

<u>The Marty B II</u>

Unless otherwise noted photos and article by Steve Mestler

"When you gonna fly that thing?", asked almost everyone at the airport. "Tuesday", I said every time. But I didn't know <u>which</u> Tuesday or even if it was going to fly again.

It all started after a "minor" incident that turned into a major undertaking; at Lexington County Executive Airport. There is one North-South runway, which is fairly new and really very nice. The wind that day was 090 at 11 knots gusting to 15. Not out of the range of our mighty Seabee so I thought. When the final approach was established I knew the "sight picture" looked a little funny. I was looking at the runway through the right-hand front window. Oh well, readjust my seat position, grit my teeth and continue. When the Seabee touched down I immediately noticed it turning into the wind so a little right rudder to correct, more right rudder, more right rudder, FULL RIGHT RUDDER! Nothing. The Seabee kept turning until it was almost directly into the wind. "OH NO", went through my mind and out my mouth I am sure.

The Seabee departed the runway surface and into the grass but wait, there's a ditch! Well below flying speed hitting the ditch was inevitable. As the Seabee continued on its journey I was just along for the ride. The down slope of the ditch was not the problem the up slope was! It hit at an angle, which caused the right main gear to separate from the Seabee. The separated gear then went under the hull and down into the valley of the ditch. The Seabee, controlled by Newton's third law of inertia, continued on past the ditch and the right wing hit the sandy terra firma. It bent the right wing up at about a 10-degree angle from the float strut attach point out and took out the right wing float, float strut and damaged the right flap as well. In a cloud of dust the Seabee finally came to rest. Engine still running.



Before



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After I shut the engine down, I got out and looked over the Seabee. What a catastrophe! If it were not for that &#\$%* ditch I would have taxied to the fuel pumps, got gas, started up and flown home to Whiteplains where the winds were more favorable. About ten minutes after the "incident", I got a call from NOAA; "We see you are at Lexington Executive Airport. Is everything ok?", said the man at the other end of the phone. I said, "yes, no one hurt." The ELT in the Seabee had activated and NOAA knew exactly where I was. I didn't even think about the ELT but those 406 ELT's really do work. I made the next phone call to a friend at Whiteplains and explained the situation. Within an hour we had four trucks and trailers ready to haul my Seabee home and within three and a half-hours it was in my hangar in four or five big pieces. (An amazing bunch of people at Whiteplains). Now I had to decide what to do. Rebuild? Scrap it? Donate it? I had to take time to think.



Whiteplains crew during disassembly (photos by Mike Moore)

After much consternation and discussion with the local mechanics and friends, we decided to rebuild. When something like that happens it always seems to not be that big of a deal but it eventually was. This was April 2018.

The landing gear needed some attention as it was temporarily fixed at Pellion (6J0). Again the "Parts Gods" smiled upon me as I had everything to bring the landing gear back to life. It pays to invest in Seabee wrecks. You have to remember that the Seabee was made back in 1946 and 1947. Republic is now out of business and parts can be very difficult to find.

With the fuselage sitting proudly on its new landing gear, it was trailered to Rhode Island to an expert Seabee mechanic and the best sheet metal man I know. He was to replace the bottom as it sustained damage to the bow skin on the right side and replace the bottom aft of the bow skins to the step with 0.063" 6061-T3 as opposed to the 0.053" ST24 original bottom. Other minor modifications were made to increase structural integrity like the front seat reinforcement under the floor and a better landing gear mechanism under the back seat.

At the same time he was working on the bottom, I was contemplating the wing situation. The wings on the Seabee were 16" longer (40'-4" span) than the "standard" Seabee wings due to the installation of an STC, which allowed for this. Do we try to rebuild the bent wing, get a new wing and lengthen it by 16" or shorten the wings to the original "standard" 37'-8"? The choice was clear after the



aforementioned consternation that we will shorten the good wing and get another standard wing.

Getting the other wing was a non-issue thanks to another Seabee owner that had one I could buy. After negotiations the wing was on its way to Whiteplains via Kentucky. He was (and is) a real lifesaver.

So, to shorten the left wing was an easy job; drill out all the extension rivets and put the end rib back were it was 35 years prior. The flap hinges and aileron hinges had to be repositioned back to the original positions and that was pretty much it.



The "standard" wings in Kentucky

The new standard wing was a different story. After the "new" wing was in my hangar the real fun began. The wing only had 200+ hours on it BUT it had been in storage for who knows how long. Many animals and insects decided to make this wing their home and remnants of their nasty hygienic habits posed a real challenge to get this wing in shape. It was obvious the wing had to come apart to be cleaned, primed and painted. With the help of a "super mechanic" at Whiteplains the wing was disassembled. I had never done anything of this magnitude on my Seabee before but with the help at hand it was do-able. All the upper rivets had to come out and the aft spar had to come off to allow for bucking the rivets close to the leading edge. When the top rivets were out, the trailing edge was supported to aid in internal access. All the hardware inside the wing was changed. The hydraulic lines and flap actuator was changed. All the wiring was changed. The wiring was the original Republic wiring with the fabric covering which was not acceptable. The aileron cables were changed.

The cleaning started by just rinsing out the loose stuff inside. Birds, mice and who knows what made their nests in the wing for decades. Uugh! What a miserable job. I finally got down to bare metal (at least the zinc chromate primer) and etching and priming began.

When I was satisfied, it was time to close up the wing. Starting from the leading edge my helpful mechanic and I drove rivets moving aft ever so slowly checking each rivet after each one was set. There were four or five different



lengths of rivets and some were larger than others. It was a tedious process but eventually we reached the trailing edge (yay!). The last component was to install the trailing edge spar, which could be done with a rivet squeezer.



"New" wing before (Partially cleaned)



"New" wing after priming (Acid etch primer)

As a side note; the original rivets Republic used were AN442AD rivets. They look like a big nail that had been cut off at the appropriate length. Believe it or not they are still available through Hanson Rivet Company.

Because the left wing was lengthened caused the flaps to be lengthened as well which meant they had to be shortened OR new ones installed. I was lucky to have a set of original flaps I could use but they were in the same shape as the "new" wing. Mice, birds and bears oh my! They must be taken apart, cleaned, primed and painted; more laborious work.



"New" flaps ready for primer



When the "new" wing and flaps were cleaned and primed it was time to paint. The original paint used in 1986 was Dupont Centari; an acrylic enamel I had used before which works really well. Due to EPA restrictions Dupont stopped making it (of course). Acrylic enamel is still available but it isn't as forgiving as the Centari paint. We used it anyway. The colors matched pretty close and the finish is totally acceptable. Blue stripes were added like the original and the wing assemblies were complete.



Completed wing panel at an undisclosed location

Wingtips: During the accident the right wingtip was damaged beyond repair. A new set needed to be had. The wingtips are VERY soft and simply pushing the wing can dent them. Republic used what I think was 3003 aluminum, which is very malleable but easy to form into a complex shape such as a wingtip. I was lucky again in that the gentleman working on the hull had a used set of original wingtips (for free!). There was one problem; after years of on-and-off different Seabees two sets of holes were drilled along the mounting edge of the tips. I tried filling them with soft, very short, flat head rivets but this didn't work. I decided to cut just inside the misplaced holes to provide a virgin tip to work with. 1-1/8" was cut along the edge all the way around and the tip fit perfectly! Whew! So the right tip would be 1-1/8" shorter than the left but the flight characteristics turned out to be the same as before with no noticeable difference. My faithful mechanic and I stripped the new wingtip, primed and painted it was ready to install.

While I was at it, "How about a new (okay, overhauled) engine?" I purchased a core engine years ago from another Seabee friend of mine and began the overhaul process shortly after that. Custom Airmotive in Tulsa, Oklahoma was highly recommended so off it went via semi truck. It took a couple of months to get it back but I was in no rush at the time. The engine that was removed was a GO-480-B, 270 HP Lycoming. The engine I got back was a GO-480-



G1D6, 295 HP Lycoming. What a difference! That last inch of throttle really pushes you back in the seat. Climb rate was 800 FPM with two people on board and 35 gallons of avgas. Not bad for a Seabee.

By this time (2-1/2 years later) the fuselage was on the gear and ready to be picked up in Rhode Island. The bottom was bolted on which meant we had to rivet it back into position. Time to order more rivets!

With the help of the neighborhood, we came up with a plan to raise the Seabee off the hangar floor to remove the landing gear and new bottom. We would construct an "A" frame to support the airframe and a hull cradle to support the bottom with the ability to roll the bottom around so we could get it out of the way for other work to be done.

Initially the Seabee was supported by the hull stands I use during routine maintenance. The left and right landing gear can then be removed as a unit. First thing: Remove the landing gear completely. Removing the hydraulic actuator in the center of the hull and unbolting the center landing gear coupling does this. Four large bolts (AN29-66 clevis bolts) hold the two landing gear tubes together into the center coupling. The left and right landing gear can then be removed. So now you have a right and left main gear with tubes attached. This makes it much easier to install later.

The Seabee was raised using a 2×6 "A" frame with chain falls on either side. Two well-poised men were in charge of lifting the Seabee at an even rate high enough to get the Seabee off the ground enough to place the hull cradle in position.



"A" frame and hull cradle in position



Hull Cradle supporting the bottom



Now the hull bottom could be rolled around, out of the way so work could begin on the fuselage innards. The fuselage was raised high enough so I could get under the fuselage and work on the hydraulics, fuel compartment and nose section. Nothing structural had to be done but some hydraulic lines, vacuum lines and fuel lines had to be changed. The landing gear main supports under the rear seats had only a few bolts (from Rhode Island) holding it all together. There are a total of 16 AN4 bolts that held the support system to the floor and aft bulkhead. They were all replaced with new bolts and hardware.

The original brake lines from the floor to the fuselage side fittings were stainless steel. I opted to replace them with aluminum tubing instead (I had no means of forming stainless steel). The vacuum line from the engine runs under the floor and during the bottom construction the dimensions were slightly different than before so a new vacuum line needed to be fabricated. The main hydraulic pump lines were made and fit from the very front of the nose around the inner right side to the hydraulic pump inlet/outlet. Lines for the flaps and gear were also replaced. Okay, so much for the front section now on to the fuel compartment.

Not much had to be done in the fuel compartment at this point except tape the edges of the compartment with Gorilla tape, you know that thick green stuff that the FAA approved for fuel tanks. It's really sticky. I did have to make a phenolic-chafing block for the left-hand side that was lost during the Rhode Island excursion.

Our attention then went to the removed hull bottom. We noticed a few spots that had separated the bow skins from the hull bottom at the seams and new rivets were installed along with copious amounts of ProSeal. It was now time to gather the "Seabee Army" to rivet the bottom onto the fuselage.

Schedules were checked, wives were notified and phone calls made. All was falling into place. A meeting was held the day before the installation to discuss the procedure, address any problems the "Army" had AND bring to light anything that looked funny to them. A trial fit was performed to make sure the bottom would fall into place correctly...it did.

On the faithful day the bottom was repositioned under the fuselage, the spray rails put in position next to the respective fuselage side and one guy (me) was charged with mixing ProSeal while the others brushed it on the edges of the hull bottom and the bulkheads. We had two hours to complete the entire mission. The plan was to Cleco the bottom, with the spray rails, on completely...in every hole! We found that the draw Clecos (with the hex head) worked best as you can tighten them way down to form a tight seal.

Once the Clecos were in place we could all take a breath. The real riveting would start tomorrow. As you can imagine, it's very important to get as close to a water-tight seal as you can with a seaplane of any kind. With that said, all seaplanes leak a little. Even condensation can form inside the hull and water will be present after a day of flying.





The Seabee "Army" at work

Compressors were started and commencement of the hammering began. This four-man Army operated like a fine Swiss watch. Rivets were organized by size and positioned next to the hull and the ProSeal kept coming. It turns out that the ProSeal (thinned slightly with Toluene) stayed workable 'til we were ready to drive rivets. All the rivets were checked more than once and some were replaced more than once. All in all it went very smoothly thanks to very competent help.

Now that the hull was in place it was time to put it back together and get it ready for paint. During the "crash" the front seat was bent over to starboard and was beyond repair. Again, thanks to the Seabee wrecks a new front seat was cleaned, assembled and painted. Then there was the small stuff; the headliner, windows, ADS-B, elevator trim mod, all had to be replaced or reworked. The Empennage was reinstalled and the tail wheel assembly inspected and greased. The right wing float and strut was painted by our resident painter and replaced.

When the Seabee came back from Rhode Island the bottom had been epoxy primed but that's all. We had to match the gray and blue from the previous bottom. I did have some blue Dupont Centari left over from the previous owner but the local paint supply couldn't get it any more. They were very nice and called the PPG Company and they gave them the secret formula for the blue that I needed (I had plenty of the gray paint). It matched perfectly.

Oh Yea, the painting. The Seabee hull sits only inches from the ground. How are we going to get enough room underneath to spray the hull? After masking the upper half of the Seabee off, we took it outside and painted the gray part. The blue part would come later. After the gray paint set, we masked off the top from the spray rail edge up to get the hull ready for paint. The tail was jacked up and a small hull stand was put in place under the tail then each wheel was jacked up and put on automobile ramps and chocked. The struts were inflated to full length (10.5"). This gave us plenty of room for spraying the hull from underneath. The painting was excellent! Now the engine...





Our expert painter at work...

...now the hull bottom

The GO-480-G1D6 engine had been sitting on the pallet for 5 years! It was covered with plastic and the desiccant plugs installed. I did let the plugs lapse a bit and after a Borescope of all cylinders my friendly mechanic and I decided to take the cylinders off and inspect them more closely. The Borescope revealed what we thought was corrosion on the cylinder walls. After the cylinders were removed we found that most of the "rust" was the preservative oil the engine company installed. There was a small amount of rust close to the top of the cylinder and I dressed each one out with an abrasive pad. If I had known the cylinders looked that good I would have flown it that way!

After painstakingly reassembling the engine, which included fourteen various oil and fuel hoses, a manifold pressure line, installing all the spark plug wires and accessories it was ready to go on the Seabee. I made arrangements with a friend of mine to use his excavator to lift the engine into place. You have to remember the engine sits eight feet off the ground so precise control of the machine had to be maintained. I asked my friend, "Can you control this thing a quarter inch at a time?" He said, "Sure, no problem." He was right! Like a heart surgeon he finessed the excavator an inch at a time and smoothly set it down onto its engine mount. If I didn't know any better I could swear he had done it many times before. With the help of the Seabee "Army" mounting bolts were placed and tightened. What a relief!

Later on, inside the hangar, I found that my hose routing wasn't quite right. Some of the hoses had to be disconnected, rerouted and reattached. Try routing a 303-12 hose sometime! Frustrating.

In the comfort of the hangar the exhaust pipes were installed along with all the baffling. Hoses were connected to the oil cooler and various accessories and panels installed. With the help of a Seabee Army corporal we preoiled the "sparkplugless" engine with mineral oil and rotated the propeller to spread the oil around. The cylinders had been liberally oiled prior to reassembly. The propeller was next.



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Newly overhauled GO-480-G1D6 ready to go



The "Seabee Army" hanging the engine

The propeller is an 89" diameter Hartzell three blade, reversible propeller. It had been overhauled just prior to my trip back from Rhode Island. It weighs 110 pounds so help was definitely required. This is a three-man job or at least a three "old" man job. Two guys lifted the prop onto a hull stand just behind the engine (the yellow stand in the picture) and a third man guiding the Spline propeller into position. The prop nut, which is integral to the propeller, was started and a BIG breaker bar was used to twist the nut 450 ft-lbs it needed to meet specifications. It was safetied in place and the nose...er...tail piston was installed. The Beta rods were attached and the reversing valve connected along with the prop governor.

The trickiest part of the propeller installation is the Beta stop nut adjustment. There are three nuts that have to be within 0.001" of each other at precise dimensions. Thankfully the prop shop provides these dimensions.

Ah yes! The fuel tank. The 75-gallon tank, or cell, is a bladder tank located just aft of the main gear in the hull section. To replace it one needs to have years of training as a contortionist and it is only accessible through the cabin aft of the back seat. There is an 8" x 16" rectangular hole that this giant bladder must fit into. The fuel drain (for sumping during preflight) is attached before installation and then the whole thing is folded into a roll that should fit through the opening. It did. After it was in the "hole" we found it was too small! Sitting in my hangar for 3 years allowed the fuel cell to shrink. What!? Calling Floats and Fuel Cells in Tennessee they advised me that it is not uncommon for a cell to shrink after long-term dry storage. "What can I do?" I asked. "Some people have had good luck soaking them in a 55-gallon drum of 100LL for a month or two", he said. I wasn't going to wait that long plus I didn't know if it would work. They also asked how old the cell was. I told them the date on the cell was 1988. They recommended a new fuel cell (of course) so I ordered one. I also asked if I could get the original fuel cell returned as parts for the Seabee are hard to find and they said, "No, we need to destroy it after the new one is made". Evidently they can't return a fuel cell with the same serial number as a new one. Go figure. The second installation (there would be three) I noticed a fuel drip from the step (the lowest part of the hull) so out it came again. The fuel drain was leaking because there was a bolt that was



too long. Bolt changed, on to installation number three. Okay, no leaks this time. The plumbing was installed and the tank top replaced with all the associated hardware and hoses for fuel delivery and venting. The electric fuel pump was replaced and plumbed. Whew! Thank the 100LL gods again that that job was done. Added 5 gallons at a time to calibrate my fuel dipstick up to 30 gallons (for now) and we were ready to roll.

The engine run was next. After a new engine installation, most Seabee people run the engine for the first time with the wings off. This makes for easier tweaking of anything that might need adjusting. The engine was started for 5 minutes and shut down to check for leaks and security of the fasteners.



First engine run (Photo by Ed Fisher)

During the engine run the temperatures were noted and the cylinders never got over 350° F (redline is 475°). Granted, the engine was running at 1200 RPM for just 5 minutes but I was happy so far. All the engine instruments worked. The electric fuel pump, which is required to get fuel up to the engine, worked flawlessly (Almost TOO flawlessly). The fuel pressure from the pump should be 9-16 psi but I was getting over 20 psi! (I'll have to get that checked out). The engine was shut down and the inspections began. No oil leaks, no fuel leaks and all fasteners were secure. What a good day! The "Army" was given the day off.

Two more engine runs would be done; one for 20 minutes at no more than 1500 RPM and one for 30 minutes. The 30-minute run included a "full power" runup. The Seabee was chocked, brakes set and, for good measure I tied the tail of the Seabee to my truck! Engine was started and allowed to warm up. Everything was good so far. With a hand-held radio I was in direct communication with Ed Fisher (mechanic extrordinare) who was standing guard with a fire extinguisher. The power was increased slowly to 2000 RPM then to 3300 RPM. I couldn't believe the power I had. The throttle never reached the firewall as I was getting scared! I was happy and all the gauges were green.

Now the good part; the wings! We mustered the Seabee Army and arranged the wing installation. The wings were in a hangar on the field and



needed to be moved to the Seabee hangar. One wing panel at a time, on the back of a truck, came up the steep embankment on their way to the fuselage. One rider was in the back of the truck holding the wing from shifting and driving at 5 MPH we made it safely to the installation site. The right wing was first. I figured it was a new wing for the Seabee and if we were going to have problems it would be here. The wing is mounted to the airframe spar carry-throughs first with two large (AN10) bolts through the fittings. For some reason Republic has a large bushing that goes into the rear spar after the wing is in place then the bolt can be installed. The forward bolt can then be slammed into place. One guy holds the wing strut goes in the lower fuselage fitting first and then pushed up into the upper strut fitting. Other than an alignment problem with the upper fitting the wing went on fairly easily. Bolts were installed and tightened.

Now for the left wing: I thought the left wing would be easier...NOT SO AVGAS BREATH! The left wing was the "good" wing but gave us a little trouble with alignment. Much moaning and groaning was apparent during this process but eventually both wings were on and secure. It was looking like a Seabee!



Left wing on...

Right wing on! Yes we malletized this one.

After the wings were attached we rolled the Seabee back into the hangar to contemplate our next move. Most of it was just small stuff like wing tips, interior, seats and general lubrication. Republic was kind enough to provide a lubrication chart that has all the lubricants and locations. Most of the remaining work was a one-man job so I gave the "Army" the day off...again.

Wing tips were installed, headliner installed, seats installed, beverages consumed and all was well with the world. The next phase was inspections. All the removable panels were opened up and I scheduled an appointment with the IA that would sign off the paperwork. The A&P had already signed off the work we did which, was quite lengthy, but the Annual Inspection had to be done. As most of you know it would be easier to schedule a meeting with the Governor than get an IA out to check everything out. Mr. Republic must have been smiling down on me because the IA was available almost immediately. The IA looked in on us



every once in a while during rebuilding to see how things were going and was approving of our work as we went along. The big thing was the full power engine run. The Lycoming book says not to exceed 2200 RPM on the ground so the full power check was done on the first flight. With the IA happy and me happy and the A&P happy it was time to fly! Finally on September 14, 2021 the Marty B II was born. All paperwork was legal.

But wait, I almost forgot! I need a physical AND a Flight Review. Uugh! Basic Med is a wonderful thing and thankfully we have a resident Doctor that can do them so...Physical...Check! The Flight Review was another story. I had to ask a good friend of mine to fly down from North Carolina and check me out. He would but not 'til next week (crickets). The wait was excruciating.

On Tuesday, October 12, 2021 my CFI (Seabee qualified) friend flew down and looked over the Ol' Marty B (II) and he was happy and I was nervous. About 11 o'clock that day we started the Seabee up and got ready to go. One of the local pilots had taken off and circled the field as another set of eyes for me. If anything were to fall off or burst into flames he would tell me.

A runup was done and all the instruments said go! As I lined up with the runway I felt the nerves subside. As my test pilot mechanic said, "When you get ready for takeoff you'll know you have a job to do and the butterflies will disappear." He was right. The throttle was advanced slowly and the instruments checked. All was good. More throttle and still good. The last inch of throttle really threw me back in the seat! That engine has got some ponies! As we climbed out the airspeed went through 80 MPH then 90 MPH and we were climbing at 800 FPM! That's not bad for a Seabee. The first 30 minutes were spent circling the airport just in case something weird happened. It didn't. I did notice something funny with the airspeed indicator; it was reading 118 MPH! I never got above 100 with the other engine and longer wings.

All the engine instruments, especially the CHT's were great! The highest cylinder got to 410° well below redline (475°) but the oil pressure was a little high (88 psi, redline is 85 psi) but that would be taken care of later. After 30 minutes we set up for the first landing.

The GO-480 engine is a geared engine that redlines for takeoff at 3400 RPM (5 minute limit) and then the propeller control is reduced to 3000 RPM for the climb with full throttle. The constant speed propeller will stay at cruise RPM almost to the ground that's why it always sounds like I have a lot of power coming in but really the manifold pressure is only 14-16". Idle is 12".

All the old time GO-480 ("Gee-Oh") guys will tell you to never, never let the propeller drive the engine! This could happen at idle and I have always been reluctant to bring the power back below about 14" of MP as anything below that and the gearbox starts to chatter which is a sure sign the prop is driving the engine. On this first landing I found it hard to slow down! This had never been a problem before with that "other" engine. Maybe I had just been away too long. Downwind, 85 MPH. Base 85 MPH. Final 85 MPH. What the heck! Finally at about 300 feet I was indicating 80 MPH. That's where the airspeed should be. Crossing



the trees we were lined up right on centerline (no wind to speak of) and we landed just past the numbers on runway 9. What a great feeling. Three and a half years of work and it all came down to a 30-minute flight over the airport. We went to lunch to celebrate.

The Flight Review didn't really start until we flew again that day. This time we would fly to the lake for some water work and then to Pellion for some runway landings. We flew 3.5 hours that day and everything went well beyond my wildest expectations. I know people say, "It's just like riding a bike", but now it felt more like a Harley motorcycle. I am a little rusty but I think a few hours more and I'll be "in the groove". I know from previous experience that flying a Seabee is the most fun you can have sitting down.



First landing and it <u>was</u> a Tuesday! October 12, 2021 (Photo by Mike Moore)

I can't say enough good things nor could I repay the fine people in our community here at Whiteplains. When you need help reveille will sound and an "Army" will form in no time to help you out. And I would be remiss if I didn't recognize the fine gentleman that helped me. I couldn't have done all this without them:

Miller Monarch: For helping me drive to Rhode Island twice! And for the "standard wing"

Alex Poules: For his most excellent metal work

Mike Moore (Seabee corporal): For his numerous suggestions, riveting and overall help

Dennis Ramsey: For his muscles and malletizing ability

Don Nowakowski: For his riveting and wonderful suggestions

Jack Fastnaught: For his encouragement and help collecting the initial "Army" Rob Bridgers: For riveting and being there for much needed moral support Cris Mestler (my son): For fuel tank installations. He <u>is</u> a contortionist



Greg Wicker: For his huge truck and huge trailer Don Cook: For his help with wing unloading Chuck Hyer: Seabee IA and overall nice guy Full of good advice. Jim Franklin: For his ever-present safety advice and especially... Bill Bardin: For flying down to Whiteplains and checking me out, thanks Bill! Ed Fisher (Raceair Designs): Without whom this project would never have been finished. His expertise, solid advice and aeronautical knowledge were a Godsend. Thank you Ed! We are very lucky to have you.

I'm sure there are others I have forgotten so please forgive me. But I thank you all for your support and encouragement for the last 3+ years. It has been an amazing learning experience.

Now what do I do? Oh, I know!....