harrison lake, and with side bonuses of swampy areas and a smaller tightly winding, riffled river.

Although Sunday and Monday were cloudy and rainy in the morning, water conditions were ideal. In addition to the Explorer, Surveyor and Vanguard, two more Vanguards were in attendance by Canadians Ken Wardstrom and Ed Lamphier. More Canadian craft were added to the event by Al Munnik, who brought his Starship 500XL, which he had re-engined with a 48hp Rotax 503, and added new blades to its 28 inch, nine blade Multiwing gear driven ducted rotor (This is a 16 year old design, classic English racer technology). A Scat and another 500XL were brought by Willie Aquino, and another Scat was brought by Ron Willemsen.

Many rides were given, myself and 1 to 3 persons at a time in Surveyor, and Bryan plus 1 to 7 persons at a clip in Explorer. Some trips were made outside and up the Fraser, using Vanguards, Explorer and Surveyor.

Bryan ran into a big surprise, a curious river flow dynamic on the Fraser River. He was carrying a full complement of tourists through a stretch of calm water near the river bank. He returned through this same spot a short time later at about 20mph, only to discover, much too late, that it had become a set of water "haystacks". He crashed through, thrilling the tourists for sure, and fortunately the 1 meter bow skirt depth of Explorer allowed it to ride up and over, but the bump dislodged all three rudders from their pivots. So while floating down the river, the helm disabled, he sent a couple of the tourists aft to place the rudders back into their pivots. (Those Canadian tourists are hardy folk.) Needless to say, the rudder pivots will be positively retained in the future.

We went back to the same spot next day to observe the phenomenon. The water could be almost calm, and 12 seconds later, develop into a full 1 meter plus height class 2 rapids, as a back eddy below the "fall" would drop about 30cm. The rapids would fade after about 40 seconds, and the whole process would recur every 2 minutes.

We took another cruise up the Harrison River between steep forested canyon walls to the Harrison Hot Springs resort. Al Munnik fire-walled his one place Starship 500XL along-side a couple of two place Vanguards, the 4 place Surveyor, and the 8 place Explorer, and his claim to fame is that he used almost as much fuel as the Sevtec craft, combined! (Estimated 5 US gallons for the Starship, 6 for the Sevtecs.) When combined with English racing hovercraft technology, those 503's are hungry beasts!

Numerous other excursions were taken into the swamps, (Surveyor got lost, but eventually flattened some veggies to get out) and a run was made up a small winding clear riffled river that had lots of pointy sticks and other "hover-lethal" obstacles in it.

An opportunity was taken to determine Surveyor performance limits, and a load of 700lb(320Kg) was successfully planed out and Surveyor has a top over water speed of 37mph(59Kph).

Five more hours were put on Surveyor (around 7 more on Explorer) and there are now 20 hours of operation on Surveyor.

**June 3, 4 1998 update:** A 160 mile run was made, with an overnight moored to fallen trees below a steep Kitsap Peninsula cliff. There is enough room to sleep 2 in the craft but careful organization is needed. The run went out the river system to Everett, across the Sound to Kingston, and on to Poulsbo, then on to Silverdale, then Bremerton and return. Conditions were smooth water to 1 plus foot seas and blowing 10 to 20. Surveyor now has 30hrs on it.

Surveyor has been inactive for awhile while the designer has been riding on other peoples sevs. like a trip from Anacortes. WA to Ketchikan. AK. 824 miles.

**July 24, 25, 26 1998.** Surveyor participated in the Pacific Northwest Hoverin and was operated for some 5 hours, giving rides from the Kelso, WA site to Oregon shores, across the Columbia River to the Trojan Nuclear cooling tower, and surrounding landscape. There were some 20 active craft at the event, the Surveyor, 4 Vanguards, 3 Prospectors, 3 Explorers, 6 Scats, 3 Dragonflies, a Starship, a UH 13T, and a Weber Starcruiser.

Surveyor is now well along in testing. The only significant modification has been the change of its "3V" lift fan drives to "A" belt drives with "B" pulleys, to eliminate the possibility of a belt derailing from a pulley.

**Aug 11, 12, 13, 14 1998 San Juan Island Sampler, or a Whale of a Tale:** Reed Manwill and myself loaded up Surveyor for an island adventure. The first leg of the trip saw us going down the Skykomish River, from my backyard hoverport, into the Snohomish River, through hundreds of Canada Geese, some just fledged, some not quite with flight feathers. Some of the flyers took to wing just as they were abeam and formed formations and cruised down just ahead of us, to circle back to their original positions.

From the Snohomish, we headed north into Steamboat Slough, which is part of the Snohomish River Delta, out to a Puget Sound mudflat. Oops, too close! we got into a huge Cormorant rookery, with unfledged young, which was on a solid row of high pilings, so we backed away to a discrete distance, as some of the Cormorants took to flight over our heads, some of them clearly beginners at the sport of flying.

We then crossed some of the Sound to coast northerly along the eastern shore of Camano Island, by beachfront rows of small summer homes, and a surprising amount of untouched, but steep cliff face with tidal beach below.

We then ran out of water, as we found ourselves on a thin lens of water on a mudflat.. Camano Island is separated from the mainland at its northeast end by a vast mudflat and marsh complex, which is threaded by a small channel, which makes Camano an Island.

Not wanting to cross the grass areas (or able due to such hidden objects as barbed wire and posts and thick grass and stumps and old boat engines and whatever that has been "discovered" on previous trips with other sevs) we started a search for the channel, as four Bald Eagles ignored our close closing route as they squabbled over some muddy dead thing. Before finding out we were no longer at sea level, we ended up jumping a couple of small 6 foot wide, two foot deep channels, which needless to say, made it prudent to get off the power and cruise at lower speeds.

At last the water re-appeared, and we plunked off a two foot high dropoff into shallow, but flowing water. We then threaded our way through the channel, under the bridge that connected Camano Island with the rest of the world and cruised into the open water of Skagit Flats. A herd of seals objected to our passage and hustled across the flats from their dry resting place to plunge into deeper water, to resurface and view the passing curious machine

that startled them in the first place.

It was then on to the east coast of Whidbey Island, to turn easterly into the Swinomish channel, and cruise past La Conner, where Bryan Phillips is now carrying tourists with his Sevtec Explorer. There was no sign of Bryan, so we headed onward, not knowing when Bryan would return.

As the weather was acting up I decided to take a "long cut" to the San Juans. I missed a turnoff and ended up taking a real long cut around the north end of Guemes Island, then between Cypress and Sinclair Island, and across Rosario Straight, through Peavine pass. Now we were in the real San Juan Islands. It was then on to Spencer Spit State Park on the northeasterly corner of Lopez Island, where I pulled up above high tide level onto the spit. Although it was marked "No Camping, I figured in reality we were "moored" as we would sleep in the sev. (I refrained from placing Surveyor's pennant onto a sand sculpted anchor to emphasize the point, that we really were not camping. We could easily have anchored within the tidal zone over the sand, inside the numerous boats that were anchored off shore, as Surveyor is unencumbered by appendages, such as propellers and keels. )

We walked the park, and enjoyed one of your more spectacular marine environments, overrun with tame rabbits, for some unknown reason other than it only takes two to start. We also did a whole lot of sitting around, which is made convenient with Surveyor's removable seats, while the other "Yachties" did the same on their little floating islands. We ate and went to bed, as one by one, the anchor lights of some 20 plus boats winked on. (We did not use our anchor light as it would severely deplete one of our two 15Ahr batteries and fear that someone might pull in at night to try to anchor in our "inlet")

The next morning I awoke to a spectacular morning glow, and dead calm, the masthead lights of the surrounding boats emulating the last stars of morning. I went back to sleep, and Reed woke up and left for a long walk. I then re-awoke up to a what I could describe as a soft roar. I then went back to sleep, and again, up to the sound of a soft roar. I waited awhile and stuck my head up to see that I was part of a massive flock of seagulls. It was a good thing that Surveyor was equipped with a soft top.

A fog moved in so we waited a short while for our departure to American Camp, on San Juan Island and part of the San Juan Island National Historical Park. We took another long cut, cruising around the rugged and jagged southern coast of Lopez. While the area was huge, by island park standards, there was almost nothing there of historical interest. We walked a good part of the area, which is clearly set up for automobiles, not boats, but the partially cleared area was without any real interest, other than the views out over surrounding marine areas. We then headed north to Friday Harbor, the touristy, largest settlement in the San Juans, to book an overnight moorage at the local marina, for restaurant food, and, warm showers.

The next morning we departed in clear weather for Roche Harbor and English Camp, the other half of the San Juan National Historical Park. There were historical artifacts here, but the wonder of it all is why this microscopic piece of history was ever preserved at all. After all, it



was all about an American shooting someone's pig, claims being that it was an English pig, the English co-habiting the island with Americans. Also, the incident occurred when the Americans were being occupied with another problem, the Civil War. Anyhow, the English and American Governments settled the problem by enlisting some German, who probably knew nothing whatsoever about the places or problems involved, to hear arbitration and eventually decide that the San Juans were to be American, not Canadian, (and it was a nice walk, over sunny and shady grass, with spectacular scenery all around.)

We then went on easterly to Jones Island State Marine Park, a small, dumbbell shaped island with deer so tame you might trip over them. A trail crossed the center of the island, and another rounded one end of the island with a faint side branch up to the top of one of the island's twin peaklets. After exploring this bit of land, we continued easterly through the heart of the San Juans, Wasp Passage, and on to James Island State Marine Park, a scale model of Jones Island, where we could again "moor" the sev on a beach above high water for an overnight. Reed had the luxury of a flat piece of land, so he could set up a tent and we could sleep in relative luxury. Like Jones Island, the place was as dry as California, and there were trails to walk and views to enjoy.

We awakened to morning fog and drizzle. After more wanderings about the island, we were able to depart to cross Rosario Strait through patchy fog. A number of other boats were on the same easterly course for Guemes Channel and we dropped to the south a bit to avoid their wakes and slowly passed them.

The front boat, a planing yacht of about 28 feet or so, it is hard to tell, decided to up its speed. Maybe it was ego, or fear of being bumped by our wake (it was choppy so we produced essentially none) I do not know, but I answered with more throttle, as after all, I was originally the overtaking boat. I did not expect to stay with this boat, as sometimes a boat of that size can have 600Hp, at least 300, but it speeded up again, and I answered with full throttle, and walked away, and then he clearly backed off power, (maybe his wife was complaining about the bumpy ride) to resume his normal speed. (I am sure he did not realize that he was just dusted off by a vessel powered with two marinized lawnmower engines.)

While I still had excess speed, "Whale!" I yelled at Reed, as I was standing (as usual) at the helm and he was seated. A whale was taking us head on, coming out of the sun's glare, grey in color, and it would have been all right as its body was only a foot out of the water, but for a dorsal fin, a HUGE dorsal fin, extremely fine in section and standing a full 4 feet above the whale's body. I threw the sev into a quarter sideslip, to straighten it out as the fin sliced by about four feet away. I carefully noted very subtle light markings on the aft base of the fin and graceful fin profile shape as I passed by so I might identify the creature upon getting whale literature.

The identity was clearly that of a mature sei whale, probably about 50 plus feet in length. The experts who wrote the book did not mention the light markings, nor did their illustration show them, but I suspect my close encounter of the finny kind was much closer than any they might ever have had. Certainly the whale did not seem to react in the slightest to my

ever have had. Curiously, the whale did not appear to react in the slightest way to my passage. While the sev does not put noise (in human aural range) into the water, the boat I had just passed was nearby and certainly was putting out noise.

We continued on, the overtaken boat just a white dot on the water (the wife still complaining?) to pull up onto Guemes Island to visit a builder of a Sevtac Vanguard. And then it was on to La Conner, passing up boats that were travelling in the "boat highway", between the navigational aids (navigational hazards, to a sev) that define deep water to lead into the Swinomish Channel. We skimmed alongside in the thin water that covered the flats.

We tied up in LaConner at a guest float and walked its touristy streets, to find Bryan's blue "hovercraft Rides" sign at the south end of town, but no Bryan. We then walked back north to lounge in the sev. Reed noticed a strange craft, which was departing to the South. It was Bryan, with another load of tourists. I hailed him on the standard Channel 16 on Surveyor's marine radio. No results. By the time we could get untied in the swift current in La Conner's guest dock, which is a moorage hell, when the tidal current is on, and the skirt purged, Bryan was out of sight, and we knew he could head several ways. (It turned out he was guarding channel 9, a new standard for hailing. When are people going to start using cellphones! Cellphones would be ideal if there were a way to "broadcast" to an area, rather than a single number. After all, I was able to take calls from across the nation, right out in the middle of the San Juan Islands, while underway.)

We picked the wrong route, Bryan had headed another way, so we proceeded through a break in a Skagit River wingwall to head southerly toward the marsh north of Camano Island.

We got lost in the marsh again, and then got stuck. Reed volunteered, took his shoes off and I had to join him to turn the craft around, a 5 minute chore. We then found the channel, and headed up the Stillaguamish River a short way, to find fresh water and to clean out all the mud we had tracked aboard.

It was then off to the south, stopping briefly at Kayak State Park and then on past beachfront homes to Everett. The weather had deteriorated and it was blowing to 20mph, but fortunately the wind was pushing us. The seas were up, with lots of whitecaps, though, and going up the river was tricky, as the craft had to be slowed down, yet keep its helm in the aft wind conditions.

At last we were home, after some 300 miles of travel. The surface skimmer can be effective in the real world. But, the trip would have been a whole lot more comfortable, if we had a bigger sev. Some things do not change.

### **Sept 18, 19, and 20 1998. Canadian Hoverclub Pacific Northwest Late Summer Hoverin**

The rally was much the same as the spring rally, with good to excellent weather and the ever spectacular Frasier River and Harrison River valleys. A cruise up the Harrison to Harrison Hot Springs was done, as well as a long round trip up the Frasier to Hope, around one of the two big bends where the Frasier heads meaningfully south from the B C interior. The Frasier was at low water with lots of braids to get lost in amongst beds of small and runnable gravel. Rides

at low water with lots of braids to get lost in amongst beds of small and runnable gravel. Rides were given to those without craft as before.

The craft present were 3 Vanguards, Surveyor, a Prospector, 2 Explorers, Starship 500, and 2 Scats.

**May 28, 29, 30, and 31, June 1, 1999. Canadian Hoverclub Pacific Northwest Spring Hoverin** Originally I placed a newsgroup post to get other craft to join up with me as I was to fly from Monroe, WA to the hovercraft rally at Harrison Bay, B. C. However, there were no takers, except for Bryan Phillips and his Explorer.

It was decided that I would make the 60 plus nautical mile journey from Monroe to Anacortes, and "hoverpool" with Bryan to the Harrison Bay site. I set out from my backyard on May 28, down the Skykomish River, and down the Snohomish River, in gloomy weather, and for the most part with a 10Kt wind on my nose.

Even the wildlife seemed hunkered down, and out of sight, as I headed north up the coast. I was clawing away, just south of Kayak Point, making 10 to 12Kt into 10 to 15Kt winds, when I spotted the huge dark and light mottled bulk of a grey whale's back as it bulged up off to port headed the same direction that I was headed, not 20 feet away. This creature represented no danger, as there was no monster dorsal fin, just a tiny one well aft, (that is unless it lifted its tail flukes). It seemed a bit odd to see such a large creature in that place, though, as I was only 30 feet away from shore, getting hammered by wind as I rounded a point. The whale fell behind, its back repeatedly rising, as I struggled on into the headwind.

I continued on up to the end of the inlet to pass between Camano Island and the mainland in a small slough that is rarely used by boats, and is impassable to boats at lower water. The tide was in, and I continued on north over the 8 mile stretch of grassy Skagit flats, and on to Anacortes.

Next morning Bryan and I received the encouraging report that wind conditions were zero at Bellingham, which was right on our course, and we headed out for Canada.

However, there was a little problem. When we started, strong winds had built and we found ourselves doing 14Kts into strong headwind while on eel grass flats, with no wave action, and our speed dropped to a miserable 8Kt when we entered 18" building head seas. We pulled up on the beach, checked the VHF, and they were now reporting 30 to 50Kt per hour (16 to 27Kt) at Vancouver, B. C., and a small craft advisory was out. Seeing that by "small craft" they mean anything under 65 feet long, it was time for us to turn tail and head back. We did measure the wind speed by running downwind on the smooth eel grass flat so there was no relative wind on us, at 25 Kt, and the wind in the less protected area where we turned around was undoubtedly over 30Kt.

Sure, if we had the stock 1.8L engine, rather than the 1.4 L engine in Bryan's Explorer, we could have punched the wind with the additional 5Kt of speed, but, since the Straights of Georgia are much bigger water than the waters we had traversed, we surely would have



found the 20 foot length of Explorer too little. So instead of running out of power, we would have run out of boat.

Needless to say, after a few repairs on Bryan's trailer, we trailered to Harrison Bay. There, the weather was excellent for hovering for three days, and we generally cruised locally with the three other Sevtec Vanguards that were the only other attendees at the event. (Where is everybody!) Cruises were taken up into the Huge Harrison Lake, with lunch at the resort, into the Chehalis River, where we got stopped by a debris pile, and other short wanderings. Bryan and I returned Sunday, but the hovering wasn't over yet.

I set out Monday morning, south into the Swinomish Slough, which separates Anacortes and Fidalgo Island from the Mainland, and LaConner, which is either a boater's paradise, or "moorage hell", depending upon wind and tide. I dropped to the west of the nun and can marked "boat highway" and cruised along in the shallows, passing yachts of all sorts, from 20 footers to a 70 footer, who were getting in out of the grey, windy, rainy weather. They were all plowing up good sized wakes in this supposed "no wake" slow zone, and I was able to maintain 8 to 12Kts, which would give a minimal wake, and in spite of having my running lights on (including the flashing yellow) I did not get a rise from anyone due to my speed.

Things went all right until I got knocked off plane by the wakes of other yachts, also in the no wake zone, which were coming into port in the other direction, also fleeing the gloomy weather.

The wind stopped, the fog and drizzle closed in, and I was off headed south across the Skagit flats at low tide, my brand new 12 channel GPS (poor man's radar) leading the way. There was enough visibility to pick out substantial black things sticking out of the mud, and it was certainly unlikely that I would encounter a boat.

While the Windshield wiper could take care of the outside, the inside of the windshield was a problem, with two Vanguard engines, air cooled, it would be difficult to incorporate a demister in Surveyor.

Fortunately I had waypointed the entrance to the Slough behind Camano Island, but since I did not follow the exact route on my return, and the slough entrance was waypointed at high tide, I had to cross some real estate to reach the waypoint.

I then passed through the slough to more rain and fog, to emerge east of Camano Island, and cloudy, windless light drizzle weather, for perfect cruising all the way home. The return trip was very easy, but slowed by the fog, and I burnt 7 gallons out, and less than 4 returning, with a total of 134 nautical miles, (155 statute miles) behind me. No, Surveyor did not get to Harrison Bay, but it sure did the majority of hovering, in the most interesting of circumstances. I would suggest that anyone interested in the sport of surface skimming might build for salt water, if it is nearby, as that is where some of the most interesting operating conditions will be found.

**Aug 26, 27, and 28, 1999.**

### **Pacific Northwest Spring**

**Hoverin** About 1 1/2 dozen craft attended, mostly Sevtecs. I gave demo rides the first day, and while everyone headed off for comfortable nights in motels or RV's I set out in Surveyor to go up the Columbia River and over-night in one of the riverside swamps.



Although the swamp I picked turned out to be a little noisy, with a distant industrial complex sounding like a continuous train off in the distance, I went for a walk on the river bank and what was obviously part of Mount St. Helens, (which had blown up in May, 1980) and made dinner.

I was treated to a chorus of chirping crickets, which are not present at my home river frontage for some unknown reason, as the last glow of the sun was replaced by the glow of the distant industry. The crickets stopped abruptly (something about minimum temperatures, or such) and the splishes and splashes and squawks of a swamp took over the night. Of course, I deployed the mosquito netting under Surveyor's soft top.

I knew there was going to be a high tide, yes, a high tide, even though I was over 50 miles inland, a 3 to 4 foot change, no less, about 6 AM but I was well into the swamp in vegetation and did not bother to tie off to something.

About 5 A M I was clearly adrift, and instead of lowering the anchor, I decided to see where the river current and breeze would take me.

Of course it carried me out into a main channel, Murphy was on the job. I had to motor back to shore and tie off to a tree as I did not want to run down my batteries with Surveyor's anchor light.

I returned to the Gearhart Gardens rally site in the morning, only to have the thrust engine quit, fortunately, only 10 feet from landing on the beach (very handy, Murphy had just gone on vacation). An oil and gas fouled plug was discovered and I replaced it with another. The new plug lasted all of 12 seconds, so even though it appeared that the magneto was operating, as Surveyor's tachometer worked off the cylinder where the fouled plug was found, there was not enough swat in it to fire a plug.

While the lift engine, which is the same type that is used on the Vanguard, has been performing reliably, the thrust engine had been somewhat of a problem, as there is just no good way to cover an air cooled engine. First, I lost the starter motor mounted start solenoid

good way to cover an air cooled engine. First, I lost the starter motor mounted start solenoid, and then the charging circuit, and now one of the mags. My guess is that the thrust engine was just being overexposed in past trips in salt water while the lift engine is enough forward on the hull to avoid problems, provided it gets a fresh water bath after a salt water trip.

Anyway, this gives me a good excuse to install a single engine on Surveyor, liquid cooled, so I can cover the engine more effectively, and if I want, I can have a heater. Then I can go yachting in real comfort.

**May 26, 27, and 28, 2000. Canadian Pacific Northwest Spring Hoverin** 11 craft showed up, including a Universal Hovercraft UH 18s, a UH 17P, A Dragonfly (clone of Scat) a Scat, a Falcon (Old Alaska Hovercraft Chevy small block powered), two Sevtec Vanguards, three Sevtec Explorers, and the Sevtec research machine, Geoduck program, Geo powered. The event was noted for rain, rain, rain, with one short wind break. Bryan Phillips commuted to the Langley riverside floatplane and grass strip site in his Explorer via Puget Sound and the Fraser River, a one way distance of about 80 miles.

**July 21, 22, and 23, 2000, as viewed from the perversity of machinery standpoint.**

**Pacific Northwest Spring Hoverin** 12 craft showed up, including two Sevtec Explorers, one 18 years old! Three Sevtec Prospectors also came, one of them powered with a Geo 1L engine, and the other two 1.4 and 1.6L Subarus. Many rides were given in all these machines. One of the machines ran out of gas on a down-river run, so two of its four occupants got voted off the island-er sev, and the craft was able to return two miles or so by sloshing the portable fuel tank. There were plenty of Sevtecs to pick them up so no, we didn't leave them out there.

Another beautifully built Prospector that was under construction also showed up, and showed a good point. Sevtec closed flotation compartments should have a slow leak, in their overheads. A central flotation compartment had begun to swell in the Oregon sun. A quick poke with a drill solved the problem before it got out of hand.

A most interesting design, about the size of a Sevtec Prospector, an obvious lift of Sevtec design (with lots of built in problems possibly caused by eyeballing Sevtec designs and not using plans) used a 1.6L Volkswagen pancake air cooled engine driving a single 36 inch diameter Multiwing lift fan and two 72 inch wood propellers that overhung the hull by 2 1/2 feet. This very lightly built craft had a huge amount of static thrust, 300lb or so, and a huge, very usable cabin. The whole thing folded up somewhat like the older Sevtec designs, except the drives themselves had to fold in as well as the guarding. The craft did suffer a broken lift fan blade (fixed, by cutting the opposite blade off) from a much too low lift fan installation, and erosion on its wood propellers. Some might frown on the overhanging rotors, but this could be a wave of the future, particularly for larger, professionally operated craft. (Sevtec might build this way, but fear of lack of marketability due to the overhang prevents this.)

A UH 13T showed up, but performed poorly due to overweight (marginal planeout with only one aboard,) in spite of having lots of installed power, 40-50hp or so. (Not Universal's fault, quality control is hell, in a homebuilder's program.)

The Sevtec Geo 1.0L research craft was also there, giving many rides, but while the belts stayed on, the two stage drive was plagued with lift drive slippage problems, limiting power to two thirds (30hp, max out of 45 available), but it was worked up to 1600lb gross weight. (The configuration is being abandoned, and the craft will be redone. That is what a research craft is for.)

Two Vanguards showed up. One was powered by a 22hp Briggs Intek engine (40 cu in), and did quite well, making two way maximum deep water planeouts at 490 lb payload) in spite of the Intek coming up very short in the power department, perhaps only 12hp, 65lb static thrust, (as opposed to 80lb, 15.9hp for an 18hp Vanguard, 35cu in) but it was only the craft's second time out. Low power was perhaps caused by excessively restrictive mufflers. (There are as yet no stock mufflers for the Intek, so there is a problem here.)

The other Vanguard, (The prototype, on its 4th owner) was destroyed just 5 miles short of getting to the rally. These craft absolutely have to be tied securely to their trailers! A full belly band is a must, and the bow should be tied to a strong bow eye which the prototype did not possess. Two Scouts have been destroyed this way, one of them climbing right out of a box trailer with two foot high sides!

A craft purchased from [4wings](#) showed up, and in spite of a 16hp nearly unmuffled Vanguard pushing it, and a 9hp lift engine, could not muster a planeout even with one aboard unless a shallow water and land startup was used. This craft was the same craft shown in the 4Wings web site at this time (Aug 8, 00) and clearly should never have been sold due to its exceptionally poor performance. The craft was demonstrated to the customer on extremely easy terrain, and the customer had no way of knowing the craft was a total turkey.

The 4Wings craft was a lift off a Universal design, that was nicely, though amateurishly built, and clearly overweight, and with an undersized thruster. It also had no mesh guarding over the fan or propeller. In addition, a finger skirt, the likes of which has never been seen by this writer, was GLUED to the base of a Universal type bag skirt, with its square corners! This probably did not cause the planeout problem, however.

Customer, beware!

Another craft, that was also a commercial craft, was a [Hovercraft Concepts](#) two place machine. This machine's purchaser, who must have weighed all of 140lb, could not make a deep water planeout in spite of the craft being equipped with a 64hp Rotax (582?) liquid cooled engine. The engine must have been developing near full power, as tach readings were close to 7000rpm, and the belt couldn't have been slipping, as it was of the synchronous (toothed ) type, which either totally does, or totally doesn't.

While the Hovercraft Concepts machine was very well crafted, and professional, and had noticeably lower noise levels than other English racing type designs, there was a clear problem, and this writer left to give a ride in the Sevtec research machine, and the owner of the Hovercraft Concepts machine quickly left the scene before an examination of the machine

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could be made.

Customer, beware of demonstrations and money making opportunities!

Thats it. No names, just the facts.

## **2002 Pacific Northwest Hoverin**

While this writer did not attend (due to a breakdown of a new SUV, a replacement for the old one that had 200,000 miles on it) it is understood that there were 7 Prospectors, 3 Explorers, a couple of Vanguards, a Weber Starcruiser, a UH 18T, and a Hovertechnics and a duck hunter's hover raft present. I understand a Vanguard tried to push around an old Explorer. Result, one more Vanguard yellow propeller sold by Sevtec. Careful, people, there are getting to be a lot of Sevtecs out there.

## **2002 Canadian Hoverin at Fort Langley**

This July 5, 6 and 7 event was attended by the writer (The SUV ran, this time) and craft in attendance were Two Vanguards, two Explorers, the Fan-Tastic prototype, two UH10F models, a UH 13P, two Scats, An air inflatable hulled craft.

Although the Frasier River venue looks benign there are certain problems in operating (as has been pointed out previously about the Frasier) in even slowly moving water that should be noted if craft are not designed for some degree of seaworthiness. The Fan-Tastic and a Vanguard took a cruise from Langley down the Frasier River to where B. C. becomes quite urban. Although there was no wind and waters were usually fairly flat, a combination of a steep, though small tugboat wake, and the flushing of the tide caused surprising whitecapped roughness at times. Also, there was a demonstration of the fact that lots of bouyancy alone does not solve the bouyancy problem. A UH10f was shut down on the water when there was a mechanical problem. There was enough speed to cause the bow to go under water. The resulting water worked itself around to the side deck and the operator had no choice but to bail out of the craft before it turned over. This, coupled with a 2 Kt current of exceptionally cold water could have been a real emergency had a boat not been nearby. This machine really should not be run in mean waters like the Frasier river, and the operator should be moved forward, and the engine moved back to reduce the fire hazard! What is especially surprising, the machine is promoted for kids. Heavy riders should be especially wary, as when the craft is floating the extra weight pushes the deck closer to water level, which reduces the floating stability as the deck gets lower to the water level.

This designer has always wondered about this design, especially since the engine uses gravity fuel feed and the fuel and engine are located high and very close to the operator's back, which is an extreme fire hazard.