Construction:
Main Wing

Wing, Canard, Rudder and flight surface templates made from aluminum sheet were borrowed from Rocky Mountain Quickie to do hot wiring. Wayne Johnson and Jim Talbot assisted in hotwiring which is a two man operation. All cores were cut in two sessions. Typical setup is shown to the left, per Q-2 plans instructions for hotwiring. November, 1984

Mainwing cores are set up and aligned and double checked to match instructions in Q-2 plans section 9-1. Steel inserts for shoulder harness are inset into foam prior to glassing. Main wing glassed according to Q-2 section 9-4 with Wayne Johnson assisting. February, 1985

WAYNE IN ANTI-EPOXY OUTFIT W/ WING-CORES READY TO GLASS
2/16/85 SHOULDER HARNESS SUPPORTS ARE FLOXED IN PLACE

COMPLETED GLASSED LOWER WING SKIN
2/16/85

Wing glassing notes. Inspection at bottom noted non-straight plies that need repair. See next page for repair

Component and Plans Section		Date(s)	Hours Required	
SECTION 9-1	Jigging and alligning wing cores	2/14-16/85	13.0	
9-2&3	finish prepping install shoulder harness steel begin lay-up -	2/17/85	7.0	
9-4	Lay-up bottom of wing as prescribed in plans section 9-4	2/17/85	8.0	4.0 @ 2 people Wayne Johnson
9-4	Prepping top of MW. after inversion	3/8-10/85	8.0	
9-4	Glassing to skin and laminations of spar caps as prescribed		12.0	6.0 @ 2 people ME and Wayne

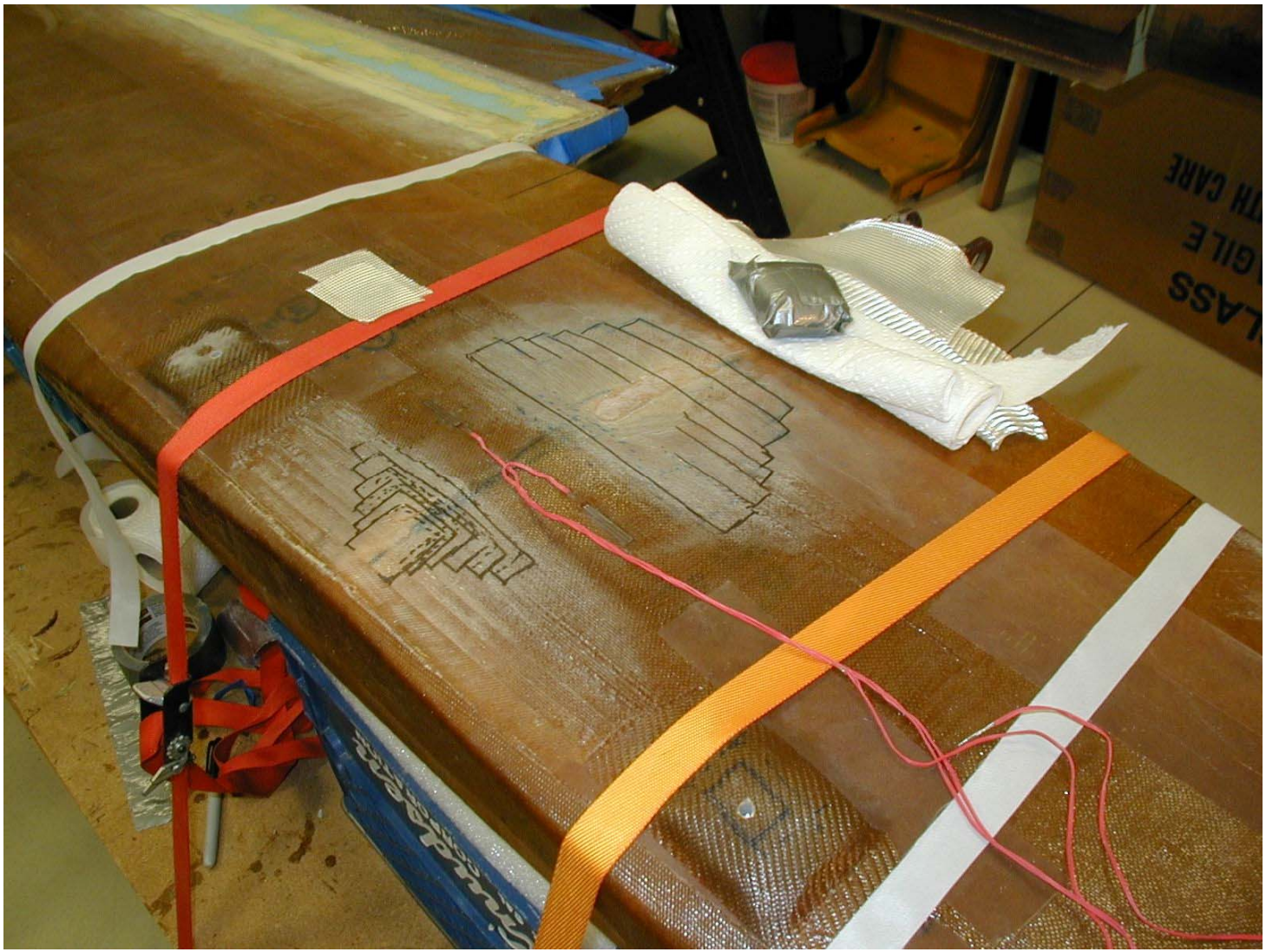
Details

Wing cores verified aligned at each section using level lines → on jigs and cores - verified straight and T.E. alligned with level string as prescribed. Multiple double checks prior to glassing and total recheck after inverting - prior to glassing top. (48 HOUR CURE PRIOR TO INVERSION) Level boards installed as frame for inversion and again after glassing top. Spar caps laminated one at a time and verified wetted out after each ply. visually inspected air free - before and after cure. Pads of (folded 25 ply 2" x 2" were applied over shoulder harness attach points.)

Post-cure flaws (if any) **Date and type of repair**

Air bubbles noted in weave of shear web after top-skin cure are below 10% concentration do not require repair
Kinks noted at BL00 in at least 4 spar caps on bottom - require repair as called out in plans by feathering appropriately and relaminating with a replace ment.

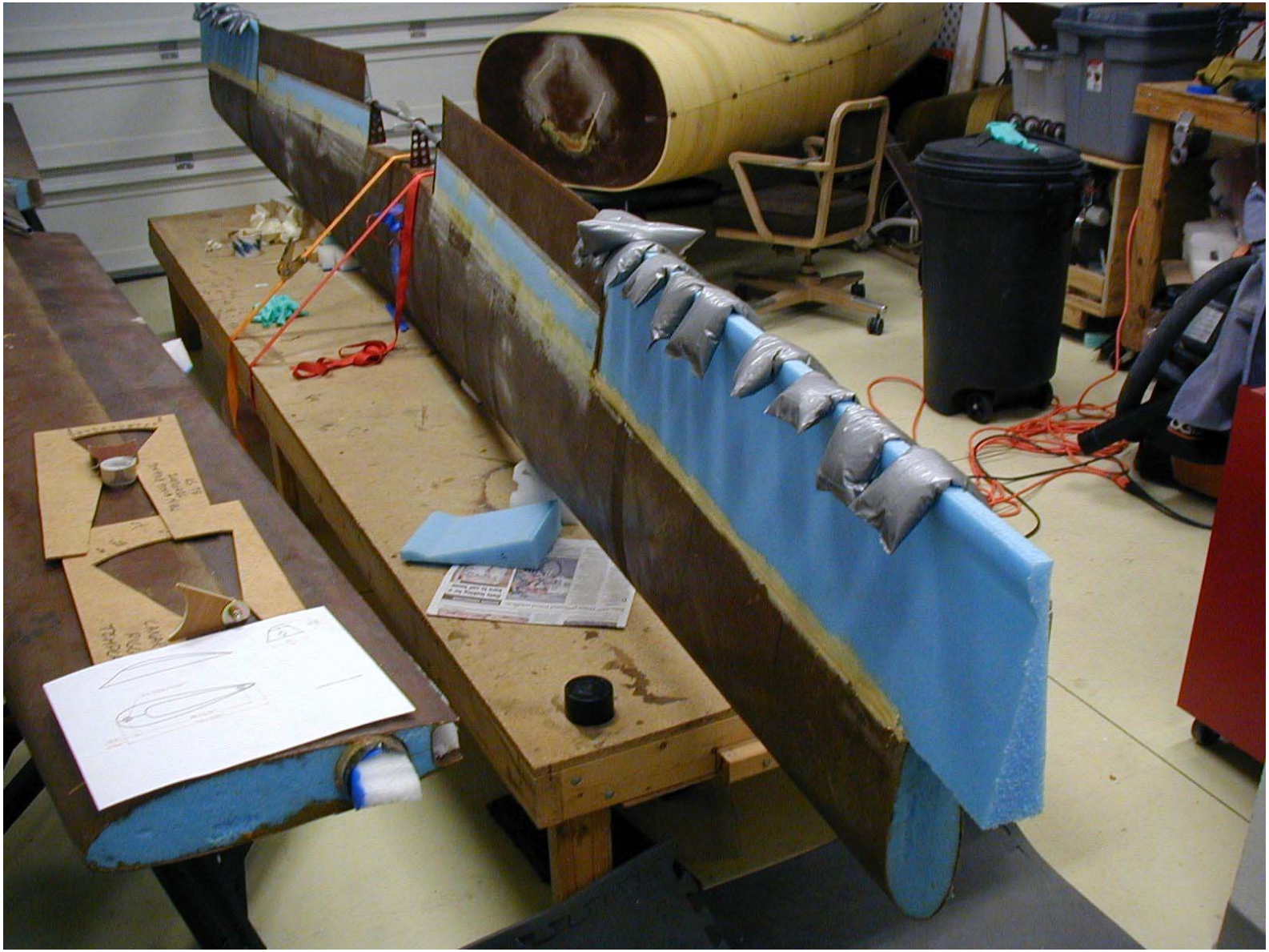
Wing root repair per approved method in Composite Education: inspection and repair methods section of Q-2 plans. Problem plies are sanded and feathered back then correct number of UNI plies are applied. (Black outlines show repair areas and taper and overlap of UNI plies to be applied consistent with acceptable repair methods). Note that seatbelt mounts have been drilled and tapped per plans. December, 2011. Inspected by Jay Scheevel repair OK



Main Wing is inverted and prepared for glassing, then glassed per Q-2 Plans section 9-4. All spar caps properly wetted out and fibers verified straight, Jay Scheevel, March, 1985

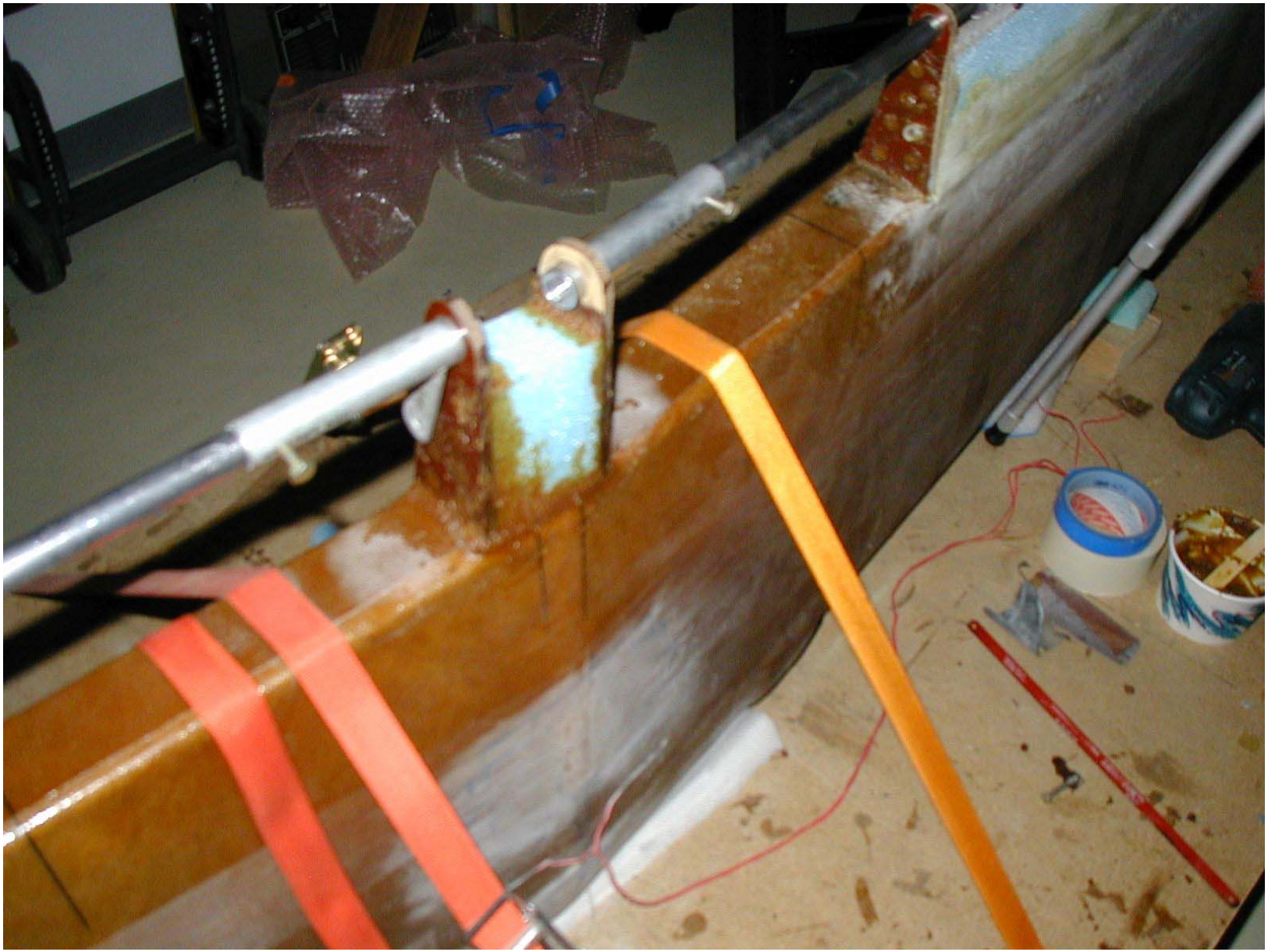
Install main wing slot cores (interior of slot previously glassed according to plans. Alignment verified, and core attached to main shear web (sanded and prepped) according to estimated control surface positioning from center line of fuselage and estimated position of CS6 aileron pivot in relofted fuselage. August, 2011

Trim inboard edge of slot core, fit ¼” ID nylon conduit for wingtip lighting along seam of slot core and through channel in outboard trailing edge core, then install CS6 and CS7 with aileron in place for alignment. Verify alignment of both trailing edge cores and slot cores. September-October, 2011.



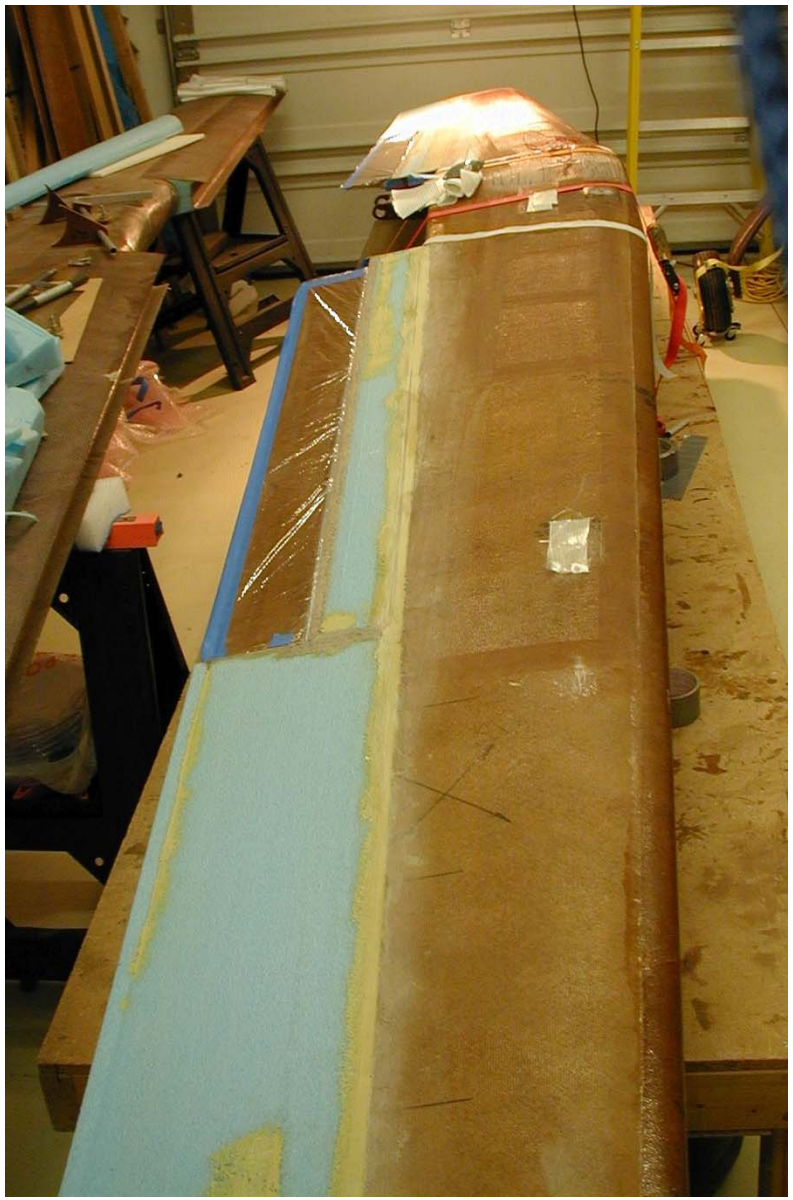
Verify alignment during cure of micro. Note the nylon wire conduit end through hole in CS6. Note installation of CS10 outboard aileron pivot, and trim of foam and sanding of slot core for glass to glass contact with out skin. October, 2011

Install foam between to CS7 pivots and verify alignment. CS7 center assembly later glassed according to schedule in Q-2 plans section 9-9 (no photo). October, 2011

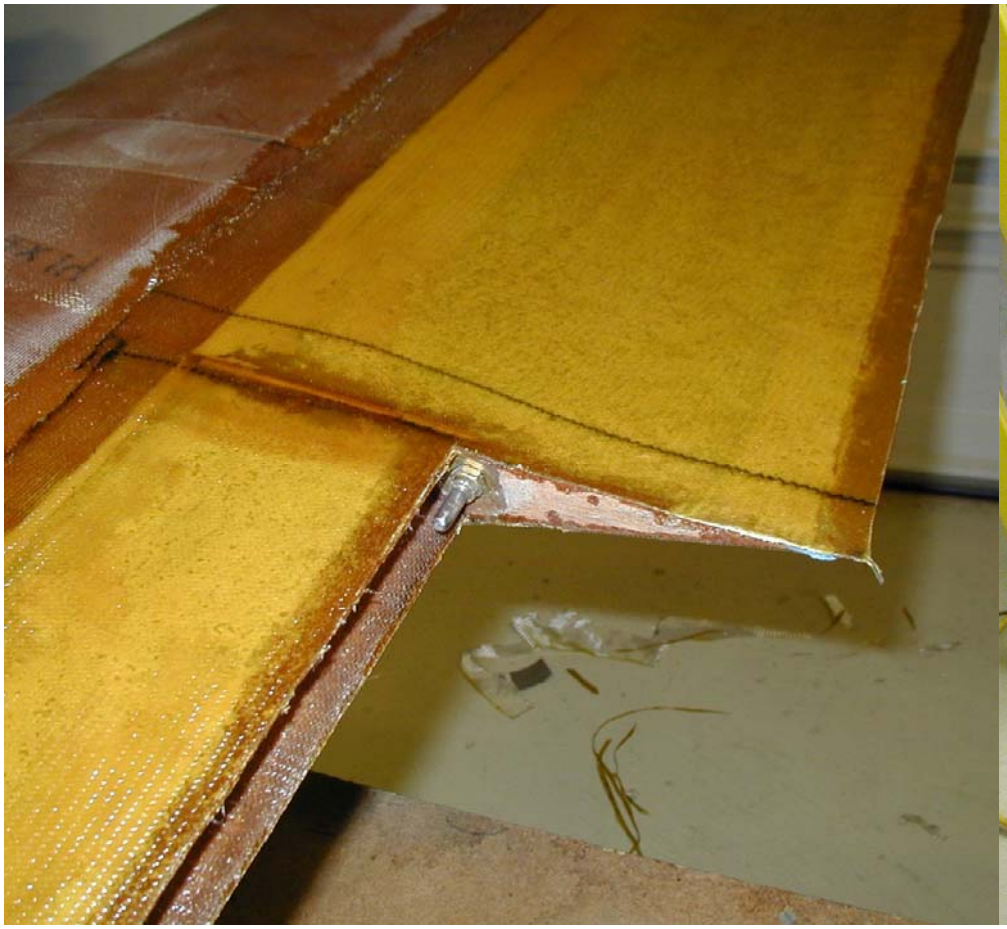


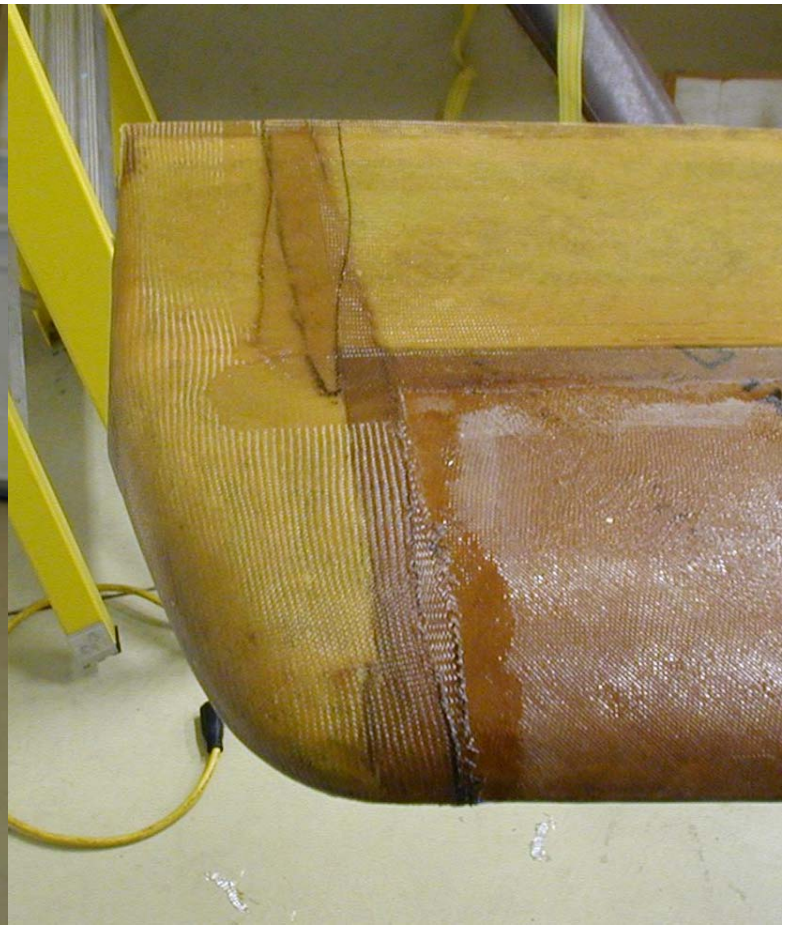
Add foam, and shape wingtips including threading wiring conduit and building plywood mount pad for wingtip lights. Fill with micro verify similarity left and right and sand smooth for glassing. November, 2011

Jig wing on table and prep for glassing of slot cores and trailing edge



Verify glass layup on slot core and trailing edge and wingtips. Note 1/8” plywood closeout of trailing edge core for strength and rigidity. All OK, Jay Scheevel. December 2011





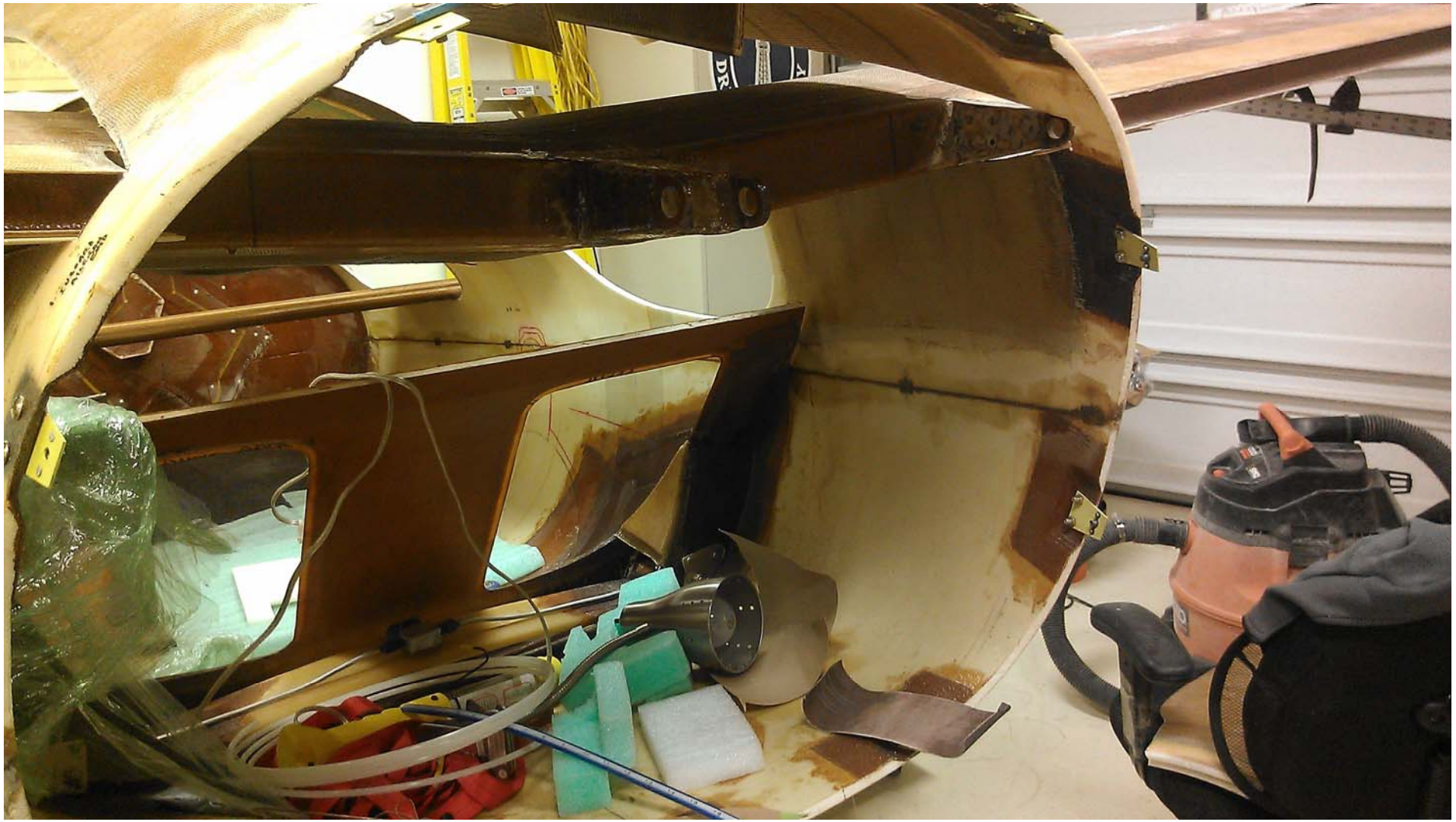
Mounting:
Main Wing

Main wing is suspended over fuselage and leveled and aligned for measurement of reference points and to determine cut lines in modified turtle deck.

After measuring marking cut lines. Sections of turtle deck are carefully cut to remove areas allowing wing to slide through canopy opening and then moved aft into mount slot. Forward edge of wing is positioned at FS 78.5 as called for in Q-2 plans. February, 2015

Wing is aligned left to right and levelled laterally with fuselage level (water level tubing method). The bottom of cutout slot is trimmed incrementally with sandpaper to achieve lateral level and desired angle. Decalage measuring tool, shown is used per decalage study (2009, Q-talk). Desired decalage of minus 1.8 degrees is achieved (canard is mounted per plans, so decalage is entirely determined by angle of main wing).

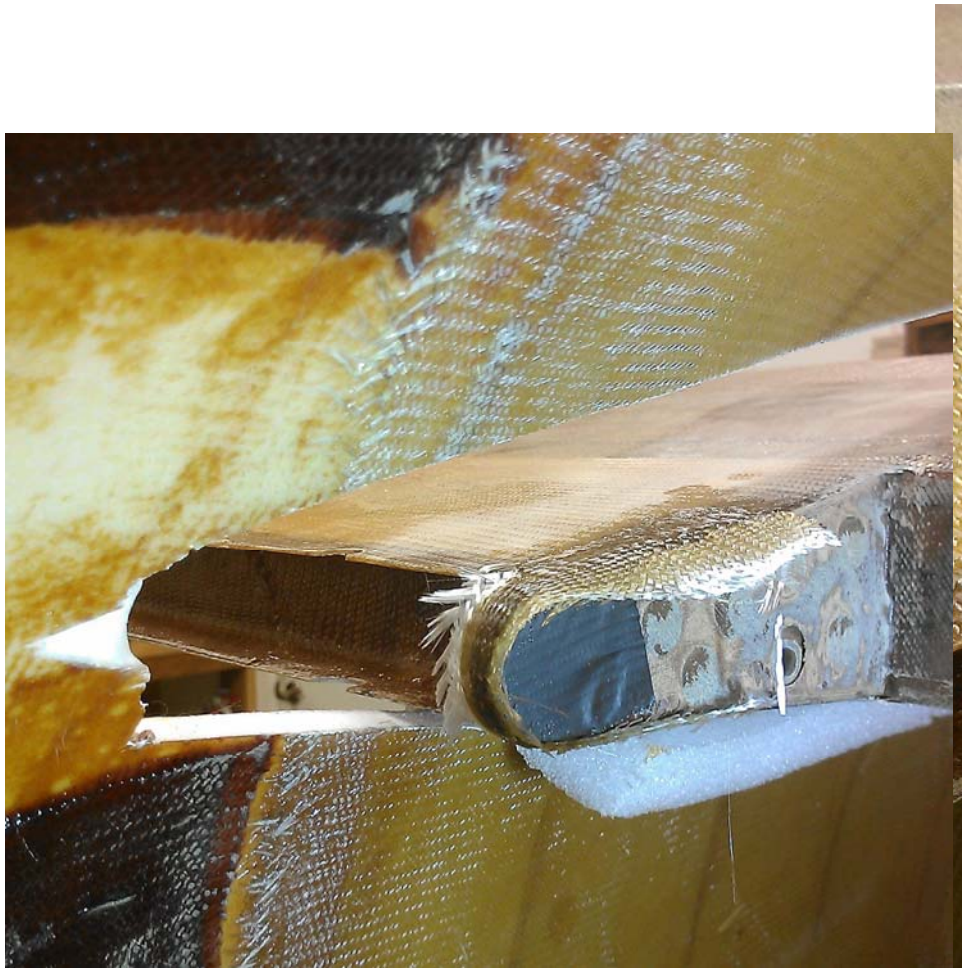
Positioning of aleron pivot mounts (CS6, etc.) are carefully positioned during mounting of main wing. Once wing is alligned and fixed in position, the cutout slot is enlarged to accommodate aileron torque tube positioning.



Detail of tool used to precisely measure wing angle. Can be mounted on either left or right wing and on left or right canard to determine decalage.

Additional view of leveling procedure. This process required approximately 8 hours to check double check and verify that wing is square relative to vertical fin (near hardware cabinets in center of photo), as well as canard and fuselage centerline.

Aileron support and pivot (CS6) was milled out to 7/8” to accommodate Rulon shoulder bearing with 5/8” ID. Additional plies of glass were added to the outer perimeter of CS6 to add more strength. 3 plies of UNI were wrapped around the perimeter, with one ply of BID at 45 degrees to closeout the perimeter assembly. Photo below shows this prior to knife trime. This layup was done prior to floxing the main wing in place.



Another view of main wing position. Bottom of cutout-to-wing joint was floxed first and alignment, level and square was checked several times during flox cure. permanently. Gap on top of wing will be filled by trimmed portion of fuselage previously cut out

This sequence of photos shows installation of the timed fuselage cutout that was removed for installation of the main wing. The cutout is trimmed to match upper contour of wing, then floxed into position as shown.

Floxed seam of upper wing skin to fuslelage cutout and cutout bonded back into its original position. On top of fuselage, the exit air vent housing is also floxed into position and held in place by shot bags.

Flox fillet on main wing to fuselage seam is sanded and fuselage and wing skin sanded and prepped (left photo) for 2 BID tapes per Q-2 plans section 12-1. (final bond after peel ply has been removed is shown on the right photo. 2BID tapes are also laid over the upper seam of the fuselage cutout to the fuselage.

The interior of the fuselage also has flox seams at wing and upper edge of fuselage cutout. These seams are prepped and bonded with 2 BID tapes per plans.

Gap between CS6 assembly and outer fuselage is closed out with 2 BID to give additional support to CS6 and also seal out any leakage of weather from the exterior into the /fuselage. The 7/8” milled opening in CS6 is clearly shown in this photo. The rulon bushing fits into this opening, reducing to 5/8” ID to accept the aileron torque tube.