

Construction: Canard





Butt joint of main spar sanded flush and verified with thin paper technique and spot-light technique 4/14/85



Canard spars being jugged and verified level 4/14/85

Set up jigs for canard per Q-200 plans supplement with anhedral removed per Tri-Q plans conversion. Bottom of canard spars are aligned to be flat. Sweep is the same as the Q-200 tail dragger. Butt of spar is trimmed and planed flat then fitted to max tolerance of paper thickness. April, 1985



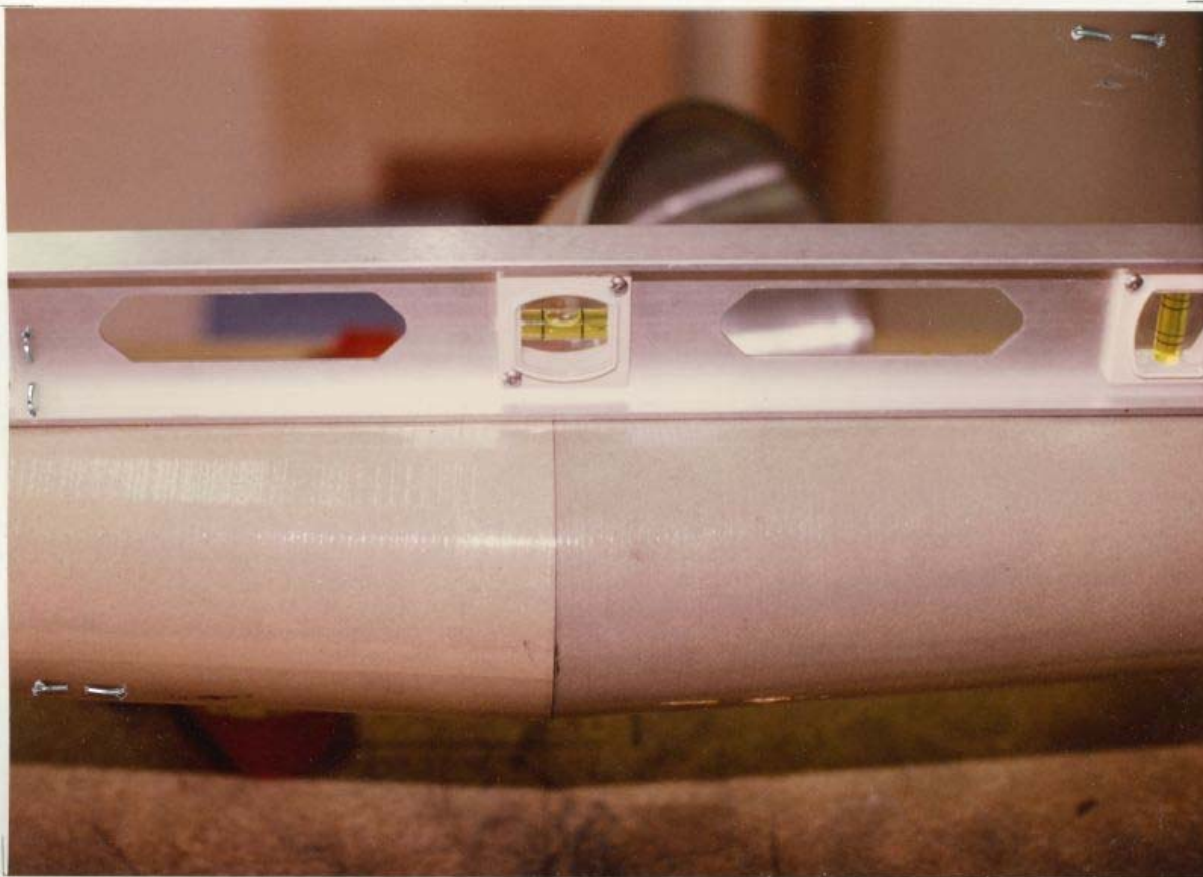
Make QUIKIE

Model Q-200

SIN 2868

Date 4/28/85

Component Canard-spar butt-joint



Closure Inspection

Center butt-joint of pre-made pre-tested carbon-fiber spar. Spar ends were trimmed to remove dihedral (for tri-gear installation).

Ends were sanded and fitted to paper-thickness tolerance (photo).

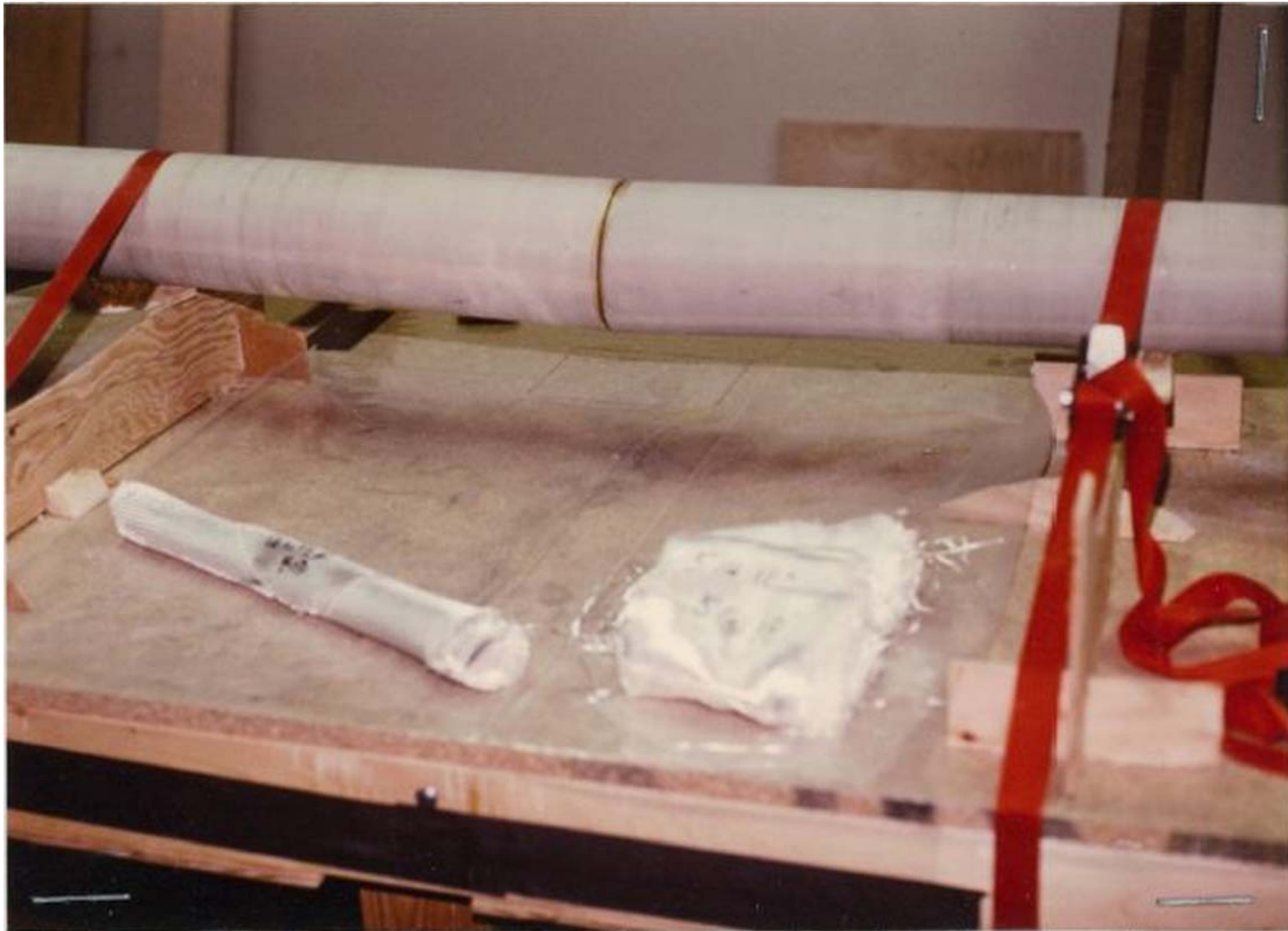
Joint surfaces were sand completely dull w/ 40 + 80 grit paper then vacuumed and dusted w/ compr. air.

Ends were centered between jig levelled and front-back alignment verified multiple times

Signature Jay R Scheerel

Inspection details verified





After trimming and alignment of spar, the butt joint is filled with flox and pressed together with uniform squeeze out. This holds spar in alignment until spar caps can be applied to fully attach the two spar halves to one another.





Bottom of Spar joined with BID wrap and spar caps laid up per plans instructions in Q-200 plans supplement. May, 1985

Bottom covered spar cap sanded and
prepped for core attachment
5/18/85



Make

Model Q-200

S/N 2868

Date 5/24/85

Component Canard-spar joint cap (bottom of Canard)



Closure Inspection

Joint joined with floss
(w/100% circumf. showing squeeze out)
Then verified, levelled, center^{ed}, aligned.
Wrapped 3 times with single layer
BID @ 45° to joint (overlapping > 6"
either side of joint). Caps layed up
in staggered groups of 5 then trans-
ferred by group to spar. All fibers
verified straight. All groups centered
vertically & laterally. JRA

Spar splice appear sound &
conforms to instructions in ↑ Manual
Signature John A. Budy

Inspection details verified





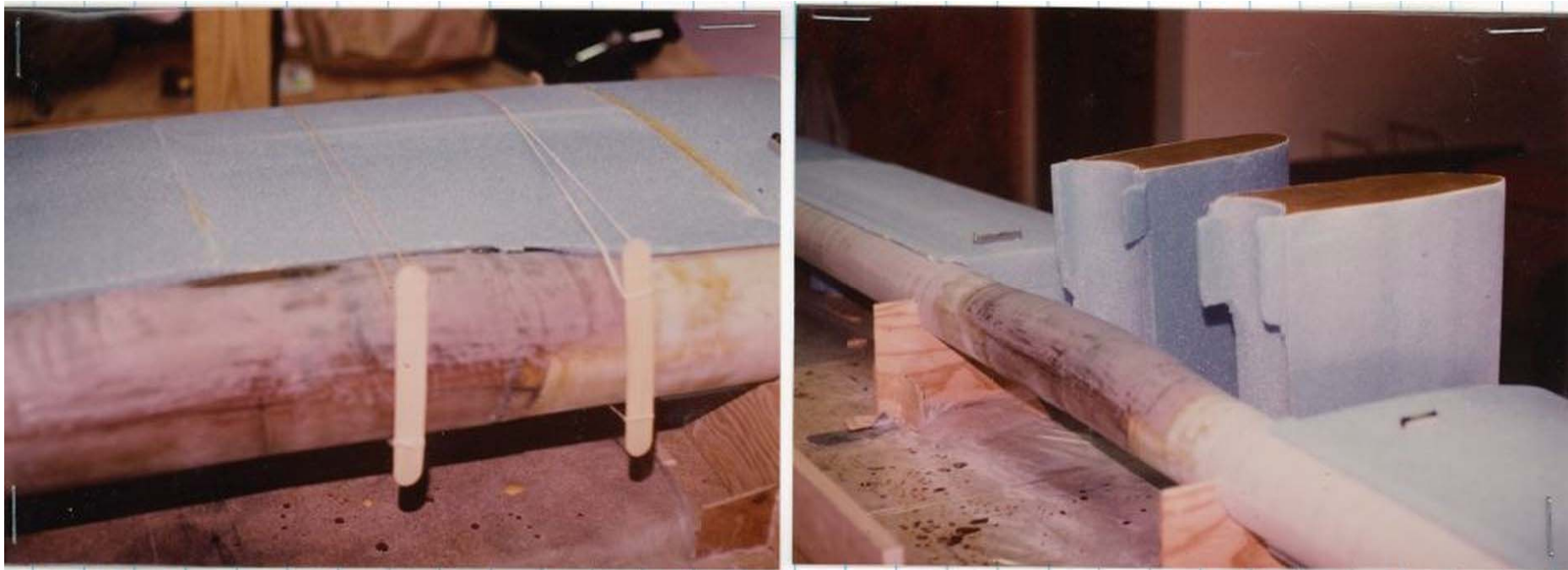
Attach foam cores to spar with micro-squeeze out per Q-200 supplement plans. Verify all cores level and aligned using 8-foot straight edge, level lines on foam cores and bubble level bonded to foam core end.





Cores from BL0 (center of wing) to BL15 require rib stiffeners as BL15 created per plans by laying up BID plies on end of foam rib. These plies are trimmed will be bonded to outboard cores.





Center cores with rib stiffeners are installed with micro attached to wing spar and to outboard sections with micro. Tension from rubber bands and mixing sticks hold cores in place until micro cures. May, 1985





Cores are trimmed and faired to make a smooth transition to the spar, then gaps filled with micro slurry to prep for glassing bottom of canard





Prepping for application of Micro to foam, then glass per Q-200 plans supplement. In order to move quickly enough to accomplish proper layup of wing skins, help from Wayne Johnson and Frank Motyka is vital. Thanks guys! June, 1985

Prepping core for glassing (acornard) bottoms w/ Wayne and Frank's help. 6/15/85





Detail bottom spar canard prepped
for bottom skin 6/15/85



DETAIL Canard spar glassed
& 6/15/85

Before and after layup of canard bottom skin per Q-200 plans supplement, inspected for quality and proper wet-out and fiber alignment. All good, inspection by Jay Scheevel. June 1985





After bottom skin is cured, the canard is flipped over and secured on jigs for glassing of upper side of spar root and upper surface skin of canard.





Upper spar surface is sanded and prepped for layup of spar caps. Groups of UNI plies are laid out in order to assure lay-up sequence as specified in the plans.



Make QUICKIE

Model Q-200 Tri-Q SIN 2868

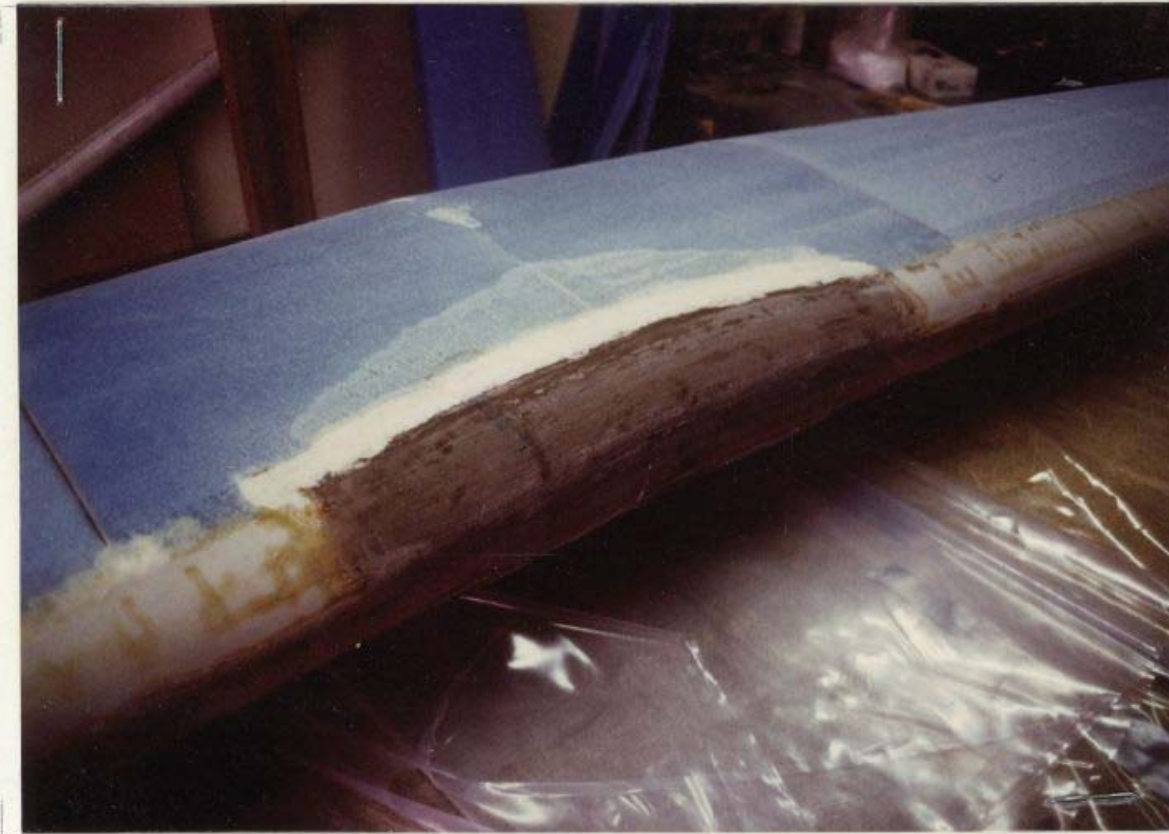
Date 7/5/85

Component UPPER CANARD SPAR CAP

Closure Inspection

Upper canard spar laminated as prescribed in plans section (supplemental) with 30 ply caps staggering complies with plans - ply layers were laid up in groups of 5 with alternating 1 can stagger and applied to spar in groups of 5. Lay-up verified air free before and after cure - Pre cure prep: Sand - vacuum - acetone wipe -

dry
Signature Jay K. Schevel



Spar caps are laid up and inspected, then gap between cores and spar is filled with X-40 expandable foam, then trimmed and sanded to make smooth transition to spar to prep for glassing upper canard skin.

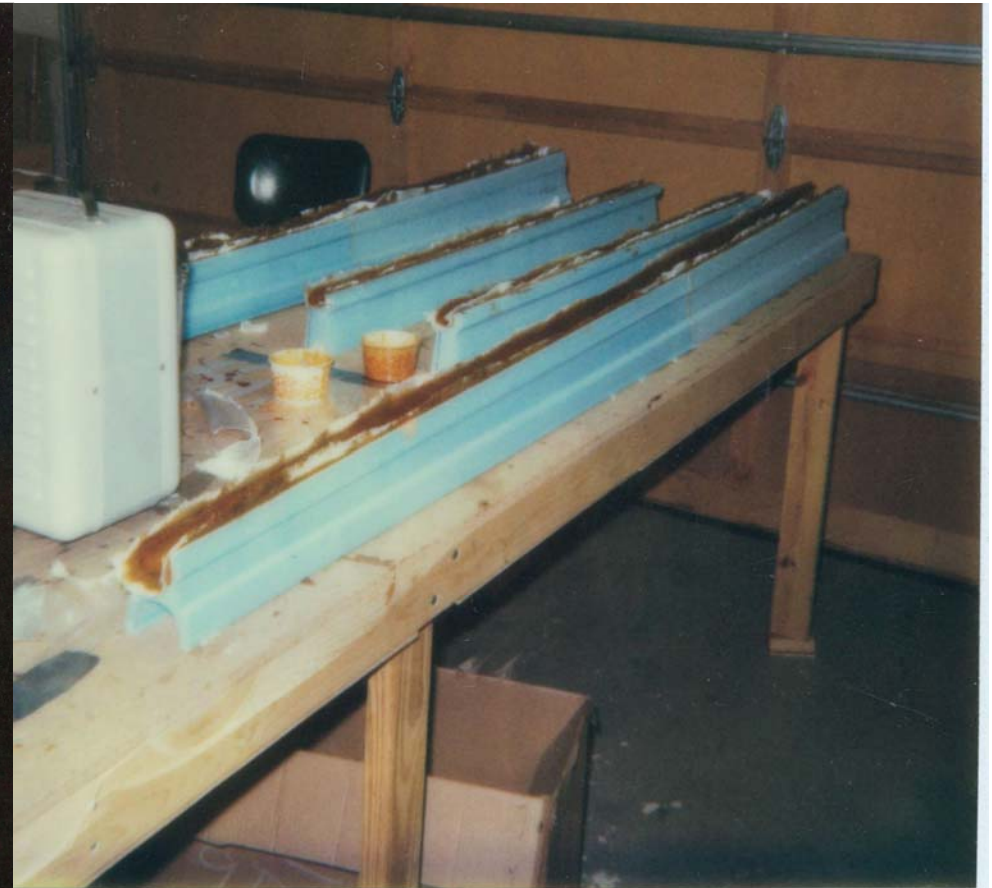




*Top - Canard spar prepped and
ready for skin glassing 7/5/85*

Before and after glassing upper skin of Canard, with help from Wayne Johnson. Lay-up wet out, fiber alignment, and proper overlap onto bottom skins per plans is assured by inspection by Jay Scheevel, July, 1985





Elevator slot cores are aligned and joined with micro, then the interior of the slot is glassed with 2 BID per Q-200 plans. Glass is trimmed at “green” stage to match edge of core. November, 1985





Attach slot cores to the rear edge of the canard spar verifying level alignment of both left and right side. March, 1986.



Attaching slot cores on canard 3/1/86
Upper and lower contours verified
with reference string stretched end to
end - ends verified w/ level line





Foam is trimmed to give smooth transition to the glassed skins of the canards an assuring glass to glass contact at rear of slot, then 2-BID of glass is applied per plans to close out the slot cores top and bottom. August, 1986

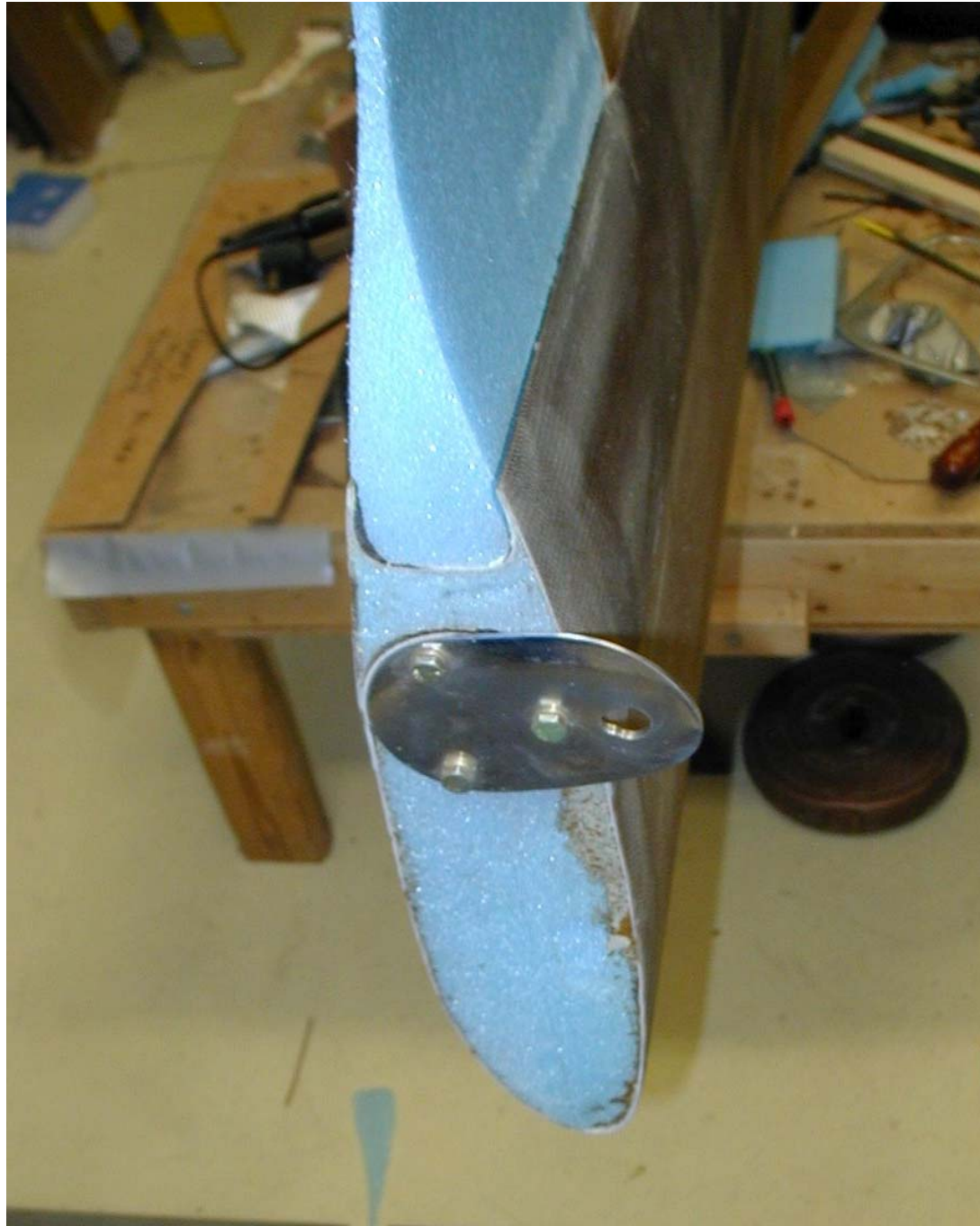
*8/18/86 Completed bottom side 2-ply
BID on slot core of canard.*





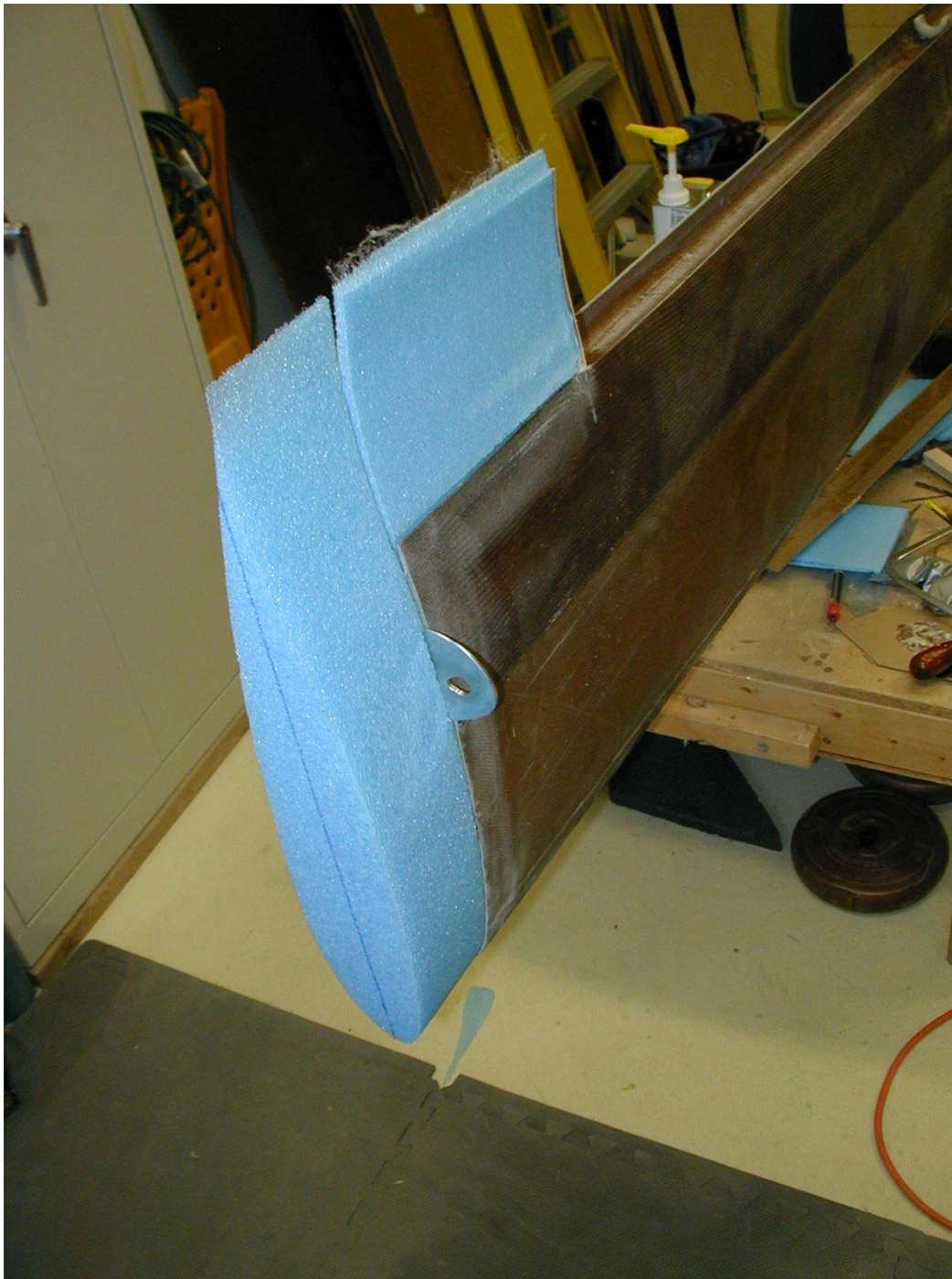
Fabricate sturdy tie-down for canard. Created from 1/8" aluminum plate, cut to shape and drilled for 3 AN3 bolts that thread into a 3/4" thick phenolic "donut" that fits into trimmed end of carbon fiber spar. This donut is bonded into the spar with flox. June, 2012





A trailing edge core must be fabricated to fill the span which would normally accommodate the wheel skirt of the tail dragger Q-200, so hotwire templates were built to cut a trailing edge core that matches the airfoil and also the shape of the slot core at BL100. This is slid into place in the slot core with micro to bond to the interior of the slot, and is positioned to accommodate the exact length of the elevator and position the outboard pivot properly. A ¼" plywood end piece is fitted to the inboard end of the trailing edge core to provide a bearing surface for the outboard pivot mount CS19.
June, 2012





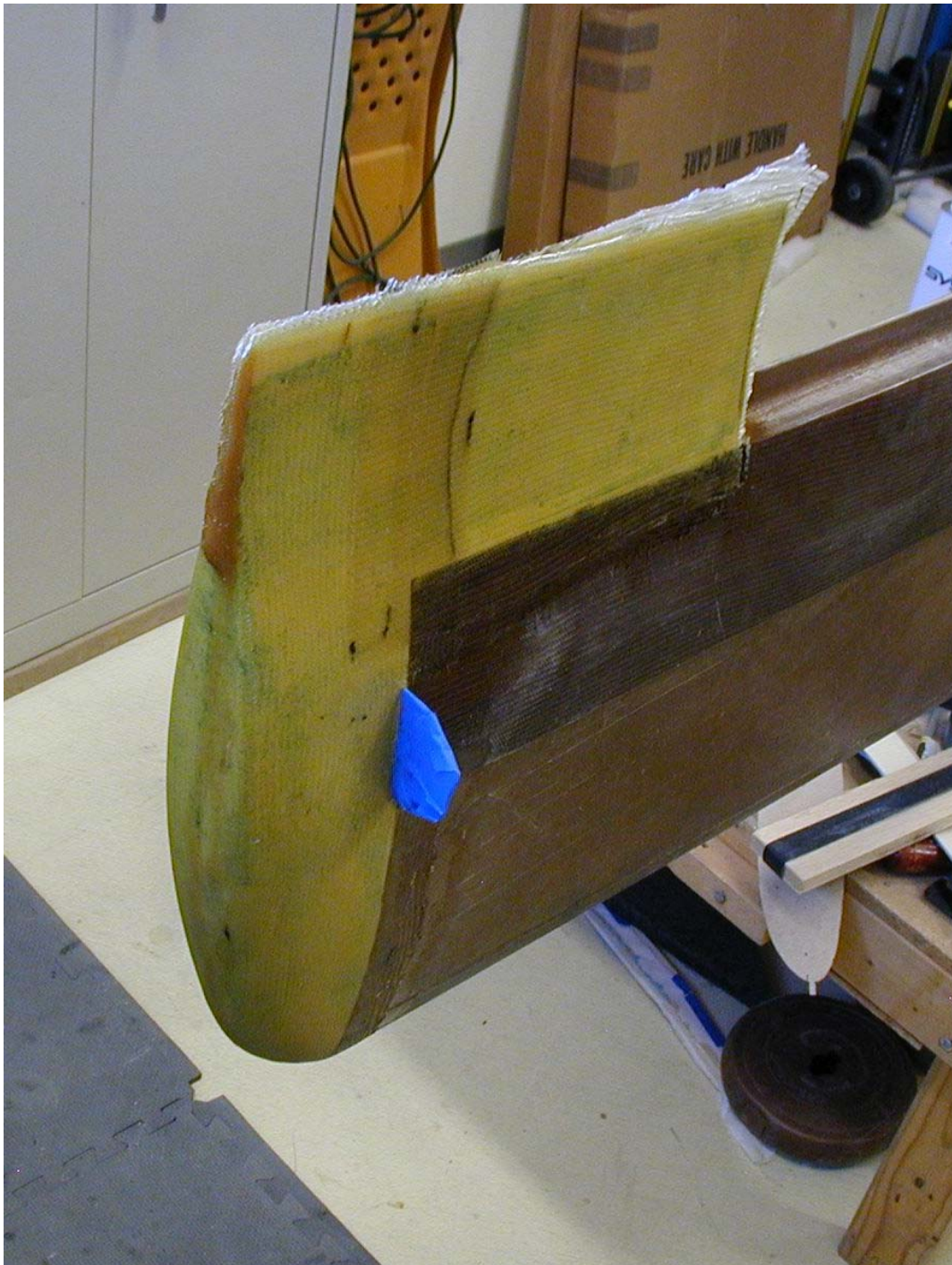
With trailing edge core in place, additional hotwire templates are made to match the BL100 template and a canard tip core is cut to accommodate wingtip shaping. This is mounted to the canard tip and also closing out the tiedown mount assembly.



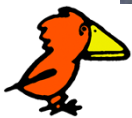


Canard tip is carved to shape, carefully matching both left and right tips. The trailing edge is reinforced with flox, so that glass layup from top and bottom will have a solid connection on trailing edge. Everything is filled with micro and sanded to final contour after cure. June, 2012





Canard tip and trailing edge cores are glassed with 2-BID lapping over onto canard skin a minimum of 1 inch.





Canard tip is further shaped by adding micro to the tip that is sanded to shape, then this additional micro is glassed with 2-BID overlapping onto existing tip. July, 2012





Outboard elevator pivot (CS 19) is installed per Q-2 plans, section 10-7 and Q200 LS1 construction supplements, then is faired into the slot core with a floc fillet, sanded to accommodate the elevator rotation without binding. Note 1/8" plywood is used to closeout trailing edge foam core to add strength and durability. This further supports the CS19 outboard pivot. June, 2012.



Mounting: Canard





Mounting canard to fuselage. The fuselage is suspended on main gear axles and canard is laterally aligned to this reference and angle of incidence aligned with level on fuselage, then cut reference is marked and cut on fuselage by measuring up from upper surface of canard. Fuselage cut section is removed and the fuselage is positioned over the canard and re-leveled to match the cutout to the canard. Cutting fitting alignment check by Jay Scheevel





Canard as it is being fitted to cutout section in fuselage. Fuselage is also trimmed to accommodate the slot cores on the canard where they penetrate the fuselage. Lateral reference is determined by keeping the main gear axles aligned with the canard span, with the forward flat face of the canard flush against the back of the firewall per Q200 construction supplement.





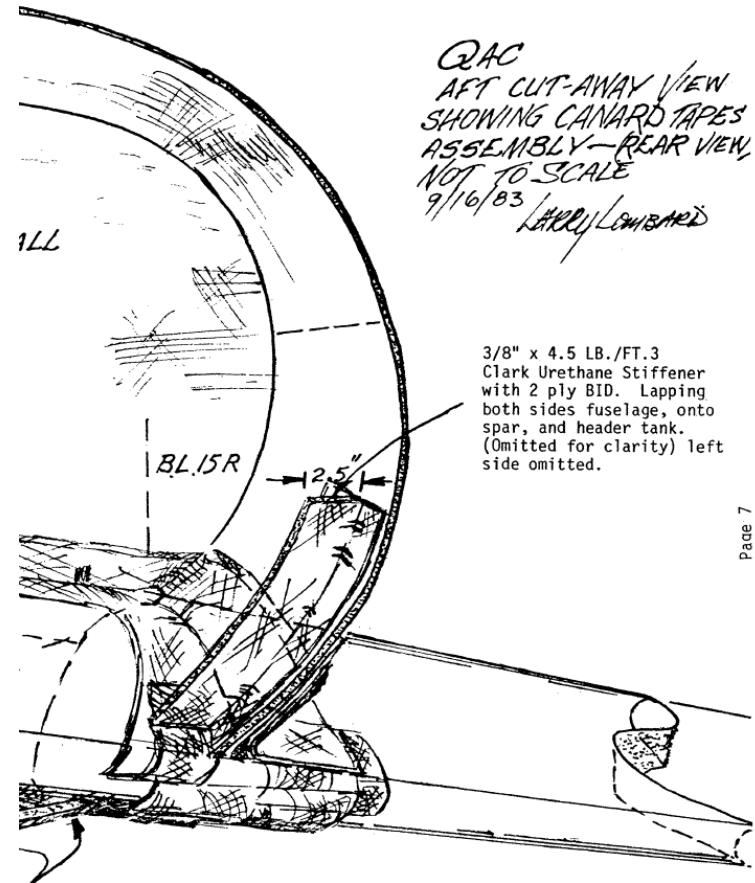
After canard alignment, the canard is joined to the fuselage with flox and BID plies layups per Q-200 LS-1 Plans supplement diagram which shows detailed layup schedule. This includes bonding inside and out to the fuselage sides and to the lower firewall inside and outside surfaces as shown in the plans.





Details of the canard spar fit to the fuselage and gap filled and fillet formed with expandable foam and BID plies per the Q-200 LS1 canard assembly instructions. Note the canard control torque tube supports CS-14 (larger/inboard) are installed per Q-200 LS-1 addendum layup schedule. The CS-15 (smaller/outboard) per Q-2 plans page 10-10 layup schedule. The CS-15 supports are laminated with 2 UNI plies lapping onto the fuselage to give extra strength and support as the torque tube passes through the fuselage wall. Both CS-14 and CS-15 are bored out from 5/8" to oversize to 3/4" to accept Rulon low-friction replaceable bushings for 5/8" torque tubes.





Cut fit and install stiffener from spar to header tank per Q-200 supplemental plans (above). Note that plans call for stiffener to extend from header to spar and bond with 2-BID lapping onto fuselage, spar and header tank. Stiffener is located just aft of the two forward fuselage access ports and is identical on both sides of fuselage.

