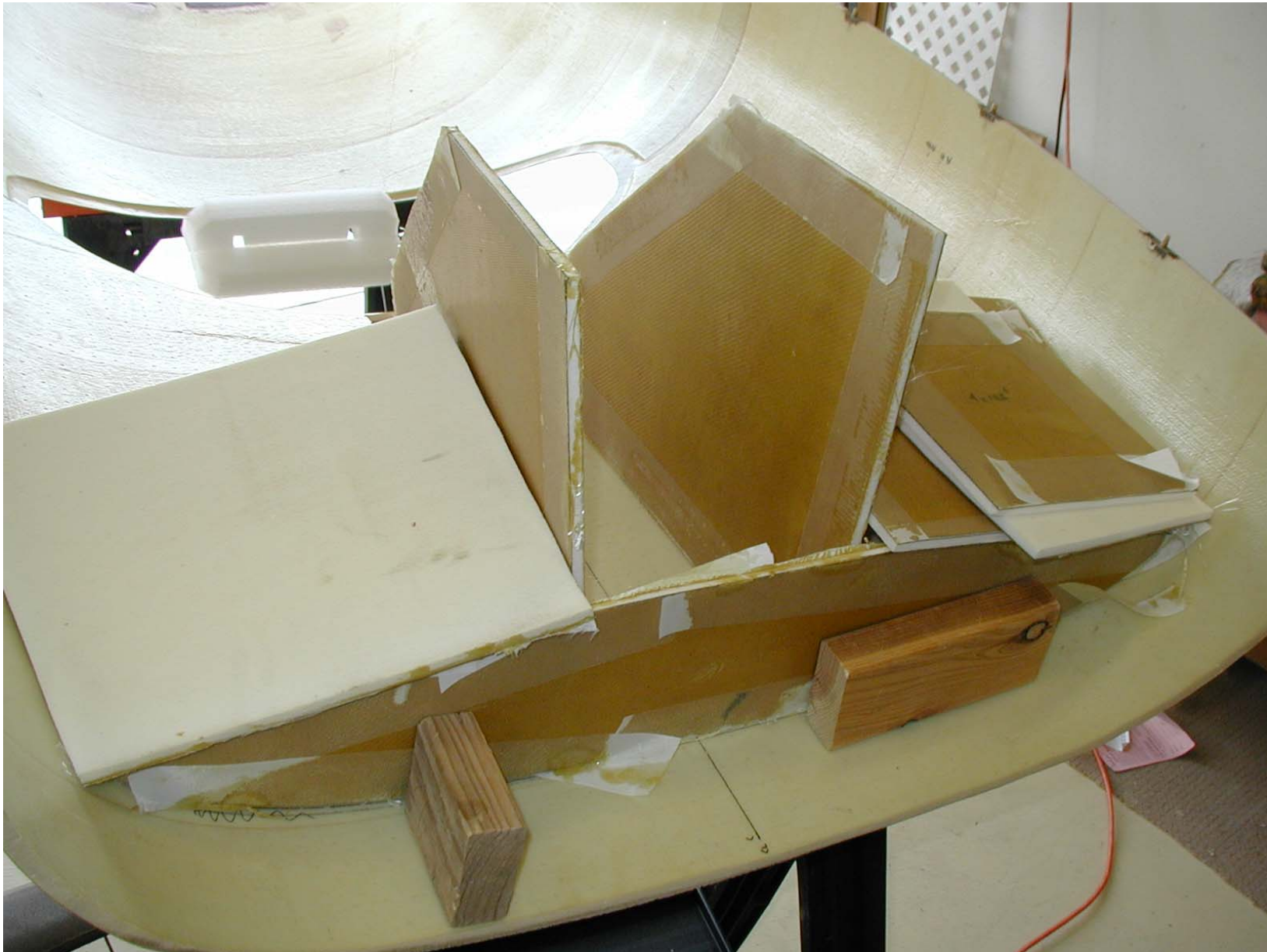


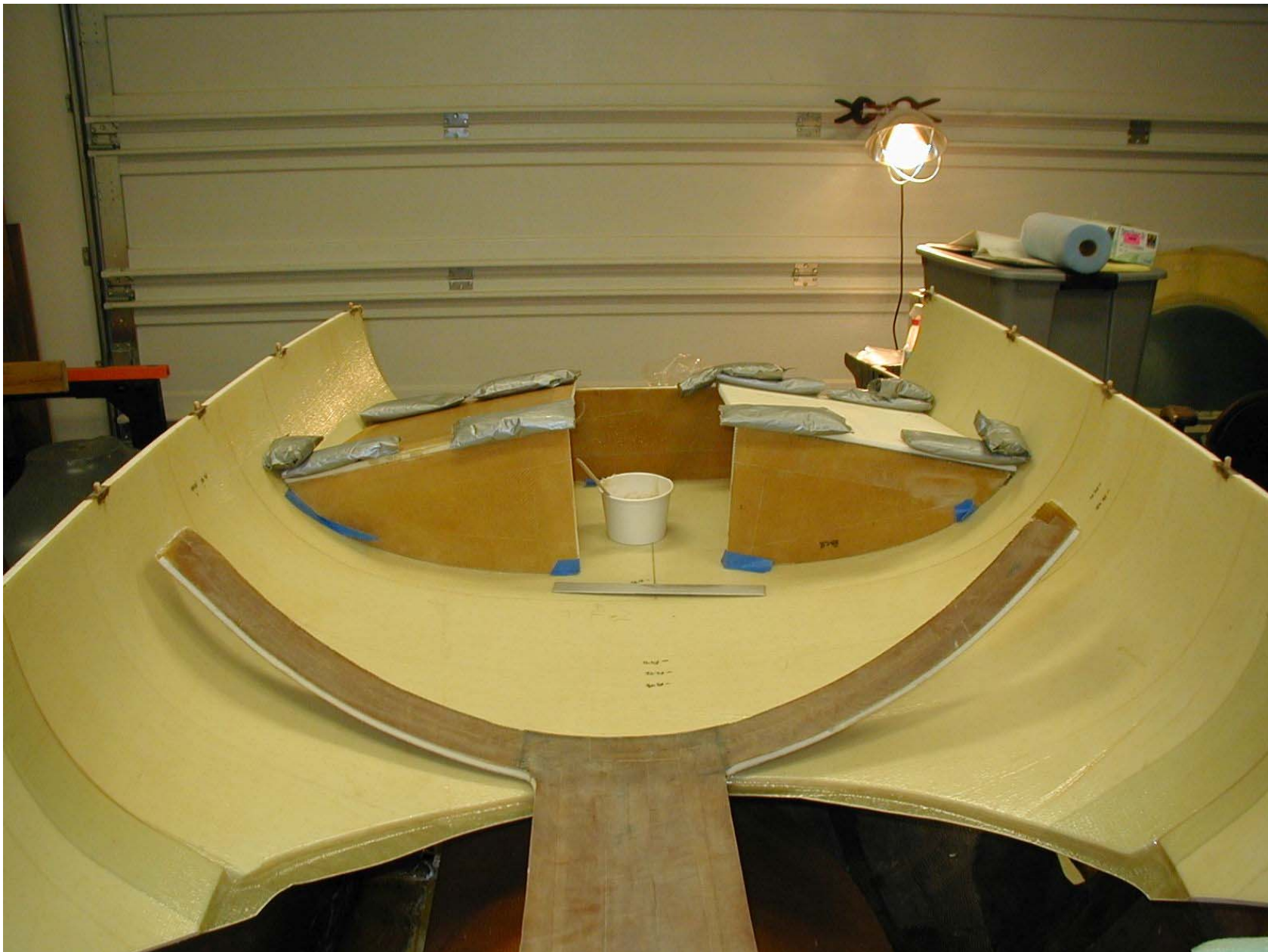
Construction: Fuel Tanks





Cut and glass one side of foam panels that will be build into oversized header tank. Fit in upper fuselage half for rough dimensions. November 2008.





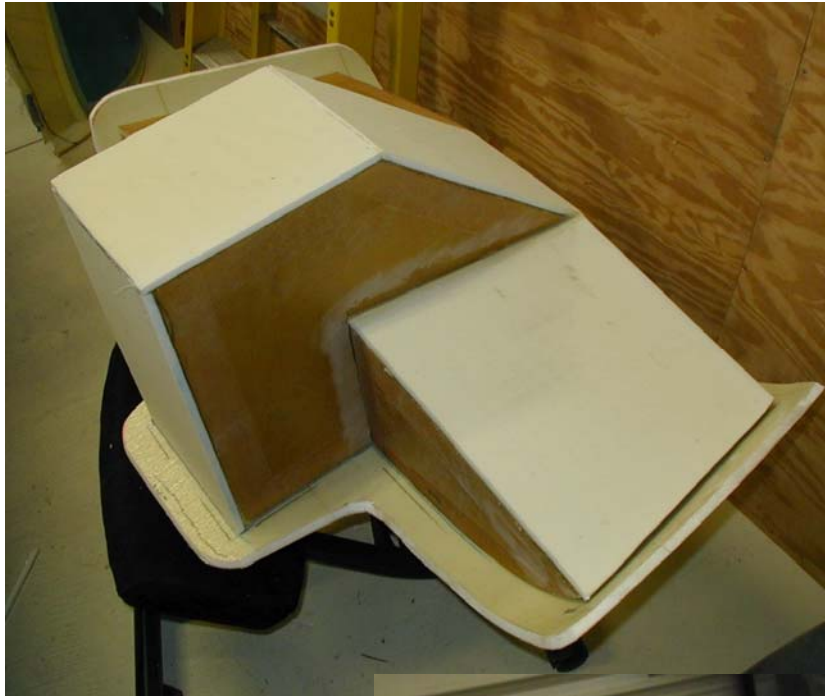
Layout and initially bond header tank panels together in place in upper fuselage half.
May 2013.





Check initially bonded header tank for clearance inside of fuselage shell. May 2013



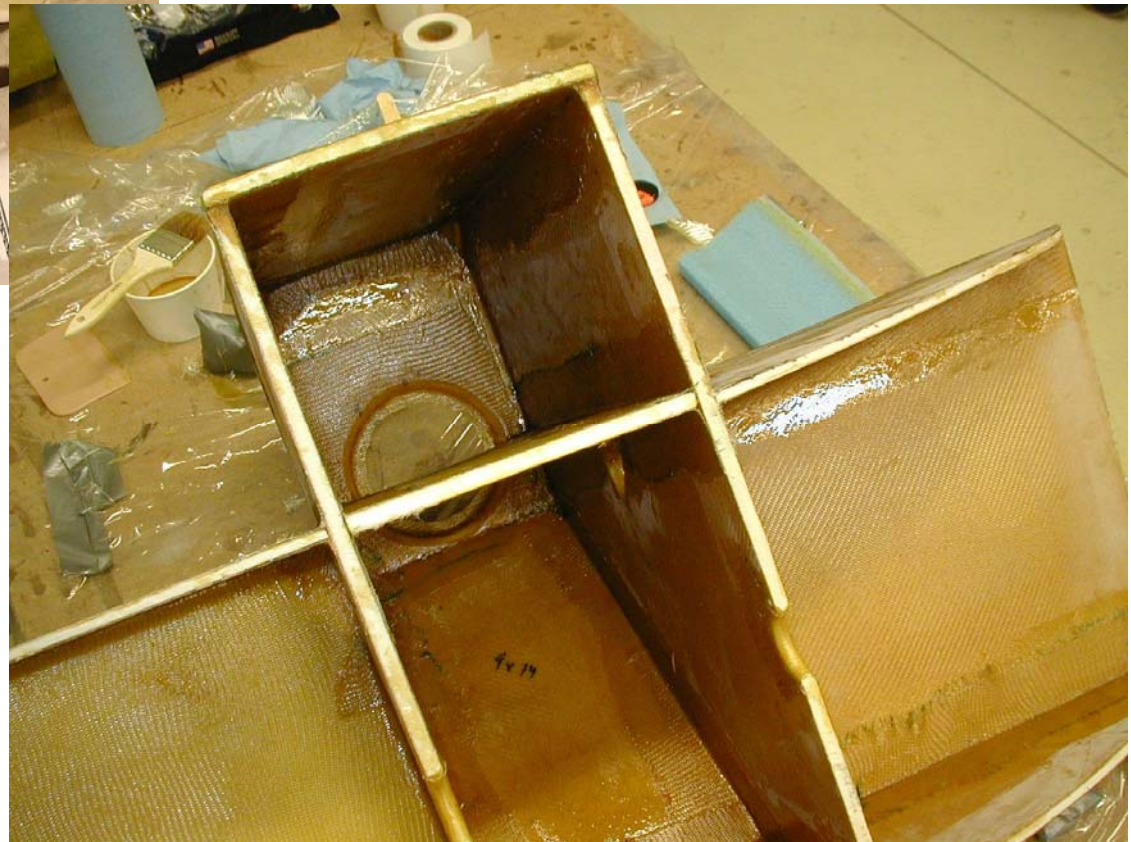


Cut section from upper fuselage half to create top of header tank, then test fit tank into position on cutout section and inside fuselage to verify fit. Cut vents in upper internal baffle/supports in tank to assure full drainage. July 2013





Bond 2 BID strips on all seams, inside and out of tank with flox fillets for joint strength and to assure seal. Cut access/drain port hole in bottom of tank then bond glass to glass 2BID around port to support strength. August 2013.





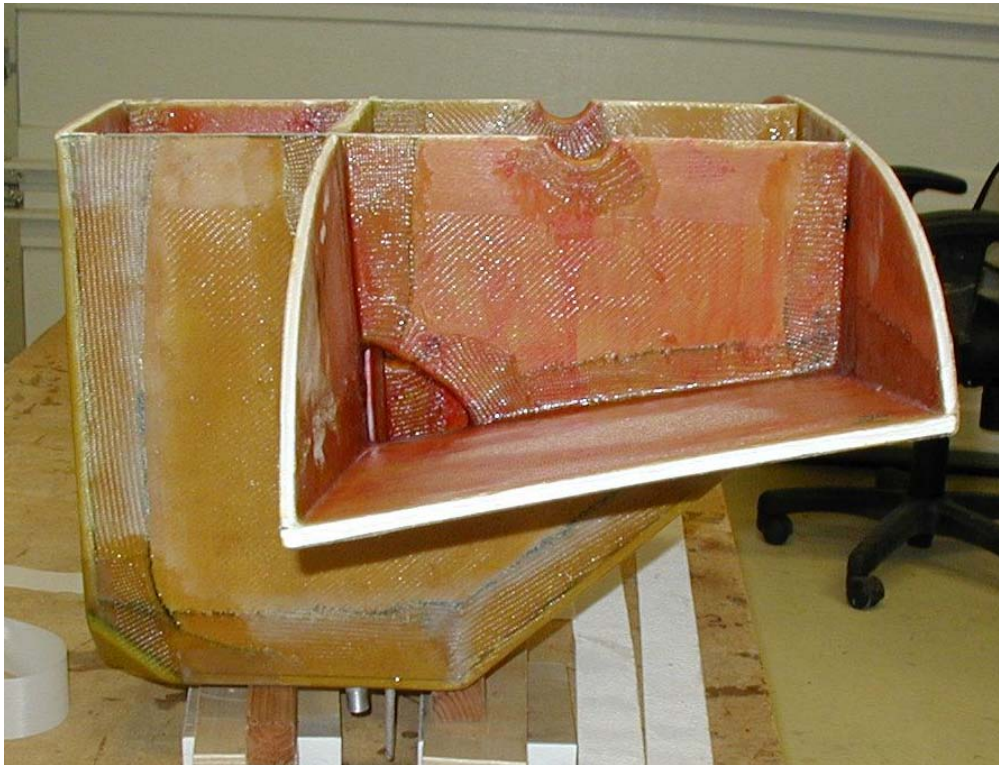
Layup all internal seams wet and include flox fillet for strength and seal. Close out all edges of internal venting and drainage ports. August 2013





Fabricate phenolic sump ring with integral circumferential clamping bolts (10-32), fabricate overflow baffle and install plumbing for venting and overflow return to main tank, then slosh with PPG Aeospace PR-1005-L BUNA-N-SLOSH COATING on all fuel wetted areas of the tank. September 2014





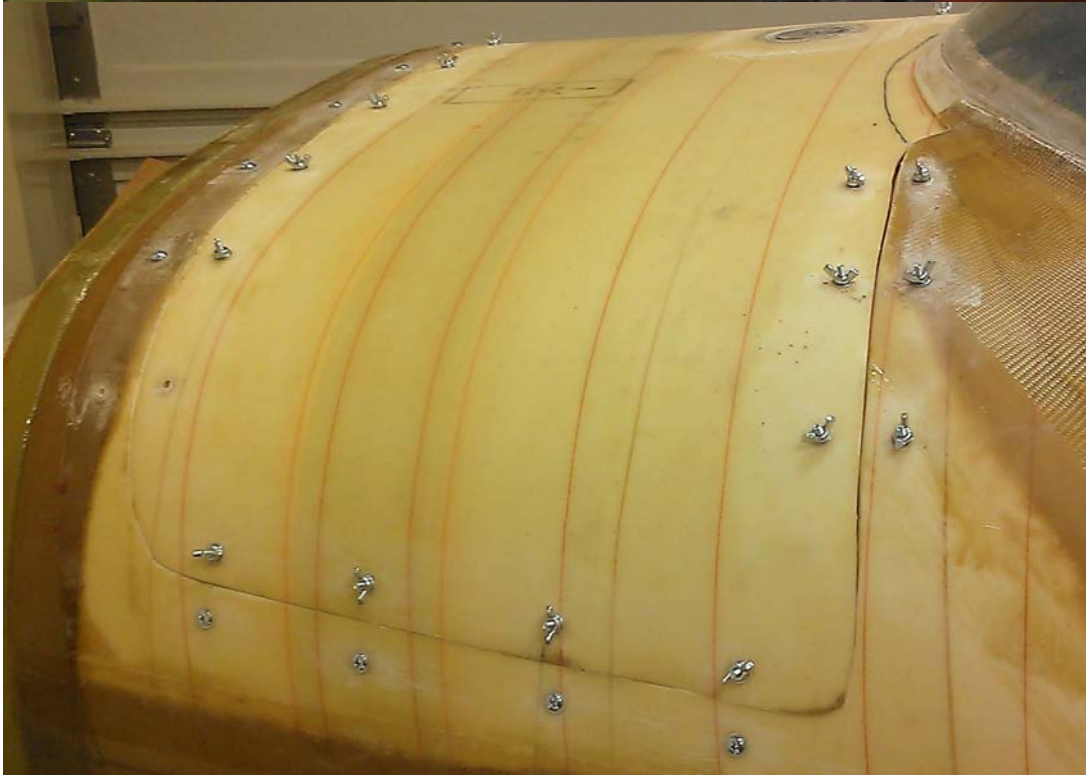
Tank body prepped for installation to top (fuselage panel section) by sanding upper panels to fit. Panel prepared with small channels of 1BD glass filled with floc to assure good squeeze out and bond to top shell. Once body is pressed into place in the floc, then 2BD tapes and floc fillet is applied around the outer perimeter of the tank body where it joins the top. Once bonded, the tops section is sloshed with sloshing compound to fill seals. Base plate is installed with BUNA rubber gaskets and the tank is pressure tested. Verified to hold 1 psi for 20 minutes. September 2014





Finished header tank is fitted with phenolic sump cover drilled for fittings and 3/8" aluminum fuel lines. Isolation valve and fuel filter are fitted into place on the tank and verified for clearance with controls. Flush mounted tank filler neck is installed on top of tank along with phenolic mount flange on top of tank for capacitance fuel level gauge assembly. August 2015.





Create temporary installation points for header tank by installing dowel segments and center drilling for screws mounted in backing plate. By snugging down wingnuts and washers on exterior it pulls the edges of the tank into alignment with the fuselage sides. June 2015.





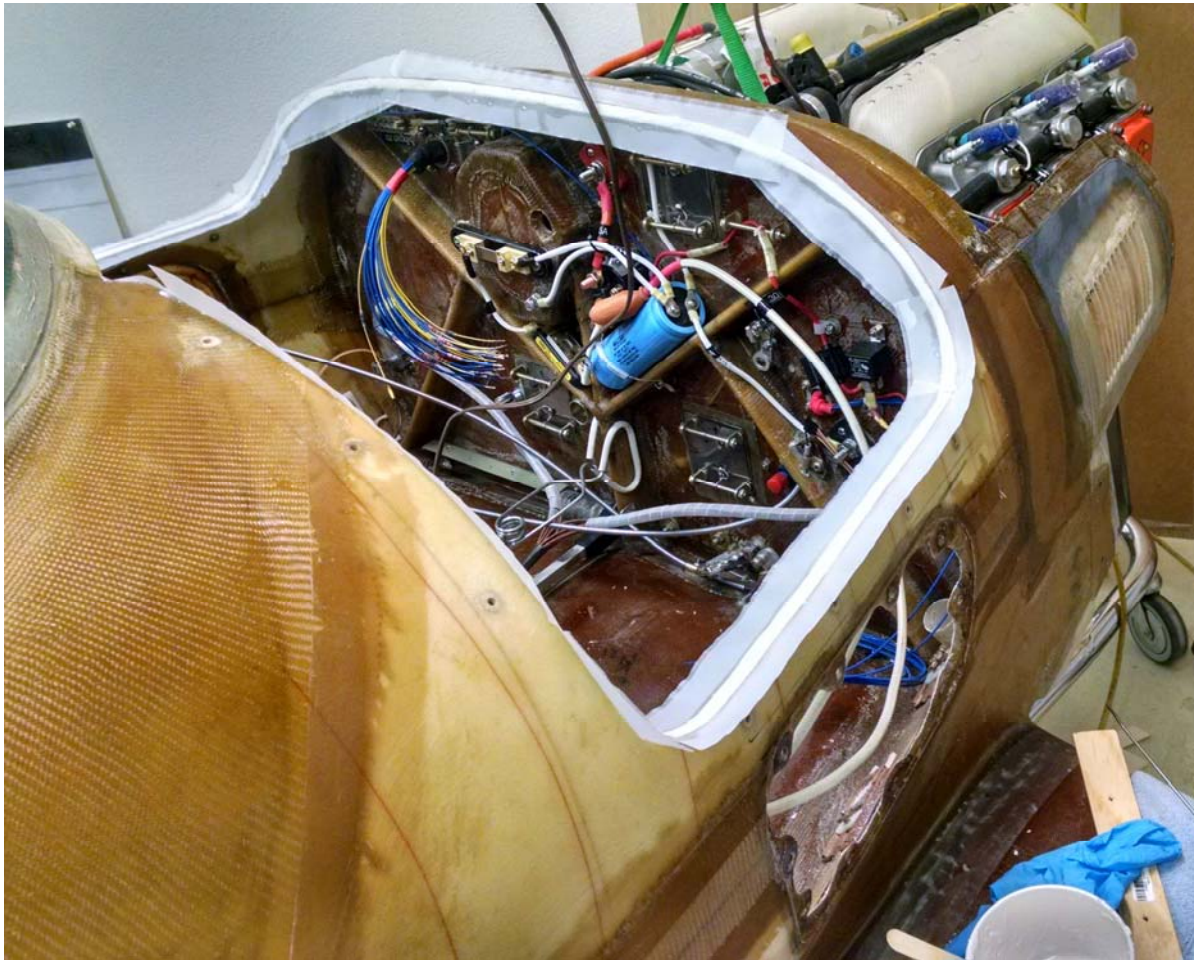
Install mahogany shelf on rear panel of header tank to hold the ADHRS sensor package for Skyview system avionics package. February 2016





Install mounting hardware for Skyview EMS box on sloping front of header tank. June 2016





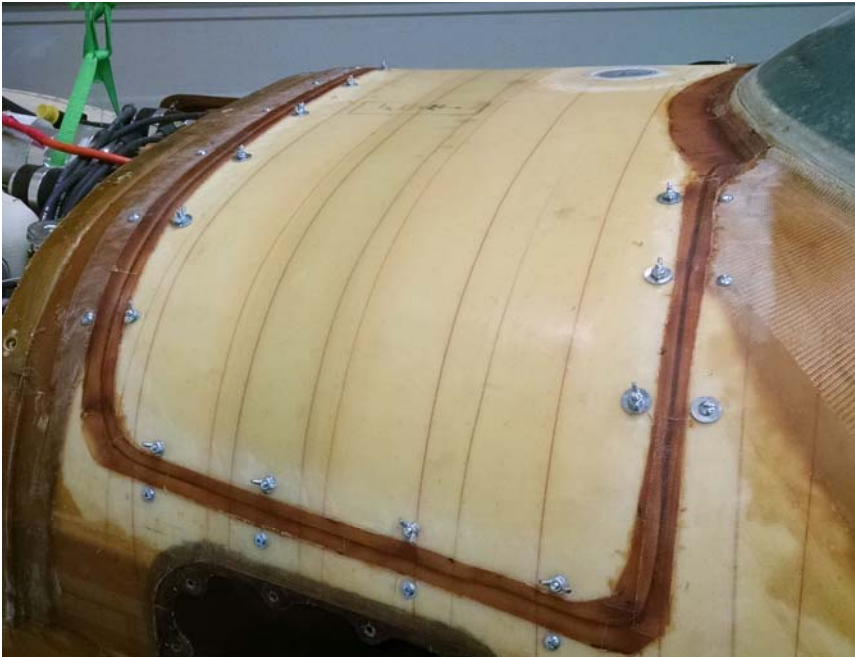
Prep fuselage for permanent installation of header tank by applying micro to seal receiving lip and laying up with peel ply. April 2017. The inset to the right is the capacitance sender installed in the header tank. The top of the sender that is shown resides inside the cockpit under the forward portion of the windscreen.





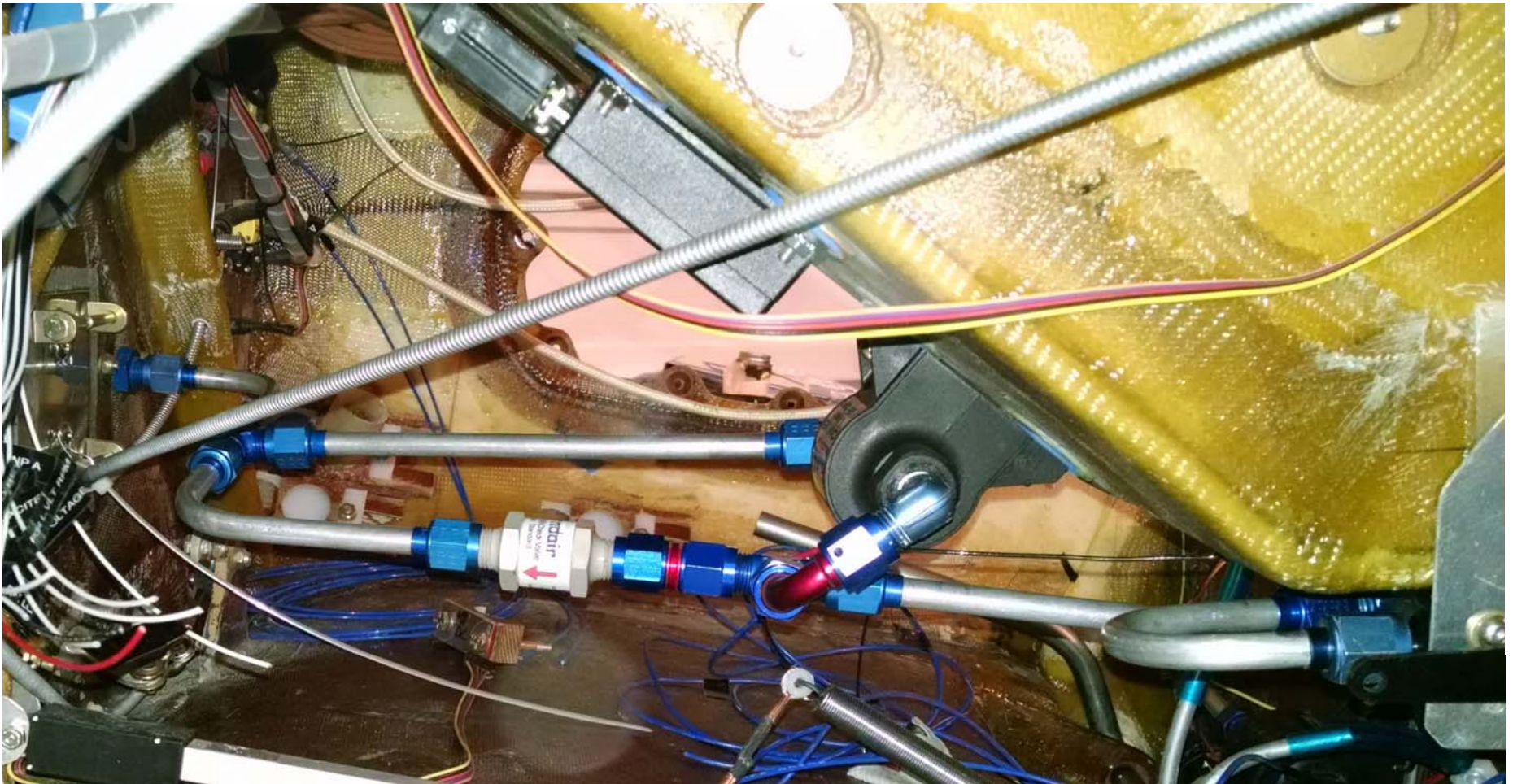
Install tank with alignment flanges tightened to bring fuselage and tank edges into close alignment. Apply duct tape 1 inch from seam on either side for to avoid glassing over alignment hardware. Then the gap between tank and fuselage is filled with flox 1 BID applied to seal the seam. Peel ply if applied over this layup. The BID seam glass is trimmed along the edge of the duct tape then the tape removed and the sealing glass tape edge is feathered for additional 2 BID tapes applied over seam. On the interior, the seam is sealed with peel ply and tape to avoid flox dripping through. April 2017.





The alignment hardware is removed and the seam is sanded/feather for application of two BID on the exterior of the fuselage across the seam. The interior tape and peel ply is also removed and sanded to prep for 2 BID to be applied on the interior of the seam. April 2017

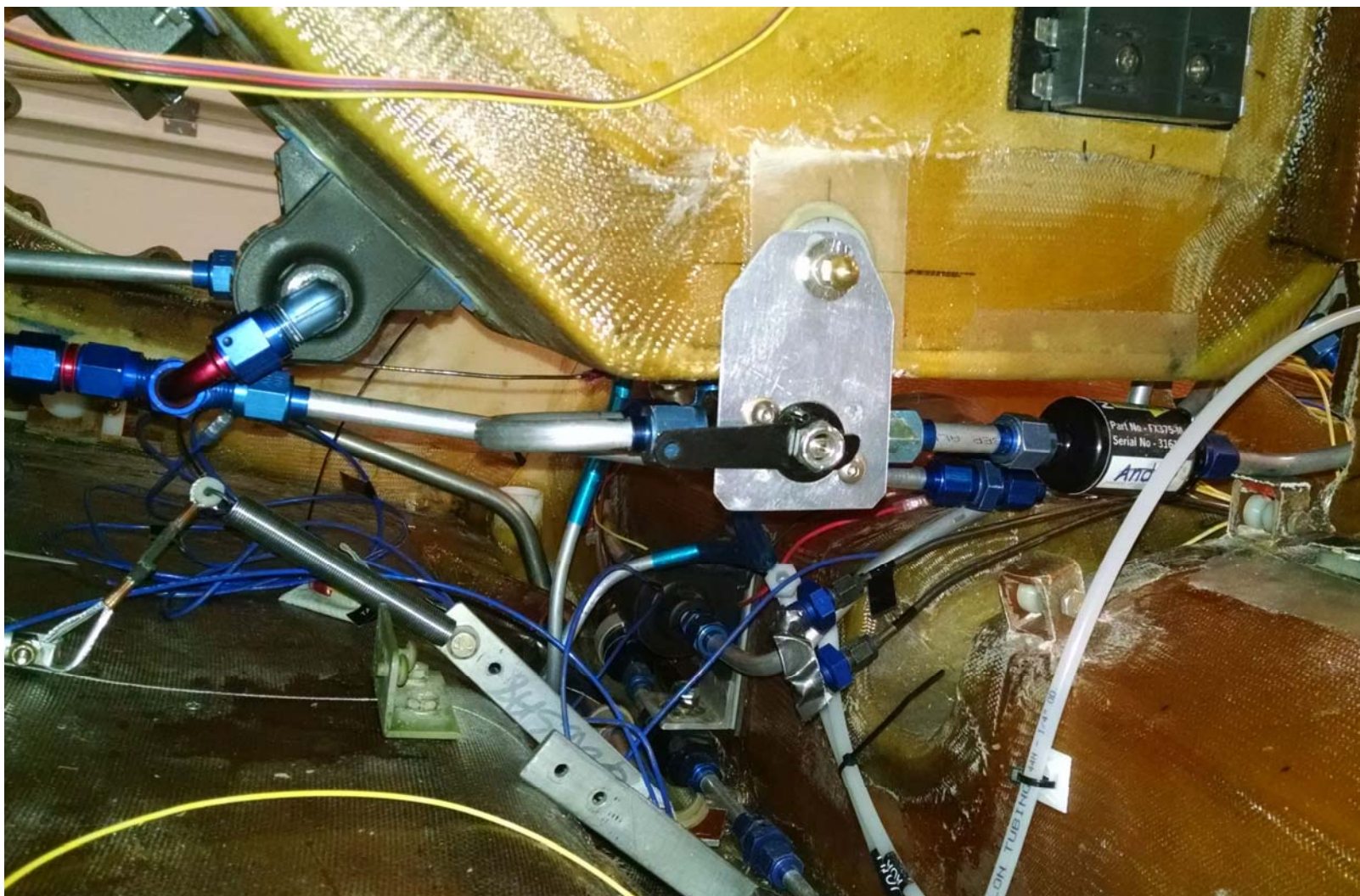




Install boost pump on mount hardware on front of tank and install plumping to sump along with check valve and pump circuit. Outlet is connected to firewall pass-through. See fuel system schematic at:

http://n8wq.scheevel.com/documents/Main_electrical_schematic3.pdf





Additional view of 3/8" tubing and (AN6) hardware including isolation valve and filter on header sump. In the lower background is the main fuel pump mounted on front face of Main fuel tank.





FUEL TANK FOAM BEFORE
FABRICATION 11/24/84



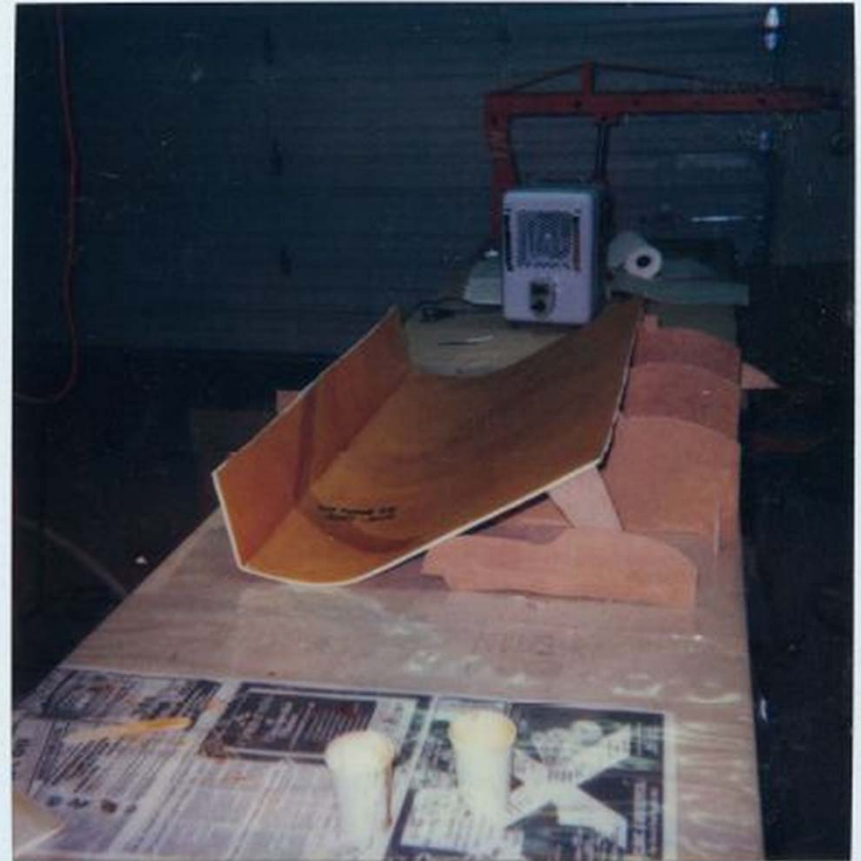
FUEL TANK FOAM
FORMED OVER TEMPLATE
READY FOR GLASSING 11/24/84

Cut and form urethane foam sheet over forms to create shape of main fuel tank per Q-2 plans section 4-1. November 1984.





COMPLETED 2 PLIES OF BIDIRECTIONAL
CLOTH ON FUEL TANK 11/25/84



CURED AND TRIMMED
FUEL TANK 12/2/84

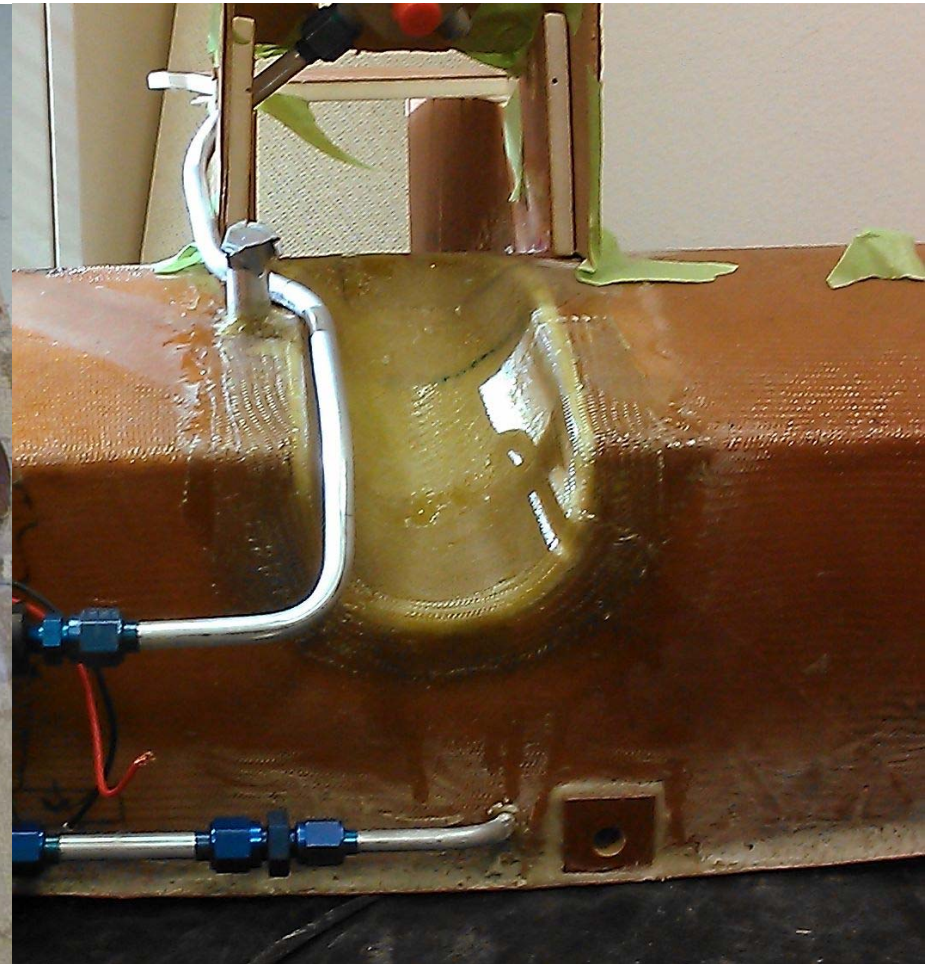
Glass the top of the fuel tank with 2 BID per plans section 4-1. Once cured, tank is flipped over to prep for glassing the bottom (inside) of fuel tank. November-December 1984.





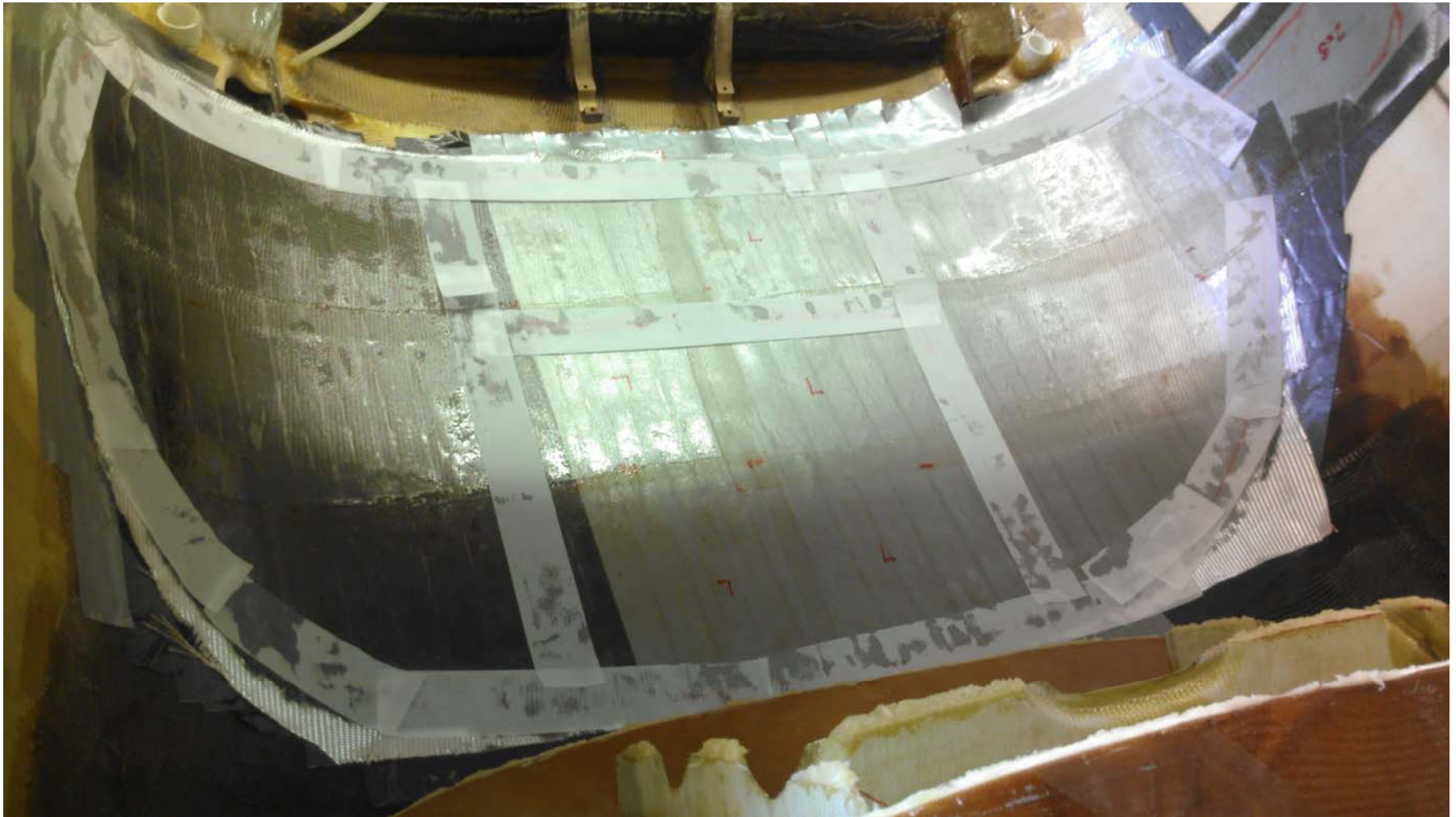
Trim and fit main tank to the contour of the fuselage in proper position in front of seat back bulkhead. December 1985





Design, cut and install half tunnel in top front of main tank to accommodate straight pushrod clearance for elevator control. Cut removes portion of tank and urethane sheet is glassed front and back with 2 BID plus 1 BID tape on seams that sealed with flox. All plies are laid up wet to create seal. September and October 2014.





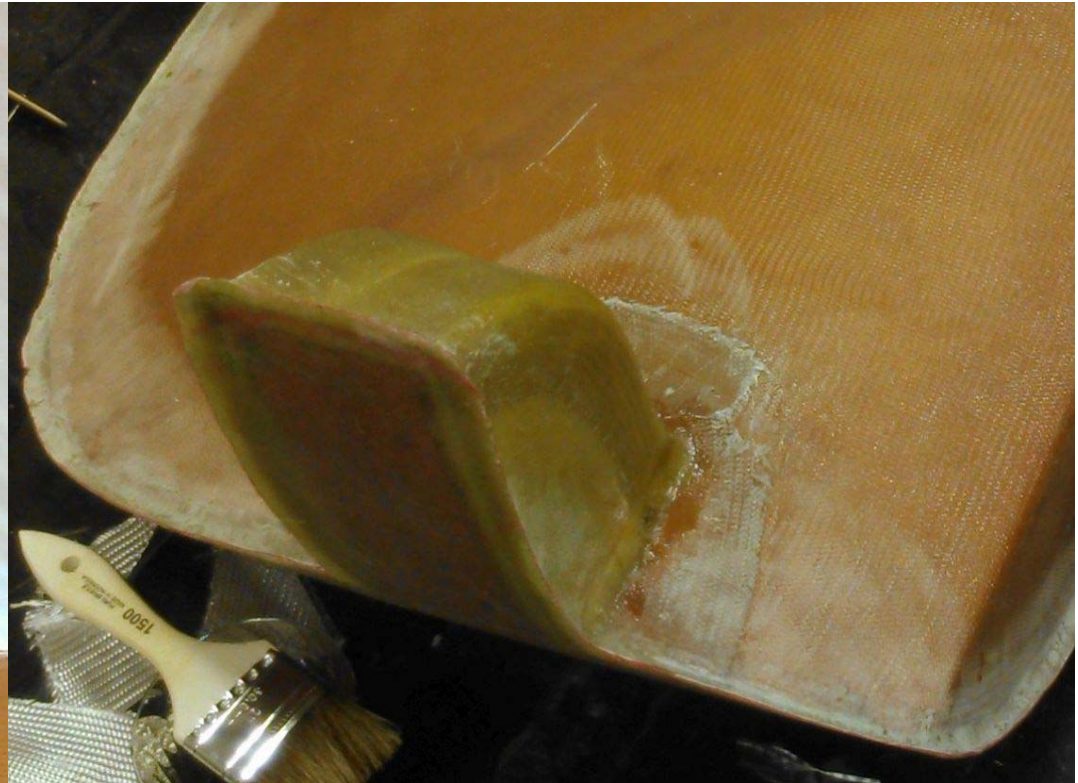
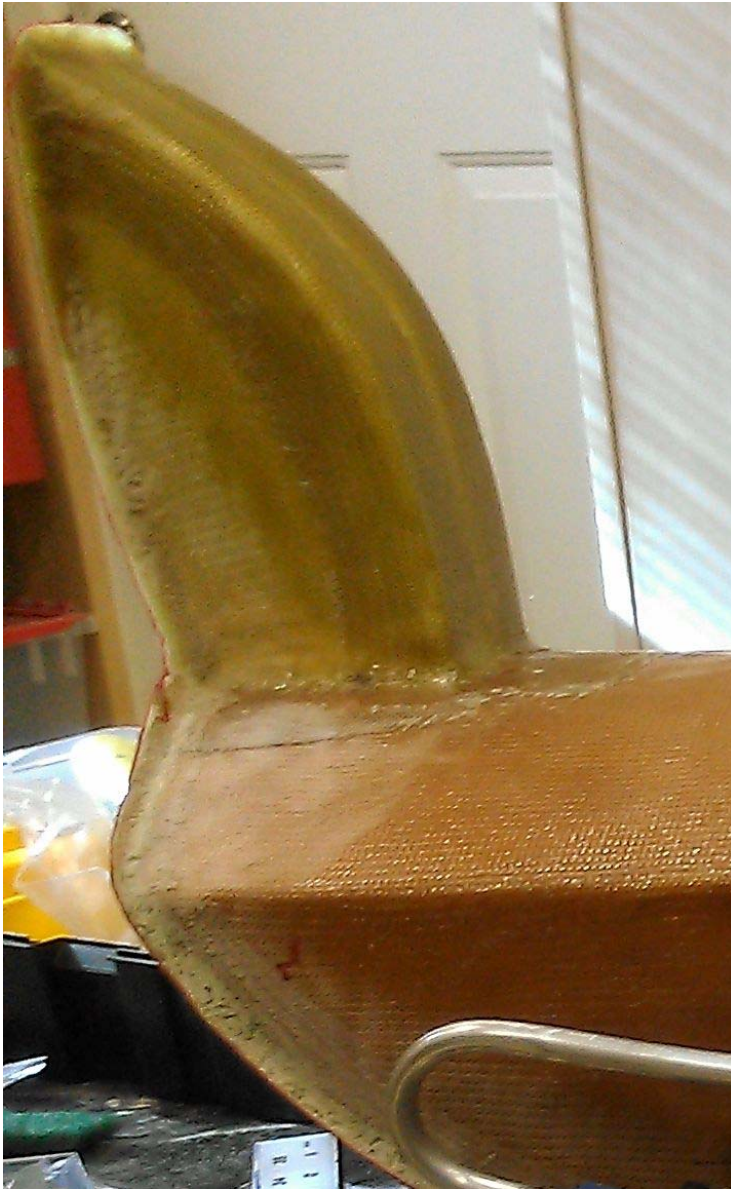
Internal baffles and ribs are glassed into place in the tank per Q-2 plans. Duct tape applied to fuselage bottom and two plies of BID are laid up over the tape and peel ply applied at contact points of the baffles. Contact points of baffles are coated with expandable foam and tank is set in place. Foam height on baffle contact points indicates the amount of additional baffle material to add to make solid contact with tank bottom. Expandable foam is replaced by urethane and glassed to make good contact with tank bottom. October 2014





Main tank bottom skin is extracted from fuselage bottom (duct tape mold release), trimmed and bonded to tank edges and baffles with flox squeeze out to maintain seal. Extension on lower right of photo is to allow continuous tank bottom up to fuel filler extension. October 2014





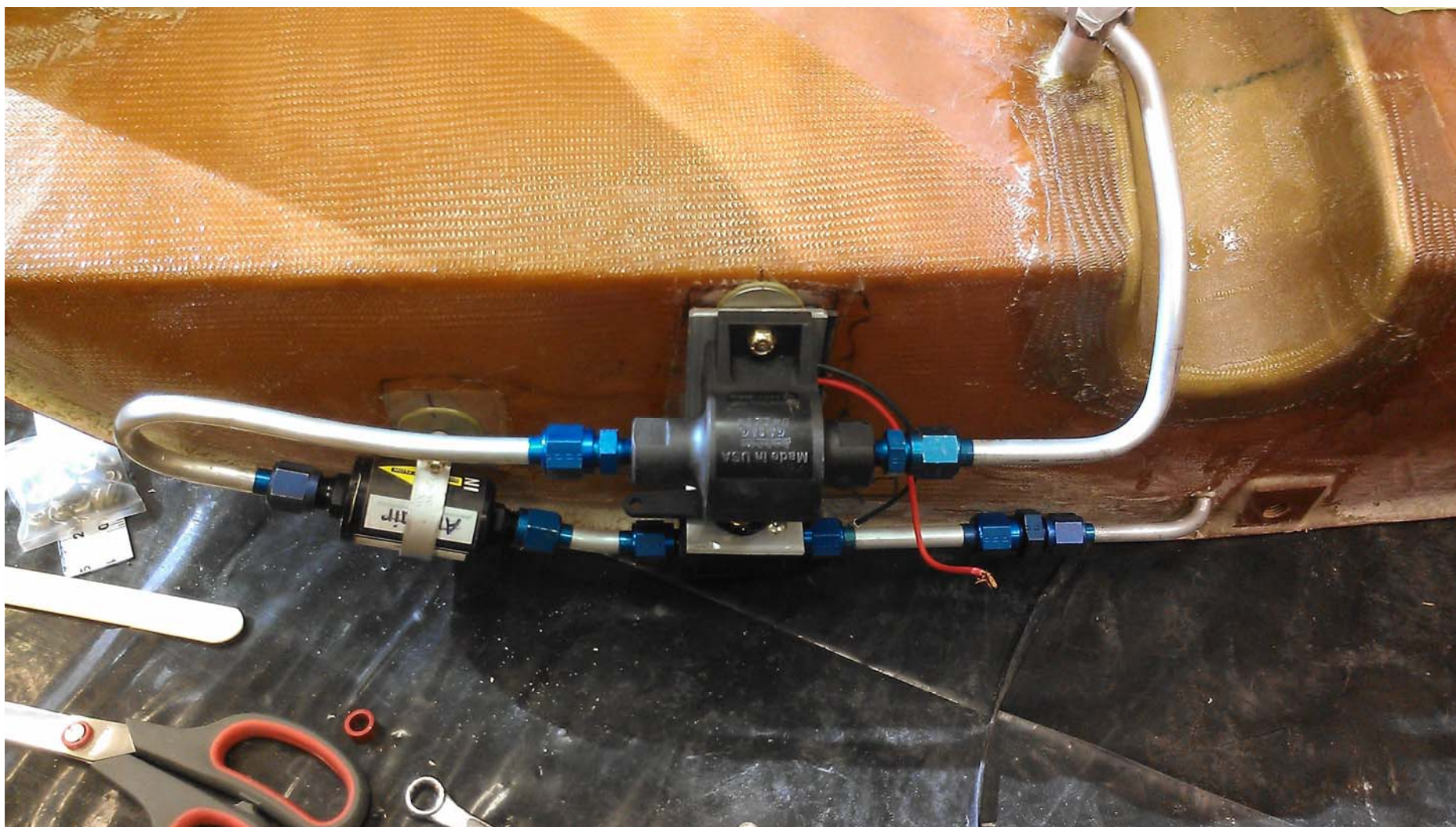
Fuel tank extension is fabricated from urethane foam and glassed with 2 BID on both interior and exterior portion of tank. Stainless steel sheet is bent and bonded to interior back of extension to protect from erosion by filler nozzle over time. Bottom skin is bonded to extension with good flox squeeze out. All layups are wet to ensure good seal and seam between extension and tank is reinforced with two BID tapes. Interior of tank is sloshed with PPG Aeorspace PR-1005-L BUNA-N-SLOSH COATING October 2014.





Install all mounting hardware, hardpoints and phenolic ports for fuel pump, filter, isolation valve and plumbing to connect to panel mounted fuel selector. November 2014.





Detail of installation isolation valve, fuel filter and of electric fuel pump leading out from the fuel tank. Fuel tank sump internal pick-up is 5/16" tubing all other tubing is 3/8". November 2014.





After installation of center console, fabricate phenolic hardpoints for additional fuel indicators, including mechanical float gauge located near pilot's leg and a capacitance guage installed near the filler extension on passenger side. After installation of gauges, tank is pressure tested holding 1 psi of air pressure for 20 minutes. February 2015.





Level fuselage and determine lowest point to install phenolic hardpoint for sump drain. Also cut opening for filler neck on fuselage side prior to installing tank in fuselage. April 2015.





Cut out port in filler extension to match up with port in fuselage side prior to installation of tank into fuselage bottom section. Note position of capacitance gauge in tank. Inset shows details of Westach gauge installed. April 2015.





Apply floc to all fuselage seams and baffle contact points on bottom of tank, then press into place and check for floc squeeze out all around main tank. Floc filler neck in place and verify seal to the main tank filler. Internal ground braid previously installed in tank is connected to filler cap and ground lug on lower front of tank. All grounding verified. April 2015.





Main fuel tank edges are all sealed with 2 BID tapes per Q-2 plans, for seal and strength. Then fuel flow plumbing is cut and fit to clear elevator controls and other obstructions. Below sump of header tank. August 2015. Photo below shows final layout with header tanks bonded into position and fuel selector

