

Anodizing Procedure

gloves/wood to go

Sand 200 grit

Rinse in water

TSP 0.8 oz/gal H_2O 3 min.

Water rinse

Acetone rinse

Clean, New Al wire securely attached

H_2SO_4 Sp Gravity 1.1

@ lead (Pb) electrode (-)

attach (+) cable from 12V battery charger
to Al wire to part + (-) cable to lead (Pb)

→ 25 min (- bubbles show its working)

Water rinse

Remove Al wire w/o touching

1 tsp gold dye / 700 ml H_2O (fresh)

just below boiling

add parts to dye solution 5-6 min

6 min Boiling clean water

good color

July 28, 1986

2:15 PM Arrived!
begin inventory

July 29 inventory + store

July 30 inventory Complete

Aluminum extrusion not present, not
accounted for. Call ASDS.

Cut Front Seat Bulkhead. Check Epoxy Ratio.

Aug 1, 1986 FS Bulkhead made per plans, but
not flat, Convex Surface forward.
Glass front. Trim. There are
going to be some late nights!

Aug 4 Glass rear of F.S.B. per plans
Trim

Aug 5 Cut holes + corners F.S.B.

Aug 6 Rear Seat Bulkhead per plans
front + trim

✓ Aug 7 R.S.B. per plans rear. Trim

Aug 11 F28, F22, Doubler, Inst Panel
Cut — including leg holes, Conduit
Holes, etc. Not inst. Holes. Clean Shop

Aug 12 Glass Per Plans

Aug 13, 1986 Turn over F28, F22

Inst. Panel + Doubler, Curve
edge of F28, cut for flox corner;
curve part of doubler. This
foam is hard to shape! I shall
not do this again w/o explicit
directions. Clean Shaps. Prepare
for glossing

Aug 14

Glass other side per plans.
This is not as easy as the plans
lead one to believe. They leave
out much - not vital steps but
helpful ones. I could improve
the directions.

Aug 15 disassembled @ R.S.B. - cut a
new one + glass front.

Aug ~~14~~ 19 glass RSB back after carving
(clean Shaps) (carved on 8/18)

Aug 20 Cut firewall. Mark both sides for
holes. Clean up.

Aug 21 Glass of side fire wall, add
fiberfrox

How True! 12/8/87

Aug 22, 1986 drill holes (6) for AN 509-10 R10
Set screws, flat heads +
glass over per plans

Aug 25 scrape off fiberglas (order
more) used Dremel @ Nylon
brush See CP 25 p4 Cut holes
for longerons + engine Supports

Aug 26-28 Right Side fuselage per plans —
change: Cut hole @ circular depression
+ insert .2mm foam circle + likewise
curve depression for increasing
room behind accessory inst. panel.
Clean Shop

Aug 29 Glass Right Side looks good
It took forever to finish the
Aug 31 evening Cut glass for land
gear Support.

September 1 Glass Land Gear Support

per plans p5-3

Sept 2 Clean shop

Sept 3 set up left fuselage side

Sept. 4, 1986

Sept. 6 Carve left fuselage side + Clean

Sept 7 Glass left fuselage side

Sept 8 Left land gear Support
per plans

Sept 10 Clean up

Light
DIMMER

Sept 11 Begin light dimmer control (RST)

Sept 12 Continue; Complete
looks good hope it works well.

Sept 16 Clean up Pick up Land gear, etal
Fentherlite

Sept 24 Trim + sand edges on all pieces
as needed

Sept 25 inventory shipment KB
inventory AS+S shipment

Sept 28 See Roland on metal work.
(Villeneuve)

Put brace on rear of front seat to
hold flat.

October 31, 1986 Cont. per instructions CP 38 p 4
Anodize
→ & Chem. Education Reports.

Need large lead sheet to line
Container - get one instead of Pb weights
Cover pans of dye + water - too much
steam in house

Necessary to Bail parts in H_2O after
sitting in the dye for 10 min.
otherwise procedure is as stated.

looks good. Second Stave helps -
together they raise the hanger's temp $40^\circ F$

November 5 Sand edges where peel ply
transitions - fuselage + bulkheads

November 7 Sand preparatory to bonding -
all areas except for Consoles.
Leave those till ready for them

November 8 Trial fit - looks good,
need help. Clean shop

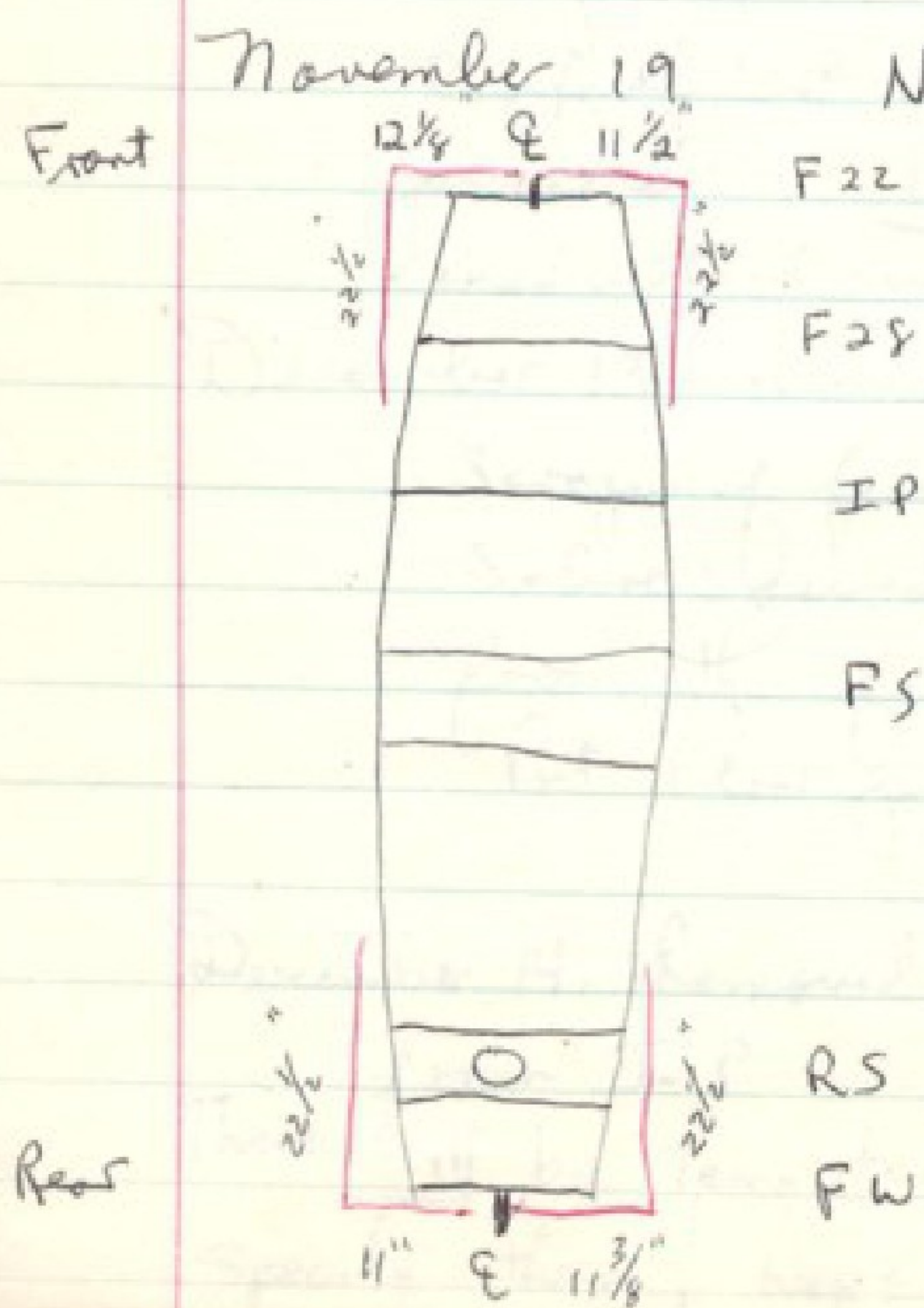
November 9 Alondid not show! Shop up to
 $80^\circ + !!$ what a waste!
made doublers for F 28, Cut
glass for Corner tapes. Went over
sanding again (lightly) all areas
to be bonded.

Turn the aft seat bulkhead to the proper angle
(Tom Soga assistant.) - Somehow the $\angle$ of
the supports is different on the 2 sides. They
should be mirror images! Wood Screws used
to temp. hold Rear Seat in place.

November 15, 1986 Knifetrim. Wait

November 16, Remove Screws, Neaten up
where epoxy has "run" Remove peel ply

November 17 Its not right! That
missshapen thing is missshapen
Try - weights + time + heat



December 2, 1986 Call RAF - Mojave, CA

(A) must have Vertical + Square firewall
(within $\frac{1}{8}$ " square)

(B) Can shave outside foam to get
needed symmetry (to .3" thick anyway)

(C) E on each bulkhead must be lined
up on a plane & within .1"

Mike Manville (?)

(D) Yuck! I bet it was that poor Seat support.

December 10 Remove F22 & F28 with
Salvage Saw + Dremel

December 12 Removed F22 from all
Scraps of Fuselage with Dremel -
Carefully removing tapes + sanding
smooth. REINFORCE when rebuilding -
inadvertent oversanding in a few spots

December 13 Removed F28 from all
Scraps of fuselage DITTO
Salvage Sanded Instrument panel
from the fuselage. This hurts.
Put Floor ^{PVC} pieces together with micro

December 14 Removed Scraps of fuselage + tapes
from I.P.

There will be Templates, even when RAF did not
Specify them, Next time. It will be perfect.

December 16, 1986

Freed the Front & Rear Seats from the sides. It sure was built tough.

December 17 Cleaned up the front Seat

December 19 Cleaned up the rear Seat
Easier than I thought. Harder than I ever want to work. It is delicate.

December 20 Cleaned up Shop. Open dust everywhere! Mixed ² new Sides together per plans. Kept 70°-80° for 7 hrs, then gradual cooling.

December 21 Flat, Smooth Top side.
~~Draw~~ in all measurements. For the aft section, there are 3 different sets of measurements! I made a new master averaging them together. Added new piece LWZ behind rear Seat. Ready to cut.

(8 90' x 1')

December 22 Cut Right side fuselage + filed + sanded smooth - on the line. Cut holes for inserts at accessory panel + Control Stick Clearance.

December 26, 1986

Cut wood longeron, upper + lower, made 2 LWZ, 2 LWX & glued (flox) (2, 1x.7"x9") together to make a 2x.7"x9". Clamped + kept in the house overnight. Sanded longeron edge to 1/8" + rounded edge.

December 27 Shaped 2 LWY's, Swept & vacuumed the hanger Ready to glass, Cut Uni & BID for left side
Left Side Bonded to bench

December 28

Glassed left side, Sawan W top on fuel Gauge (extra epoxy, then pressed out (w squeegee). Top longeron installed (w flox, Nails to align + weights. Stiffener installed (w flox, 4 "C"-clamps. Lower longeron installed (w nails, + braced (w weights at each end. LWX & LWY installed (w flox + weighted. Peel-ply added. Looks great. (4 hrs)
Wait.

December 30 Doubler to make lower, heat left longeron into a square (c/s) added, floxed + clamped in place. This looks better than the 1st time. Wait.

December 31 Glassed Top left longeron, per plans + Peel-ply edge.

January 1, 1987 Shaped Urethane foam
to fit section at rear between
LWX, LWY, LWZ, + Lower longeron;
floxed LWZ into place; microwaved Urethane
in place; floxed all nail holes + slits in
lower longeron. Glased over the Urethane
6 ply BID, + two 15 ply BID pads for load
gear Alum brackets to be attached. Peel ply.
Wait.

January 2 Knife trim 6 ply & after wait.
Dremel saw 15⁺ ply. Dremel edge all around
cut + sand F28 Doublets R+L. Removed
L side from table, Removed plastic
cover. Clean up. Recover table
(cut out ^{L+R side} spot area 6.5x8.5)

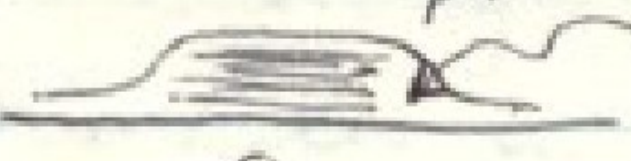
January 3 Glass Right side. Upper
& lower longérons + upper doublets;
LWX & LWY: full Orange — all per
12/28/86. Took longer due to more
complex geometry. Wait. Knife trim.
Wait.

Jan 4 Some Clean up. To add.

January 5, 1987 Glassed Top longeron,
Right side, per plans. Made lower aft
longeron doubler + fitted into place

January 7 Installed doubler to
lower aft right doubler
with floc. Sanded edges of areas
where peel-ply was removed so as to
be smooth.

January 8 Cut glass for Main landing
gear attachment - 6 ply + 2 - 15 ply pads

January 9 Installed LWZ cut + shaped
Veehane + installed. Glassed
Area for Land. Gear attach 6 ply BID
& 15 ply pads Same as left side.
Top 2 plies of the pads are .3 in
wider end side to transition to
the 6 ply as:  Peel
ply all edges + where Aluminum fittings
will be installed. Wait (3 hrs)

January 10 Trimmed (@dremel) the 15 ply pads.
Cut the Wing Spar cut out. Clamped
both halves together + sanded @
Orbital Sander to make both halves
the Same within $\frac{1}{32}$ " or less. Repair
inadvertent sand-thru's in bulkheads - from

January 25, 1987 Success! It is
Square + Symmetrical $\pm 1/32$ "
Walls are plumb or symmetrical on
both sides F22 & Firewall plumb.
Disassembled, Photo of two sides,
Put together again & when it is
perfect again, I'm going to epoxy it.

January 30, 1987 Ends plumb, Sides
plumb. Ends + Sides Symmetrical
 $\pm 1/64$ ". BUT ϵ displaced $1/4$ "
at front Seat. YUCK! The warp is
back.

January 31 ϵ forced to be ϵ at each
Station - F22 First Panel Front Seat
rear Seat + firewall. Ends Symmetrical
 $\pm 1/32$ wait overnight to do more.
Ends plumb + walls also.

February 1, 1987 Today I believe that it will
be Symmetrical - as it should be w/o
any excessive gaps or shims $\pm 1/64$ ". It
could be completed except for SCUSA class
Rear is perfect $\pm 1/64$, front $\pm 1/16$ "

June 6, 1987 Cut Reinforcing Strips for
floor corners. 2 ply B/D.

June 10, 1987 Reinforcing Corner Strips
applied between IP & FS 22
bulkhead along floor, side joint
Peel Ply.

June 11 Trim, sand, dust & clean
up; Reinforcing corner types
(2 ply B/D) between & around
Front Seat & IP. Peel Ply.

June 15 Corner types Rear Seat
compartment Right side Peel Ply

June 17 Corner types Rear Seat &
left side Peel Ply.

June 19 Remove peel ply & trim edges

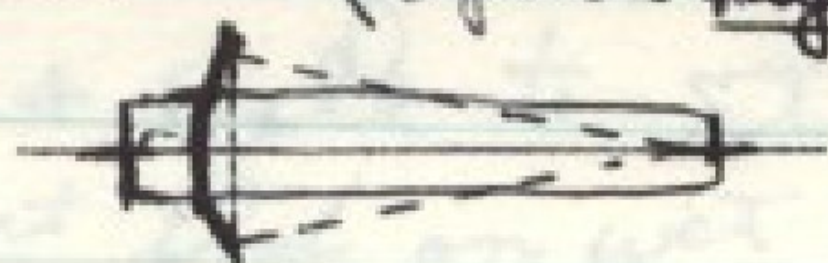
June 20 Clean up. begin outside
carving on bottom corners.

June 21 Sand outside bottom left
corner. They said 1-3 hrs for
entire outside. HA! 6 hrs
invested & < 1/4 complete.

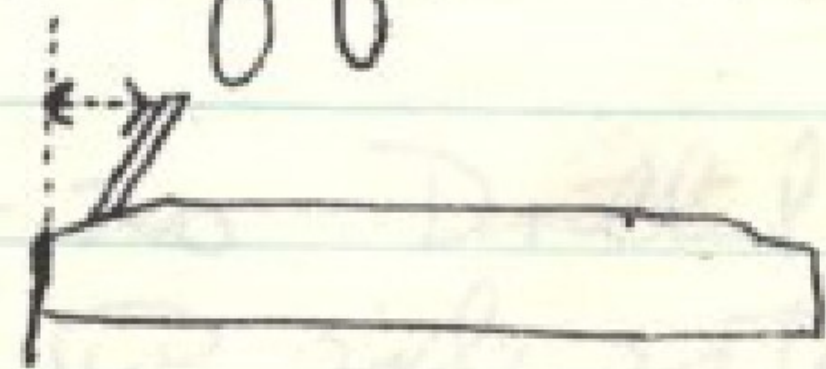
September 5 1987 2 ply BID over each
LMGA lapping onto strut on
each side & onto tabs. Tack up for
2 hours & Mounted on fuselage, upside
down, to set

September 6, 1987 AN 960-1018 Steel
washer flopped on each outer, face of
the tabs (4 total) & covered with 2
plies BID lapping onto tabs

September 7. Trimmed work of 9/6/87.
Mounted on fuselage. Moved proposed
axle E on R forward 0.1' & on L starboard
by 0.05". (Upside ~~right~~ R+L)



R axle E (interior) to E at front (F22) 94.5"
L axle E (interior) to E at front (F22) 94.5"
Wire stretched between axle E to
forward side of firewall extension 15.03"



See October 10

October 4, 1986 Pick up land gear door -
Roland + review drawings

October 11 Pick up Land Gear Attack
angle aluminum

October 13 Begin insulated box to put
glue machine in
glass in + out ^{as needed}, glass w/
epoxy for hinges
inside lined Al foil, wind strip on
inside to reduce infiltration of air.
Heat to be fish tank heater in water
in cut off milk bottle



milk bottle covered @ Saran wrap to
prevent evaporation

Oct 15, 16, 22, 23 to complete it.
Photos of pieces Oct 20

Oct 29 Drill holes for land gear attack in
fuselage sides.

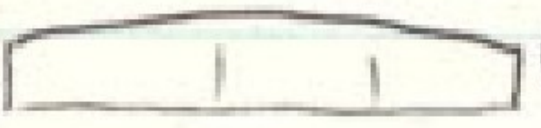
Oct 31 Anodize (dye gold) the Al X's for
the land gear attack

November 11, 1986

Tom Siga assisting Noon $\rightarrow$ 4:30

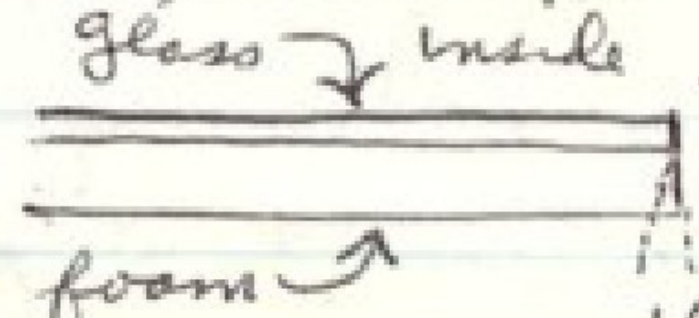
Change that - 1:30 $\rightarrow$ 4:30 SNOW today.

Trial fit 3X - seems perfect except for a bow in the left fuselage side

F  R that we cannot figure out. Least doesn't affect it. Lay it on its side + check tomorrow.

November 12, 1986

Turned upside down again - Still bowed.

Tried trimming foam from ends  - Seems to help.

$\frac{1}{16}$ " trimmed out.

November 13, 1986

Took apart, Trimmed + filed ends Put together again. Seems perfect $\pm \frac{1}{8}$ " at front, perfect at rear; the rest is square $\perp$ and level / vertical.

Finally. Oiled tools - prevent rust from dampness.

November 14 Put fuselage together with flex; taped aft side of all bulkheads (except F28). Used $\frac{1}{4}$ " aircraft plywood (spare from firewall) sanded to proper angles to

The disassembly. Clean up shop.

January 12 Repair the Sand thins -
other Side of bulkheads. It
wasn't easy to remove those 2 ply tapes
w/ a drum sander. I don't want to
repeat it - Green dust everywhere - I'm
still finding it on rafters, outlets, etc.
How fortunate that there was so very little
damage - 2 places thru 2 plies of the
bulkheads + several 1 ply + is so
easily repaired.

January 13 Ditto. Done! Caught
up with where I was on 9/10/86!

January 15 Removed Peel ply front seat
+ trimmed. Rough setting.
Need to trim holes in firewall for
longerons.

January 16 Fitted all pieces together
& trimmed to fit. sanded all
areas for bonding that were not peel
ply covered or that had glue drops.
drilled holes for land gear attachment
+ countersunk the outside of each per plan
Put E on each piece. Clean up shop

Smooth Transitions to the strut.
Each tab is $\approx \frac{1}{4}$ " thick + they're only
half done!

August 31 Drilled out holes for LMGA
tubes on landing gear tabs. Installed
on airplane. With taut string between
axle centers (inner face) & level
clamped vertically to firewall & (forward
side)
The distance is 14.76"
Within standards but just barely.
legs are level across the ends

Sept 1 Laid up glass UNI & BID on
upper side of landing gear per plane

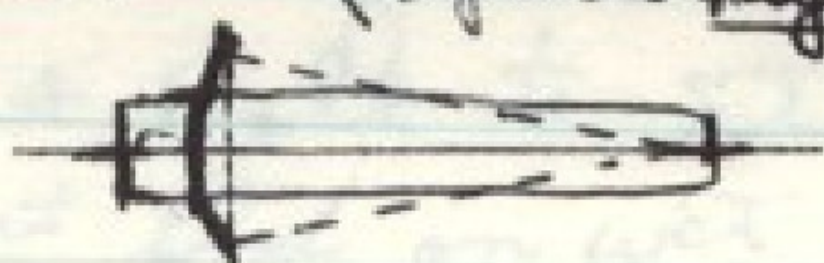
Sept 2. Trimmed tabs down to match
Aug 30 tabs & drilled out the LMGA holes
w/ Aug 31 tabs as template.

Sept 4. Inserted LMGA tubes + Mounted
on aircraft. Distance from the taut
string between the axle centers to firewall &
is 14.9" Carved Urethane blocks
to mount between LMGA & strut

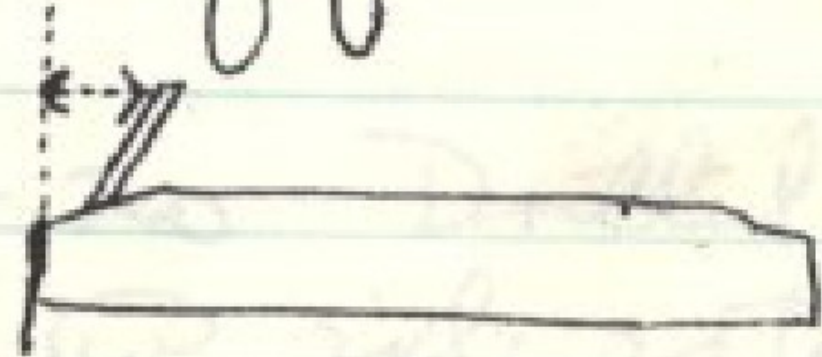
September 5 1987 2 ply BID over each
LMGA lapping onto strut on
each side & onto tabs. Tack up for
2 hours & Mounted on fuselage, upside
down, to set

September 6, 1987 AN 960-1018 Steel
washer flopped on each outer, face of
the tabs (4 total) & covered with 2
plies BID lapping onto tabs

September 7. Trimmed work of 9/6/87.
Mounted on fuselage. Moved proposed
axle E on R forward 0.1" & on L starboard
by 0.05". (Upside ~~right~~ R+L)



R axle E (interior) to E at front (F22) 94.5"
L axle E (interior) to E at front (F22) 94.5"
Wire stretched between axle E to
forward side of firewall extension 15.03"



See October 10

October 15, 1987 Glassed depression
for landing brake 2 ply BID
& 1 ply BID over LB23 per plans

October 23 Cut through the hole
in the floor of the LB depression for
LB21. Cut piece of PVC foam
16.5" x 16.5" x 0.8" for LB. (This is
of 2 pieces $\approx$ 13.5" x 16.5" & 3" x 16.5" microed
together (5min)) Shaped + 5min'ed into
depression.

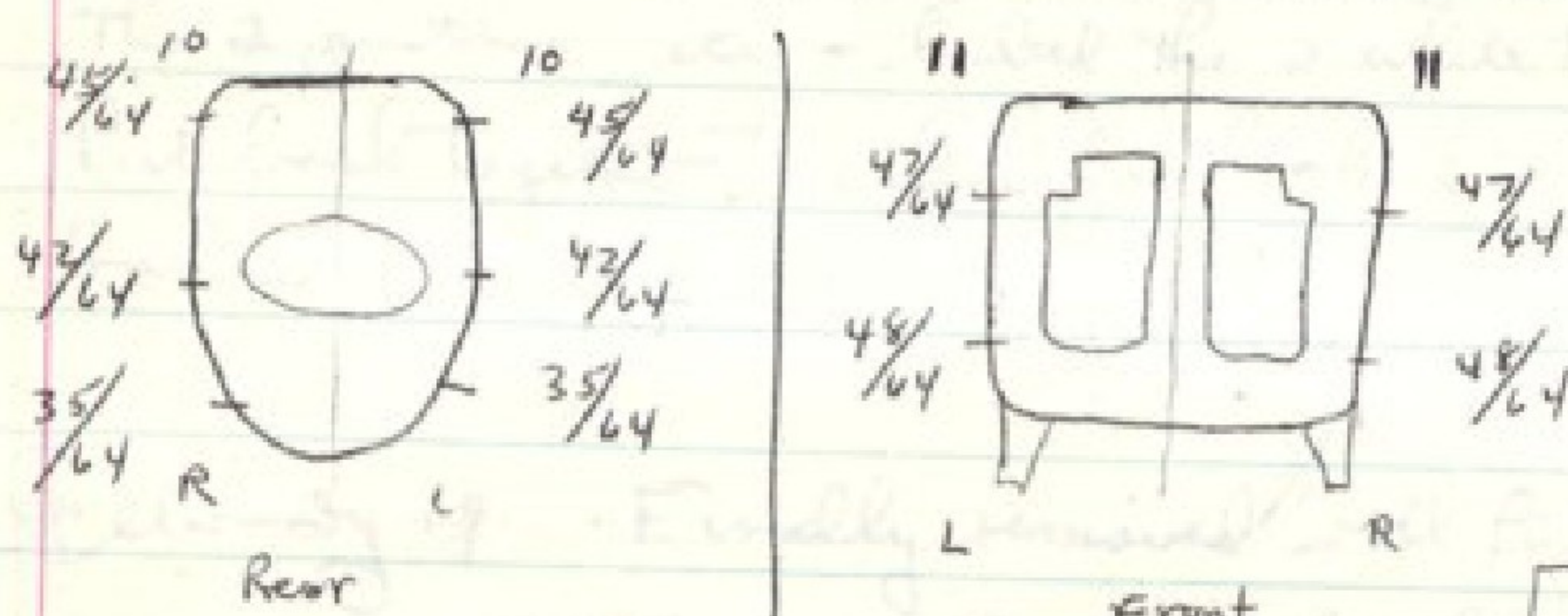
October 24 Sanded LB to level
w/ surrounding surface w/
Long Sanding block.

October 25 Glassed outside of
LB 3 ply BID @ 45° per plans
Rudy visit - fished results. Knife trim

October 28 Bonded frame onto
outside of LB. Removed Knife
Trim waste. Removed LB from
LB depression

October 29 Started fitting hinge onto
LB.

February 5, 1987 walls all Symmetrical
Vertical & equal slope, depending
upon the Station. Ends symmetrical
 $\pm$ less than $\frac{1}{64}$ ". Bonded in place.



Distances measured to ϵ
with square, flat on bulkhead &
tail end touching side of fuselage
All ϵ lined up (when appropriate
are vertical) on ϵ , on the table. Jigs
are bonded in place. Their ϵ are on ϵ on
table. Photos

February 16 Epoxied Rear side - Rear Seat
Front Seat & Instrument Panel, 2 ply
BID each side (R+L) & Peel ply. Flox
filled all gaps, foam scraps for gaps
 $\geq \frac{1}{4}$ ". Floxed F 22 to front. Wait.
Quil check of symmetry - same as 2/5/87

February 17 Knife Trim

to shape the Canard Cut outs

July 2. Marked out, Cut + Sanded the outer side of the fuel Sight gauge. Removed grey tape. Marked fuselage outside for peel ply around Main Spar + wing

July 3. Conduit for radio coax's along length of fuselage ^{left floor} - Serv-U Giant flexible PVC tubing - 0.85" dia OD & 0.61" ID x 71" ^{long} OD cut + Sanded + filed down to 0.73" OD along the Landing brake edge area & 0.75" along seat floor area. Minimum Thickness of floor is 0.8"



4 Coax

July 7 Conduit for radio coax's along length of fuselage ^{right side floor} 0.61" OD x 0.5" ID x 64" ^{long} 3 Coax

July 14. Radio coax cut:

Com 1	Left Wing	196"	34-82-80
XPDR	LW	177"	15-82-80
G/S	LW	196"	34-82-80
Com 2	Right Wing	184"	34-70-80

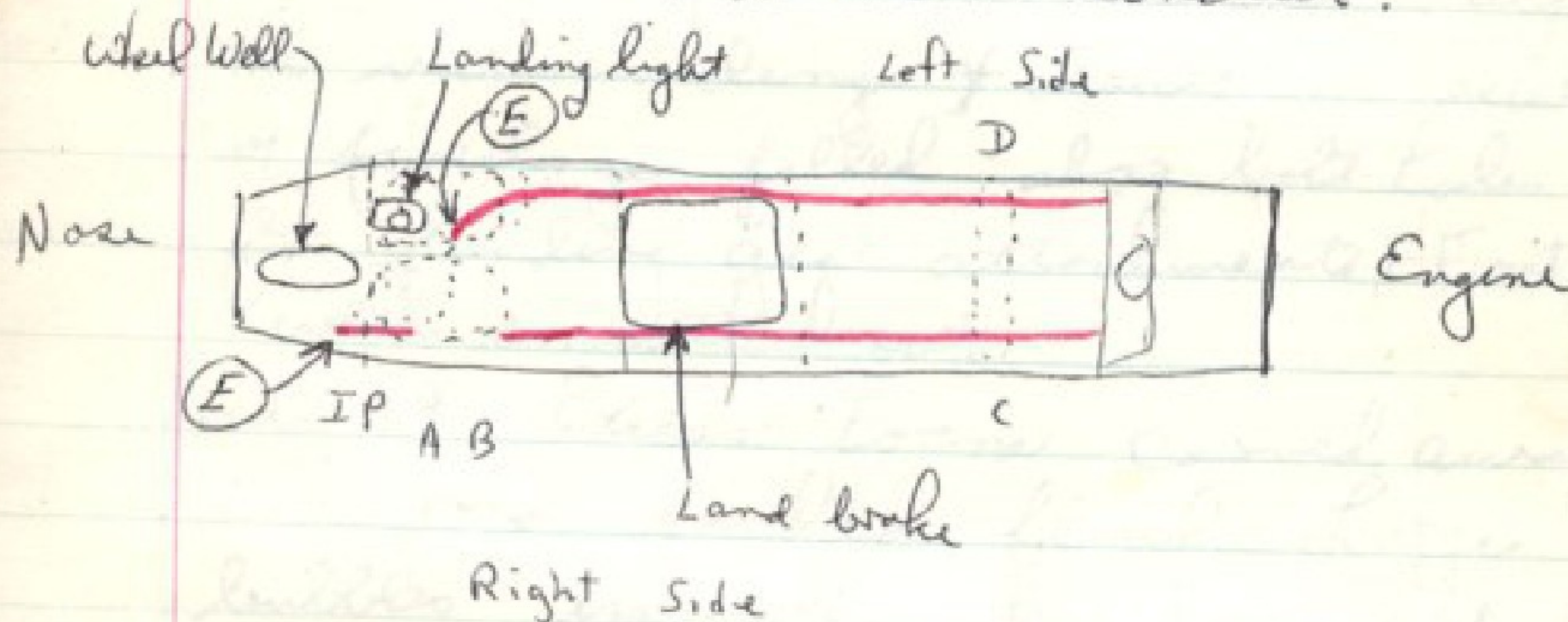
July 14, 1987 cont'd,

Lozan RW 184" 34-70-80

DME RW 166" 15-70-80

MXR-BN RW 177" 27-70-80

Coat's bundled + inserted in PVC flex Conduit
Foam carved to insert conduit.



Very little room at the landing brake -
conduit had to be trimmed (w razor knife)
So wall is thinner. (Right side only). Did not
plan for this when carving the extra storage
chamber under the pilots & passengers
thighs + inside fiberglass was necessarily
cut through. Must repair. Conduit ~~will~~ ^{though}
will be filled w foam + then carved
to match remainder of fuselage

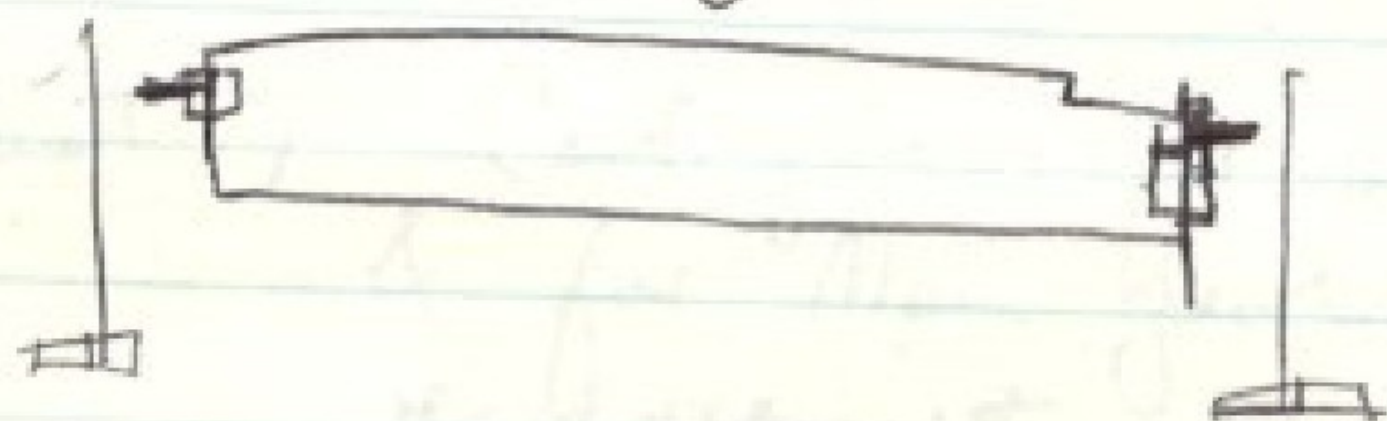
July 15 All penetrations of the interior

Floor reinforced 2-ply B/D + will
be contoured to the floor (at ABC+D) above.

Entry at (E) above 3-ply B/D

July 22 Firewall + F22 bulkheads
covered with grey tape.
Wheel well covered with plastic.
Landing gear attachment area covered
with plastic. Excess RG58 cable
rolled up + taped securely in
place.

July 23. Boards with pivots
securely mounted through
cutout in firewall, + around
center pillar of F22.



Pivot stands built to support fuselage
while glassing exterior.

July 24 Wood inserts for front seat
Shoulder belt anchors & 4 Al $\frac{7}{8}$ "
extrusions cut to slope to be seat belt
attachments

July 25 Landing brake wood parts cut
from $\frac{1}{4}$ " ply. LB 9 17 19 23

August 20, 1987 Installed $\frac{1}{4}$ " plywood
Doubles + 7 ply B/D layup for
Seat belt attachments.

August 21 Drilled Holes for Seat Belt
attach + installed Alum X per
plans + the step. Fitted Seat +
Shoulder belts front Seat; Seat
Belt, rear Seat.

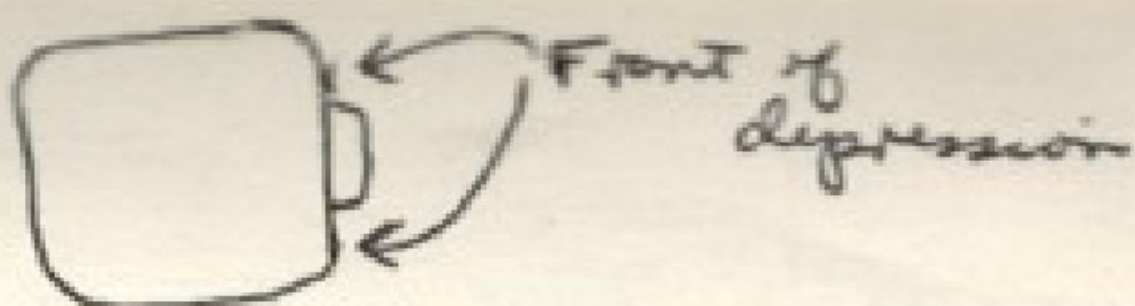
August 24 faired down the trailing edge
of landing gear struts. Fitted to
the airplane + bonded to 4 plywood
tabs per plans.

August 25 Removed from airplane + faired
in the tabs. Cut UVI + B/D

August 26 18 ply UVI with 18 ply B/D
reinforcement on each end (land gear)
for left side, per plans

August 27 18 ply UVI with 18 ply B/D
reinforcement on each end (land gear)
for right side, per plans

August 28 Trimmered all tabs down to
match the plywood jigs + Sanded



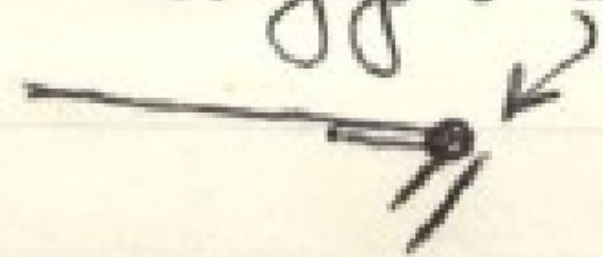
October 30, 1987 Front of LB at front of LB depression. Foam on inside curved to slope of $\approx 40^\circ$ & rounded. Lip at front $3/4"$ at sides $+1"$ for hinge. Sides & rear are $1"$ LB 19 spca removed down to glass. Small foam insert curved to fit over LB 19 slope:



October 31 Glassed inside of LB

November 4, 1987 Removed frame from LB trimmed edges. Drilled holes for AN525-10R8 + AN525-10R10 (#12 drill) Screws. Installed Screws @ 960-10L washers & MS21042-3 Washers per plans

November 5 Tacked hinge to fuselage [#3 drill + $1/4"$ drill] @ 5-min & drilled & tapped $1/4"-28$. Installed AN4-5A bolts Small gap under hinge at one end. 3 ply B.D. to fill



1st $6" \times 1.3"$
2nd $3" \times 1.3"$
3rd $2" \times 1.3"$

cut @ razor & Trim 0.2" thick then file & sand forward, rear, top & bottom slopes. Then micro it back into place

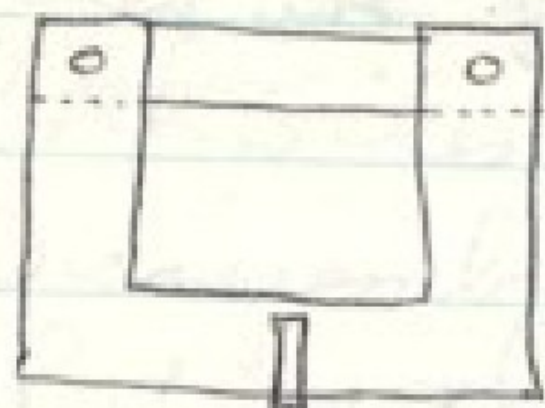
Sanded edges of holes down to pleasing curves. Similar for Right fuel gauge

December 23 got microed the inserts (foam) into the Control Stick & Accessory panel holes. Wait.

December 24 Left fuselage side - flat, smooth top & front. Both sides of fuselage are $\pm 1/64$ " (might be $\pm 1/100$ ") along entire edge. Drew in the positions for bulkheads. They match up on both fuselage sides ($\pm 1/100$) Drew in fuel gauge. # Completed addition to Plans page A5 (due to conflicts between various sections of plans) Ready to cut.

December 25 Cut ^{Rear +} bottom side of left fuselage. Entire Right & left are the same $\pm 1/64$ " All bulkheads has the same fuselage station. Left fuel tank gauge made like right (Dec 22/23) micro back into place. Phone calls & visitors galore. Merry Christmas!

January 20, 1987 Built 3 jigs to
hold fuselage square.
 $\frac{1}{4}$ " birch plywood.



January 21 Levelled the work area
per plans & bonded the
wood pieces to the table.

January 22 Set up fuselage.
Rear bulkhead (firewall) is plumb
& square $\pm \frac{1}{16}$ ". Front bulkhead
needs work. Rest looks OK.
Rear seat screwed into position.

January 23 Squariness etc. Cold, Bot.
Stoves at full throttle & temp is 62° max.

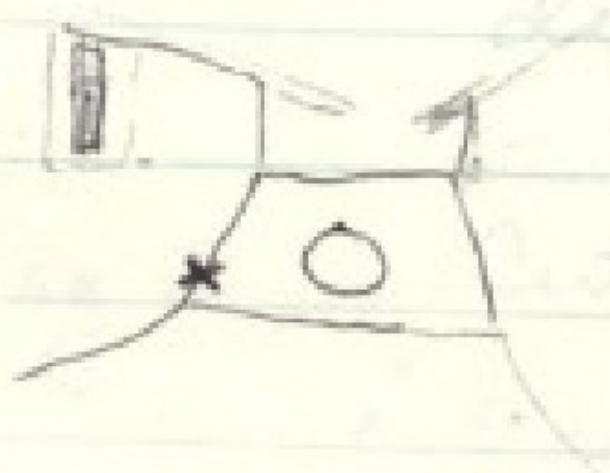
January 24 Squariness, etc. Rear bulkhead
square $\pm \frac{1}{32}$ max. & plumb. Front F22
is square $\pm \frac{1}{16}$ " max. & plumb. Remaining
bulkheads appear square ± 0 , but right
side of airplane is not plumb, nor does
it match the opposite one — after the
front seat — difference of up to $\frac{1}{4}$ ".

March 20 Anodized misc. parts. Redid
the Rear Land. Gear support bracket -
discovered that it required more time
than instructions specified. Why?
Had to repeat a few pieces

April 20 Anodizing takes so long!
Done up to nose gear fork - finally
Clean up, finally. Set up
fuselage for tapes on forward
face of seats.

April 21 Taped forward face front +
rear seats. Air bubble $\approx 1"$ on a
side Δ found at Knife trim - lower
right side rear seat tape - about
 $1\frac{1}{2}"$ above the bottom of the tape.

April 22 used Dremel on tapes to trim;
removed Peel Ply trim; sanded
down the air bubble, sanded area
around it per plans for repairs +
repaired the section.



July 17, 1987 PVC conduits with the
CoAX's installed are put in
the carved grooves, bedded in dry
micro,

July 18 Conduit grooves filled with
spray foam "Poly Cel One"; also
the various dings & dents in exterior
of fuselage filled; also bolt holes
for landing gear attachments & Front gear
well smoothed out.

July 19 Excess foam carved away
and sanded flush. Large
bubbles, especially where I want it filled
are sprayed a 2nd time.

July 20 Excess foam carved away.
Sanded flush, 36 grit
sanding block, followed by 100 grit.
Smooth transitions.

July 21 Landing brake marked &
covered with duct tape, future
wing, luggage strakes & fuel tank
marked on outside of fuselage
Guide lines for glazing, marked
 $\pm 30^\circ$

August 11, 1987 Fuselage, external
layers 2 ply $\pm 30^\circ$ UNI & 1 ply
forward half 0° plus 3 ply ~~top~~ upper
longeron stiffener on each side, per plans.
Tom & Mike Soja assisted. Knife trim.

August 12 Hanger Flying

August 15 Compared progress, hints,
techniques @ Frank Nowak
LEZ builder in Huntington MA.

August 16 Roll Over Structure - foam
cut, shaped + fuselage sanded
for bonding. Shoulder harness
wood anchors embedded in ROR
+ ROL

August 17 Glazed inside of pieces of
Roll Over Structure, Knife trimmed
& assembled into Roll Over Structure on
front seat, per plans

August 18 Glazed Outside of RO
Structure per plans

August 19 Removed peel ply; Cut holes
in RO + drilled for shoulder harness
anchors

September 9, 1987 located L axle on
Strut per CP 30 p7 & plans
Ch 9.

September 11 New Shimmy Damper
assembly for N.G. Drilled new
pivot shaft for Roll Pin. Fitted
together. Alum Pin $\frac{1}{16}$ " to long.

September 18 Filed down Al Pin to
fit. Anodized Pin + 2 Al plates
for Main gear Struts (ch 9).

September 19 3 ply BID pad, both sides
I + O of L strut. Mounted Al
plate + axle to strut @ small
amount flex on wet pad, @ 4 clamps.
Checked position + it is vertical
Rear edge 26.7" to E (per CP 30 p6)
& Forward edge of Carpenter Square is
26.6" to E

September 20 Drilled 4 holes thru
Strut @ axle as template. Ground
away @ Drummel + Coping Saw.
The Forward Side of Strut + Al plate
to match plans - to miss brake Caliper
by $\frac{1}{16}$ " 1 ply BID over end

February 18, 1987 Taped, + Peel plied
Front Side of Instrument Panel,
and rear side of F22 per plans. Knife
trim. Cleaned up the Epoxy Pump (disassembled
the 2 pistons, etc + lubed the 2 white teflon O-rings)
Put back together to check for leaks (some Resin +
Hardener but not full)

February 19 Finally removed $\frac{3}{16}$ " roll pin from
front of NG. Steel tube still well
not separate from the Al casting (NG 15). Used
Penetrating oil. Refilled Epoxy Pump. Checked
Epoxy Ratio: 100 Resin to 45 Hardener
Went flying today - Biennial

February 21 Installed the F28 doublers +
clamped in place.

February 22 F28 bulkhead glued in place
Flying today - great

February 27 F28, doubler covered w/
1 ply BID per plans

February 28 Anodize firewall per directions
on October 31. Dyed Gold.

May 3, 1987 Clean shop. Photos.
Transferred floor to work
bench. Ready to glass

May 8 Cut glass for floor. Used mask
tape on edges per CP 51 - works
well, prevents sag & distortion

May 9 Glassed bottom of airplane
(inside) and then (after 2 hrs)
inverted bottom & attached to airframe
with flox. Weighted in position &
cleaned up excess flox inside.
Knife trim on outside & wheel well.
Wait.

May 10 Looks good. Land gear
support - bolt is too long. Needs
1 extra washer as shim. Order it.

May 24 Sanded for reinforcing tapes -
interior

May 28 Attached landing gear attachments
to fuselage sides with flox.
To hold nuts - Needle nose pliers, gripped
in Vise-grips. at Small Ratchet Set

July 26 Phenolic bearings cut + shaped
for Landing brake bearings. Need to
get 5/8" drill. CB 7 + 8

July 28 Aluminum parts for Landing brake
LB 18 cut to shape.

August 3 Anodized Al parts made
recently: LB 18 Step + Seat belt attach

August 5 Sanded Main gear + floxed it
onto 3 nails on table.

August 7 Cut glass for fuselage exterior
& for Main gear strut torsional
reinforcement

August 8 4 ply @ $\pm 30^\circ$ torsional reinforcement,
per plans, for Main gear strut.
Knife trim ends. Wait

August 9 Edges faired in & entire
strut sanded in preparation
for 2nd 4 ply layup.

August 10 4 ply @ $\pm 30^\circ$ Torsional reinforcement
for Main gear Strut, per plans. (Total of
8 ply) 8/8 & 8/10

September 25, 1987 Checked Epoxy Ratio.
100:45. Cleaned pistons +
Refilled. Rechecked ratio. 100:45.

October 4, 1987 Sanded Toe-in on R
Strut. Rough fit axle on strut.
3 ply BID both sides. Clamped
axle + aluminum plate to
10 5 Strut over wet pads (w 4 clamps)
Checked Toe in, vertical rear edge
+ horizontal side of caliper.
Rear edge to E is 27.1" & front of
Square, per Cp 30 p 6 is 27.0"
October 6 Trimmied pads, Shaped
forward side of strut to miss
caliper, w Dremel + coping Saw

October 7 Finished trimming Street end
1 ply BID over end.

October 8 Completed Trimming Street end
Took wheels apart.

October 10 Wheel assembled (w tube +
tire per plans pg 9-2(A))
First Thread of axle 31.7" from E Right
31.6" from E Left
Axle E to FireWall Vertical - 15"

pg 9-2 rear wheel assembly

Remedied potential main gear slippage on LMGA tube per CP48 p5. Used plaster bag, 1 corner cut off, to squirt flock like frosting.

October 11, 1987 Clean up, prepare for winter. Cut 1" x 2" hole in floor of rear seat area for landing brake, 3.5" behind front seat bulkhead, 43.1" behind F22, on & per plans Section VI, pg1

October 12 Removed outside skin for LB per plans. Shaped interior of depression w wire brush in drill, then wood rasp & sand paper.

October 13 Took LB 24, made (guide) holes for screws, fitted LB 22 & 23. Smoothed depression. Used guide holes in Linge (LB 24) (#40) to drill guide holes in wood LB 23. Then glued (5 min) the LB 22 1/4" Al plates over them.

Piece of SS safety wire used to center Al blocks over holes in wood, then removed. (Handy to have the holes from anodizing!) Cut glass for depression

Photos

April 24, 1987 Made two sawhorses (each piece is 28") & set them level with each other + bonded to the floor $\approx$ 5' apart. Set fuselage sides on the horses, checked alignment - $\pm 1/16"$ & bonded it to the horses. Set floor on + checked marking for the interior. Cleaned up bonds on jig table

April 25 Cut foam for bottom + marked out the various depressions

April 26 Carved depressions for legs, front seat, (rear) legs. with wire brush in drill + sandpaper made drawing to see fit of the front seat - due to moving front seat forward by 2". Rear seat + Rear leg support drawing.

May 1, 1987 Finished carving floor depressions

May 2 Cut wheel well for front wheel; fitted to fuselage. Attached 2x4's @ bonds per plans

June 22, 1987 Finished Sanding @
hard (30") pad on bottom left.
Roughed the bottom right, down
to the longeron with an orbital
Sander. 1 to 3 hours HA!

June 23 Worked on bottom Right

June 24 Finished bottom Right +
also Top right

June 25 Did Top left. It looks
like a fuselage now!
Marked in area for future
landing brake + tube for
radio coax's to run from
FS to bottom of rear
seat back.

June 29 Located landing light.
Made ^{PAPER} template for Canard cut
out. Glued into place with
Rubber Cement

June 30 Cut out R + L Canard
cutout between F22 + F28 —
Coping Saw

July 1 Sanded to shape - Top R + L
between F28 + IP. Sanded

November 12, 1987

Installed LB 18 & Rod end Heim F34-14
with AN3-7A. Turned over fuselage
Cut foam for left ~~arm~~ seat

November 20, 1987 Put together the

Shimmy Damper Assembly
as modified by Bob Davenport &
in CP 51 p 5. Adjusted for 5 lb turning
force by hanging 5 lb lead weight
over a pulley. Filed around diameter
of the tire



Sanded & Shaped Nosegear Strut

November 25 1st layer B I D on
The nose gear strut.

November 27 2nd layer B I D on NG Strut

November 28 Trimmed & fitted into NG

November 29 Piced together foam to make
NG 30's. Drew separate plan for it.

December 4 Cut NG 30's + trimmed to be
identical. Glossed ~~the~~ NG 30 L on
the inside. Brought into cellar to set

~~X~~

5min + flox. Checked lining for
AN 4-26 A bolt. Covered w 3 ply BID
4 1/2" x 4". After drying, drilled
through the 3 ply layup to clear
bolt hole. Installed bolt.

Right front console cut, Top + Side
5 min epoxy to each side.

December 30 Holes cut in Right front
console for Seat Belt access, fuel lines,
Roll Trim + radio conduit & Control Stick.
1 ply BID on inside surface.

January 1, 1988 Knife Trim. Name
& date on inside.

January 2 2 ply BID outside of R.
console. All edges rounded.
except for CS 109 attachment area

January 4 Cut foam for rear consoles

January 9 Cut Al rod for nose tie down
per CP 49 p7

7/8" x .058" wall Al Tube 6061-T6



1/4" Al x 3/4" dia.

#40 guide hole

February 12, 1988 Finally got the wicks in the heaters changed + working properly! Haven't been able to bring the temperature up to 60° for a couple of weeks! Today outside is 25° inside is 65° . Second circulating fan works nicely. Reassembled Nose gear wheel, lubed the wheel bearing with Hi Temp wheel Grease 1R from San Val (Permater PET S-743)

February 13 Drilled holes in NG30's & trial fitted the nose gear retraction/extension mechanism NG51 at al & NG6 at al. 3 hrs

February 15 Drilled NG6 up to # 12 & fitted strut into it

February 16 Bonded NG5 strut into NG6 - making sure that it was centered between NG30's. Counterdrilled through NG6 & strut. Then the backup plate NG5. Disassembled NG51 assembly and painted. The NG53~52 w/ Zinc Chromate

May 9, 1989 floxed & taped outside.
Corners of NG-30 to F22 join.

July 1, 1989 Back again. Completed
LB. Adjusted tension on LB12
Springs

July 5 Nose floor blocks carved from
2" Urethane foam. Rudder pedal
pivot blocks cut from H 250 foam,
.063 Al support cut & Riveted to K1000-3
nut plate. (Al plates anodized)

July 6 Glass for nose floor cut.
Blocks moved in place & glassed.
K1000-3 - Al pieces 5-min'ed to
H250 support blocks. Knife Trim.

July 7 Nose Sidepieces cut to
shape

July 8 Nose Side pieces sculptedⁱⁿ
Hole for Nose tie down cut
Al. Nose tie down tube anodized &
drilled for Bolt. see CP 49 p7

July 9 Rudder Pivot Block &
block fitted into place

November 25, 1988 Drilled out 10 holes for
dowels, to place leading edge on
canard.

November 26 Cut 9 jigs ^(K) to hold canard
for glassing from $\frac{1}{2}$ " partial board.
Cut two tip cores for canard
(No trough for Spar cap)

November 27 Sanded Shear web
flat on all 3 sides. Inserted 10
wooden dowels for canard @ micro
& "Hot Stuff". Bolted CLT to CLT
(50 ^{lb} pounds each bolt) with wet flox
Microed Canard leading edge to
seat portion, on the 10 dowels.
Clamped R + L sides between
two straight wood pieces (outsides
of foam jig from initial cutting)
to ensure straightness. No
micro on Spar troughs. One of
the last days I can get this hanger
over 90°F this year.

November 28 Jigs ^(K) sanded to be
identical

November 30 Jigs ^(K) bonded to table
per NC plans

December 9, 1988 Sanded bottom left
Spar Cap flush with top of trough
using 3" x 1" Sanding block. Removed
about 1/2 of the 8th ply + parts of previous
6 plies + touched up edges of 1st ply.
Good fit to template (E)

December 10 Sanded bottom right
Spar Cap flush with top of trough
Checked entire Canard (w template (E))
(3/8" deep) Routed out channel for RG-58 radio
cable for 2 VOR antennae. Installed
two VOR antennae, from RST, Grass
Valley, CA. Each arm 22.8", centers are
1 cm apart. Centers are 46.0" from E
of canard & 7.25" from leading edge
Cable runs parallel & just behind the
Spar Cap except for last 10" which
moves 1.5" rearward. Cable is Hot
Stuff tacked in place. Center wire is
connected to outside arm.

December 11 Used Spray foam
Poly-Gel One to partially fill
trough for RG-58 cable to avoid any
chance of exotherm.

December 14 Trimed Poly Gel One.
Clean shop. Cut glass plies

will allow a perfect fit to the
template. 1 1/2 hr 80° - added Small B.D.
at each end to build up to top of cap - about 2" long

January 21, 1989 Began Sanding
upper Spar Cap to match D(F)
2 hours

January 22 1/2 of upper Spar Cap done
2 more hours

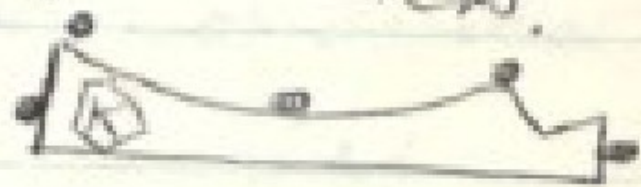
January 25 Another 1/4 done on
spar Cap 2 hrs

January 28 Completed sanding of
upper spar Cap - Canard. 3 hrs

January 29 Anodized + dyed NC-28 NGL's
Anodized NC Torque Tubes and
dyed them.

Used 3" PVC tube (w) fitting to
Seal bottom. - Glued (w) All Purpose
Cement + sealed (w) GTE RTV Blue
Silicone. Inner tube is a PVC
open at both ends + has many 1/4"
holes drilled in it. Heavy Alum foil
wrapped loosely outside of tube of
torque tube (hanging inside). BEST
PVC faucet fitting at bottom to drain
Sealed like the bottom. Used 1 hr

August 13, 1989 Photos. Removed from jig
Cleaned up bench. Cleaned up jig (K)'s
Set 2 at $\pm 63''$ + stretched 5 threads between
them, tangent at all 5 points to 3 hrs.
all 9 (K)s



August 14 Mounted Canard to jig (K) +
microed end pieces on. Leading
edge + trailing edge are straight + level
Each piece flows smoothly to its neighbors.
Maximum discrepancy in shape from
template E is $\frac{1}{16}''$ in $54''$ 2 hrs

August 15 Cleaned up hanger. Sanded
Lower Side of Sheet Web lay up
preparatory to laying Spar Cap 2 hrs

August 16 Laid up bottom Canard Spar
Cap. 9 plies at center (-17 yds tape).
5 hours. peel plied. Anodized hinges
NC-3 & shoulder tabs SH-1. Hanger 90°F

August 17 Dried NC-3's & SH-1's
Sanded Spar Cap

August 18 Sanded Spar Cap 3 more hrs

August 19 Routed path for RG58 cable

September 2, 1989 Elevators sanded
to shape on Torque Tubes 5 min out
Table. 4 plies cut.

September 3 Bottom of elevators
glased 2 plies $UN @ \pm 30^\circ$ 90°
4 hours

September 5 Leading edge of elevator
sanded + faired in, trailing edge
sanded straight

September 6 (School started) ^{every 4"}
Bonded elevators to table ^{around edges}
lead on each to guarantee straightness
1 hour (+) (3 tries for the left one) 65 lb

September 8 Prepared leading + trailing
edges. Gray tape at front, rear + sides

September 10 Glased top of elevators +
Micro in T.E. depression 4 hrs

September 12 Removed Bonds from
elevators, faired in leading edges
sanded trailing edge straight 3 hrs
Left elevator No. 1, paint etal 1 3/4 lb
Right elevator " " 1 1/4 lb

Scale is not very accurate but gives idea.

Neither fits exactly in templates $\boxed{H} + \boxed{I}$

November 24, 1989 Trimmed tubes in
canard tips; filed s/s hinge pin ends
and drilled $\frac{1}{16}$ " hole in end; inserted in
elevators, on canard. Added, temporarily, the
Pb weights + it tend to tip nose down.

November 29 Finished NG 67 in Nylon.
Drilled holes for ^{364-832 screws} ~~AN 364-832 bolts~~ in it + Inst. Panel.
Test assembled NG 61 to Nose gear retract
universal @ AN 364, & riveted NG 65 to NG
61. Interference between AN 364-832 screws &
rivets. Must replace NG 67 with a larger one.

December 3 Test assembled entire Nose
gear retract mechanism including
shock strut CST. Needed to drill
away part of the fiberclaw NG Strut
cover to provide clearance for bolts.
Opened hole for Nose tie down + installed

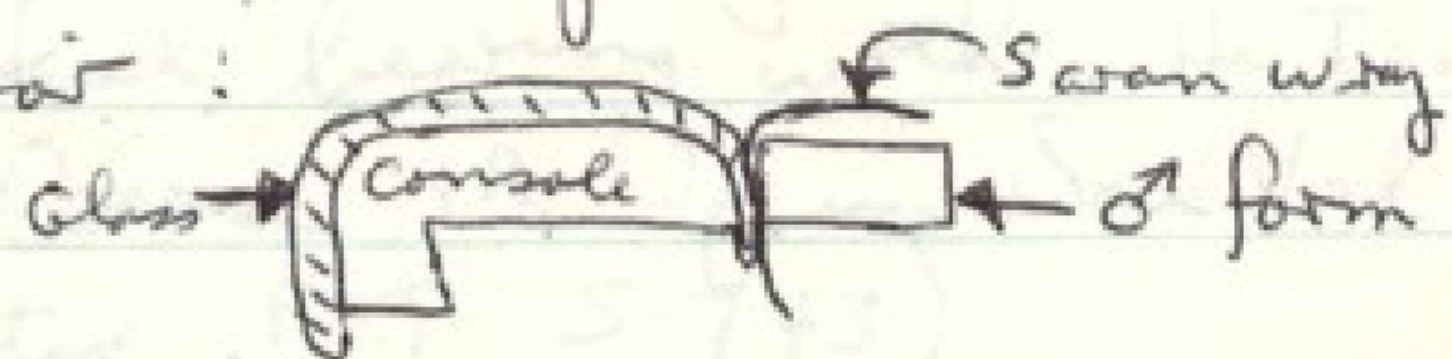
December 8 Removed wheel & axle. Measured
for the $\frac{1}{8}$ " A' plate (CP 57 p 10). Sanded off
all corrosion from Mg wheels + buffed @ Scotchbrite
cleaned @ acetone + sprayed @ ZnCrO₂ paint
(inside wheel halves) 2 hrs

December 9 Sprayed outside wheel halves +
brake fitting. Fitted Nose gear to Strut 2 hrs
December 10 Put left wheel together @ tire +
tube. Made Pattern for $\frac{1}{8}$ " Plates (CP 57 p 10)

January 10 Right rear console fitted
in place + 5 min together

January 15 Left rear console fitted
in place + 5 min together

January 16 Glassed interior R+L
rear consoles, Made ♂ forms
to hold glass in place while doing
exterior:



January 17 Glassed exterior R+L
rear Consoles

January 23 Drilled $5/16$ " hole in end of
NG tiedown (1/9/88) (after welding)
drilled #12 hole, 1" from end, crosswise.
per CP 26 p 8. Invented Al + Fe parts
from Roland

January 24 Cleaned Al parts for
anodizing.

January 25 Anodized & dyed

12
12
August 14, 1988 Made templates for
Canard, & Hotwire Saw.

August 22 Cut foam cores for
Canard inboard Section. - Thine
1st had errors. 2nd looks good.
Drilled hole for dowels 10 places,
Removed flashing at front edge.
Sliced core into front & rear
just forward of trough for Shear
Web.

November 6, 1988 Completed
clean up of hanger interior.
New roof on hanger. Repainted
3 doors. Cleaned tools for winter

November 11, Drilled CLT & CLI
& 2" x 12" x 1/4 Alum Strip. Riwted
K-1000-4 nutplates onto rear side
CLI

November 12 WL 19.8 drawn on
forward side of Shear Web of Canard -
Canard Must be in original block, Weights
down or it warps. Jugged per plans p10-3
& forced straight, level. 2 cores joined
@ Dry Micro

December 31, 1988 Removed fish tail
Checked level + twist of Canard
Adjusted for Right block with shim
+ bonded.

January 1, 1989 Fitted NC-2 hinge inserts into
machined pockets - corners of inserts had
to be filed (RAF phone). NC-2 inserts do not fit
each others pockets - They are numbered
#1 is Right outboard, #5 is Left outboard
NC-6 needed light sanding to fit into
Torque Tube ends. NC-12A both
required turning down of the tube insert
to fit into Torque Tube. Neither Torque
Tube is exact. The Pockets are all
slightly out of position. I will move
the NC-12A slightly. This remedies the
problem. (Thanks Ken Brock 1/14/1)
Sprayed tubes on NC12A w/ Zinc Chromate

January 2 Cut holes in Canard for
 $6\frac{1}{2}/ft^3$ PVC foam inserts - 7
per plane

January 4 Cut 7 PVC $6\frac{1}{2}/ft^3$ inserts
+ shaped to fit holes. Faced in lower
skin at forward edge of Canard.

November 4, 1989 Gressed upper wing tips. Reel Plyth

November 5 Knife Trim

November 9 Carved + Sanded lower surface Canard tip. End of VOR antennae unrolled + spread over tips of Canard. Shapes matched R+L with wire template

November 10 Gressed bottom 2 ply UOI @ $\approx 30^\circ$ to end. Dry Micro + Reel Ply added to T.E. & along outside of the "wing" as in photos p C-6. 90° in Hanger 2 1/2 hrs

November 11 Knife Trim

November 18 Sanded down bump in R bottom wing tip. - broke antenna + repaired @ solder. Patched skin 2 ply UOI + 1 B ID 1 Ply BID over inner face wing tip T.E. @ flex corners; dry micro to top off any subsidence in holes drilled for the NC3's + NC3A's to fair them in. Knife Trim

November 21 Microed $\frac{1}{4}$ ID $\times \frac{3}{8}$ OD tubes in wingtips per plans. Hld immovable @ 5 lb Pb

& checked incidence, sweep + level

4/28 Bend ends of hinge for battery $\frac{5}{32}$ "
door. K1000-3 nut plates anchored $\frac{5}{32}$ " ply
w 5 min in Nose roof for hinge bolts.

Range of Travel checked. Foam carved
on inside of door + inside of
Nose roof. 4 hrs

4/29 ③ K1000-3 nut plates anchored to $\frac{5}{32}$ " ply
+ 5 min'd into Battery door ~~ply~~.

Battery door + Nose roof are ready to be
glassed. NG Fender prepared to attach.
Attach bracket bent + polished; Battery
door hinge polished. 3 hrs.

5/4/90 Glassed inside Battery door

5/5 Knife + sin drilled holes for AN3A
bolts Anodized hinge + also NG
wheel fender bracket. Attached fender bracket
to NG fork

5/6 Fuselage leveled R-L & F-A.

iii.95 Canard leveled, centered, Zero sweep
~~112.0~~" from fire wall to tip (^{measured} just beneath
where main spar comes), incidence
matches longeron - measured on
template

5/7 AN3-20A bolts ground off lead +
rounded. $\frac{3}{16}$ " hole drilled in F28 +
wood doublers 1 hr

6/23/90 Anodized + dyed NG61. Riveted NG61 to NG65. Made Seal for hole in F22 bulkhead, for NG61, with 1 ply BID, coated w/ RTV Silicone. 4 hrs.

6/24 Connected/installed all Nuts + Bolts for NG Retract mechanism. Torqued to 50 in/lbs. It takes 2 people to connect Nut + Bolt for NG 59 + NG 61

6/26 Installed Rudder Pedals - if they are ever removed, put nut plates inside NG 30's

6/28 Nose tie down CP 49 p7 welded up. Receiver anodized + cut down to size. Pour in place Urethane formed around it to fill Void.

7/8 4 ply BID on inside fuselage, 2 ply on outside. Flox corners NG tie down done.

7/11 2 K1000-3 nut plates riveted to 2 970-3 washers per note about Canard attachment Pg A-7 + fixed in place on inside of NG 30's for Rudder pedal attachment.

7/12 Removed Retract mechanism for the 10th time added shims to NG 60 & NG 52 per CP 43 p5 & CP 30 p7 to eliminate "chatter" on gear extension. Reinstalled + Torqued 3 hrs.

8/8 Air Seal - like 6/22 at forward end of SC connecting to F6

December 5, 1987 Knife Trim NG30L; Laid up NG30R on inside surface. Cut glass for NG30 exterior + 15 ply reinforcements in cellar to speed setting. Knife Trim.

December 6 Drilled out the guide holes for bolts in NG30's. Removed foam 1.2" dia. & 2.8" dia. areas. Laid up 15 ply reinforcements. Laid up 4 ply outside coat.

December 7 Knife Trim both NG30's

December 10 Cut + glass F6 Forward Side

December 11 Knife Trim

Cut + glass left console. (^{hidden} inside)
1 ply Reinforcement at LB14

December 12 Glassed left console (outside)
2 ply BID

December 13 Knife Trim

Note: edges of Seatbelt cutout & Pitch Trim adjustment hole are rounded + glassed.

December 15 Left Console cut into LC1; LC3; LC4. Sections jugged together @ Sticks + Bondo.
Jugged into the fuselage @ Bondo + Sticks

December 23 LB 17 attached to left ~~bulkhead~~ side, fuselage @

JNT Mfg Co, Inc. (914) 878-6868
Mead's Lane, RR 2
Box 870

Stormville NY 12582

Also Silver, Gold, Black + S/S coats available.

Inside of LB 1 sprayed @ Mil Spec
Chromate paint.

April 21, 1988 Assembled LB 1, 2, 3 to
LB 4, 5 to LB 10. Made LB 6 Spacer
from 1" nylon rod using drill press
as lathe @ sandpaper, to turn down
to ~~3/8~~ 7/8"

April 22 Installed LB 9 support @
5 min, then flox & 2 ply tapes per plans.
On R side, tape on floor is wide enough
to reinforce 1' x 2" hole in floor @ 1/4"
plywood 1' x 1/4" reinforcement - Swaged S/S cables

April 28 Assembled entire LB System.
It works! Closes @ 40+ lb force on it.

May 5, 1988 Floated LB 11 in place
Attached NG 30's to F 22
bulkhead @ flox & taped inside corners
only. Square.

July 11, 1988 Glassed interior
Right, nose section, 3 ply
reinforcement of Canard attachment
on F22 - Nose of 4 ply cover over
Rudder pivot support.

July 12 Drilled out Rudder Pivot
Support (outside) - Right Side.
Glassed Left nose section per 7/11/88

July 13 Drilled out Rudder Pivot
Support (outside) Left Side
Cut Pitot tube $\frac{1}{4}$ " Al tube &
made Rudder Spring support blocks
anodized.

July 14 Anodized pitot tube &
oil breather/separator. Cut
Nose top + 3 nose foam blocks
installed pitot tube

July 15 Cut & glassed 1 side of
H250 Foam for F28 & IP
extension per Debbie Irvatt
F28 up 0.86" & IP up 1.25"
at center See 3/10/90

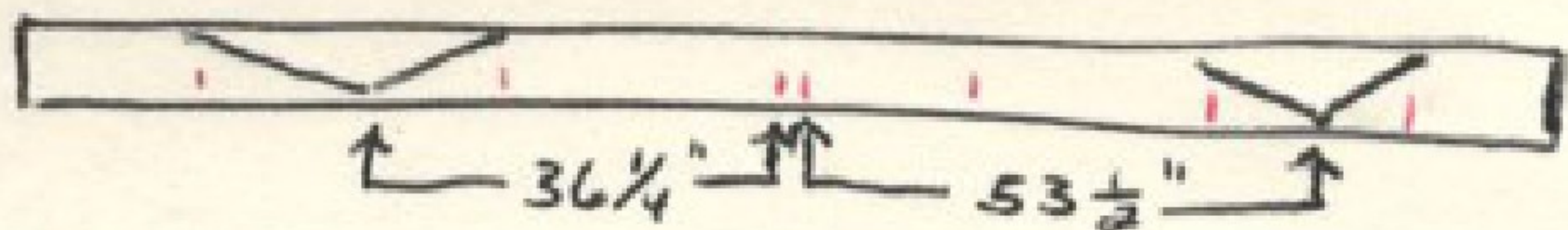
with nails + bonds. No twist or dihedral
- Tight Thread along WL 19.8 + trailing
edge.

August 8, 1989 Drilled CLI for nutplates +
also the 2 $\frac{1}{4}$ " ^{mounting} jigs. Sanded CLIT
CLT's; Anodized + dyed gold.
5 NC 2 filed to fit pockets in Torque Tubes

August 9 Riveted K-1000-4 Nutplates to CLI's
Bolted CLT to CLT to Al mounting jig
& moved CLI in forward face of Shear Web?
& jig legs bonded to table. Cut glass for
Shear Web.

August 10 Readjusted 3 Mounting Nails for
Canard. Removed hole Drilling/Mounting
jig. Added Silicone to 3 holes in each CLT
Dressed + Peel plied Shear Web This

August 11 Removed Peel ply. Drilled holes
for AN4-7A bolts, in Shear Web &
the 10 dowel holes in the Shear Web.
Bolted CLT to CLT @ 3 AN4-7A bolts + some
flox. Moved forward portion forward to
shear web. Slit Fish Tail in 2 places
+ tested @ templates E & F Canard is
slightly small - as it should be. Hope its
that way throughout. Leading edge straight level



for 2 VOR antennae behind Spar Cap
 + made 2 RST VOR antennae
 3 Ferrite toroids each + each copper foil
 arm is 22.8". Coax center conductor
 is on the outer arms. 1 hr

August 21, 1989 Heat shrink tubing on
 base of KG 58 where they will
 exit the fiberglass. Routed path filled
 with X-40 Methane foam.
 Foam cut + sanded flush with the
 blue styrofoam. 3 plies glass per
 plans. Knife trim

August 22 Trailing edge is sanded
 straight $\pm 1/64"$ using a tight string.
 Forgot to peel ply leading edge + sanded
 steel pipe bonded to trailing edge

August 23 4 1x4x8 blocks skinned
 & bonded to pipe + lower side
 of canopy. Turned over. Fish tail removed.
 & peel ply stripped out (hard work).
 Front faired in. 7 foam inserts
 cut + holes in Styrofoam made (hot
 hacksaw blade)

January 17, 1990 Sanded area on gear strut
so Brake heat shield will fit flat
Anodized heat shields + wheel balances

January 18 3 ply B/D on each strut
per plans beneath heat shields.

January 19 Drilled holes + assembled @
axles. Wrong Toe-in. Removed, Sanded
again + added 2 B/D + 1 UNI at forward
of strut Set.

January 20 Drilled strut; Assembled
@ axles. Proper toe in. Forward
measurement (per plans) 51.75"; Rear
measurement 52.1"

January 27 Removed axles + heat shields
sanded struts white, Reassembled
@ ^{with} floc, new AN 4-22 bolts + new ~~MS~~ 21042-4
nuts. Rechecked measurements.
The difference between front + rear
measurements is 0.35" Filled tires @ air
to 40 psi.

January 30 Pressure in all 3 tires is still 40 psi.
Began to balance wheel + tire per CPGL pg 6
Main #1 1 3/4 oz Pb; Main #2 3/4 oz Pb; Nose 1 1/2 oz Pb

January 31 all wheels mounted. 30 ft/lb torque
on Mains. 60 in/lb torque Nose. Cutter Pins.

and riveted together NG60, 63 + 59
& reassembled the NG-Box

February 27, 1988 Added NG Strut extal
to NG 30 box + LST assembly. Had
to rethread 1 end of CST to fit the Heim
HM6 end bearing. Hard work. Greased CST

March 4, 1988 added NG 31 & F6
per plans

March 13, 1988 Prepared NG 30's
& F22 bulkhead for bonding ③

April 19 LB 4 + 5 drilled per diagram
page A2. Held together w/ Rivets
in Holes. Clamped LB 4+5 to LB 1, 2, 3.
Drilled holes through. Cleaned paint
& all corrosion off of LB 1, 2, 3 buffed
w/ emery, then washed w/ detergent. +
rinsed & dried.

Coated outside w/ JNT CopR-Cote. dried.
Electroplated JNT Met-L-Cote Nickel/
tin coating on LB 1, 2, 3 per instructions
Buffed & recoated w/ Met-Cote. Also
ends of bolts to hold LB 8 to LB 9.



December 3, 1988 Glued Canard to jigs with 5min ep plans. Mirrored ends onto canard + 5min'd onto their jigs. Marked out locations for VOR antennae + path for RG-58 cable to avoid hinges. Front of canard straight @ straight edge. Rear curve within standard in plans. Left side is not as perfect as right. Went back to block that the core came from & cut the missing area from the block + mirrored in place on rear of L canard.

December 4 Sanded fillet smooth - almost perfect $\frac{1}{16}$ " or less / 2 feet and almost perfect match for Template (E). Laid out positions for two VOR antennas. Laid up the Bottom Spar Cap (8 plies at center) Original plans claim 2 hours for self + helper - it took 6 for me. Rm. temp. was 70°, used hand dryer to keep warm. Peel plyed. (Each ply was stippled + squeezed out at least 2X, as if each were the last)

December 1 ~~Began~~ Stippled Peel Ply. Began hand sanding Lower Spar Cap.

This is more than a little disturbing!

February 24, 1989 Began cutting out & filing the Canard elevator templates. Guess What! The elevator cutting templates do NOT match the elevator shape checking template either! They also do not match the full scale drawing on p. C1.

During the day I called RAF - no answer to letter - about Canard:

→ Mike Melvil - The shape is far more important, esp the upper side & the slot, than the thickness. He was surprised at the thickness. They have been busy in Pond race

June 29, 1989 Surprise, I'm back!

NC-2 inserts in pockets in torque tubes per plans, #30 holes; BSP-43 rivets.

Permatex PET S-743 high temp grease in hinge pin holes

June 30 Foam ready to be cut for elevator. Block 0.54" X 7 X 4

July 4 Cut two elevators.

Obviously for practice since neither

July 14, 1989 Sanded front + trailing edges
removed .0.4" foam at trailing edge
& sanded whites.

July 17 Glossed top R elevator +
knife trim

July 19 Glossed top L elevator
(2 hrs) 90°F

→ August 1, 1989 I do not like things
that are "adequate" (2/24/89) and
I'm going slower + slower + with less &
less pleasure; therefore I'm rebuilding
(oh no!) the Canard.

Foam block squared up. Template
filed to $\leq \frac{1}{2}$ the block line & lubed
w/ graphite

August 2 Weighted blocks down @ 35 lb Pb
 $\frac{1}{2}$ lb push on saw; 2 sec between
the #; .032" S/S wire. Saw was better
this time. These pieces seem correct

August 3 Drew W.L. 19.8 on Shear Web fan
bonded 2 2x4 to table for jig

August 4 Mounted Rear Canard to jig

8/8/90 CNL flopped into F22, along w/ K1000-4 nutplate
from pg A-7

8/11 Canard Torqued to F22. With fuselage
level $\updownarrow \leftrightarrow$ there is 0 sweep - tips are 112.0" from
firewall (above main spar) and canard check
template is level on its upper surface.

Removed from fuselage + elevators removed
Outboard mass balances attached to foam
(H-100) spars. Templates $\boxed{J}$ formed.

8/12 Inboard Mass balances bolted to
NC-12A control arms; inserted in torque tubes
+ tested for balance. Elevators tilt Nose
down about $40^\circ - 45^\circ$ when hinge
pin is supported on knife edge. If
suspended, inverted, completely Nose
down. NOTE: They are more nose heavy
w/ only the ^{CS 10} ~~NC 12~~ weights.

NC 12A + CS 11 were ~~chromate~~ painted + then
white enamel.

8/15 Congratulations Rutan! NC 5A will
Not fit over MSP 43 Rivet at inboard
hinge insert, left elevator. Drilled out +
replaced w/ MSC 43 rivet

8/17 Cut out slot in lower surface, canard
for elevator balance weight. Added
Urethane Pour in place + smoothed, sanded
out slot to give 0.9" clearance on sides
+ front.

4 hrs!

12/26/90 Return method requires at least as much sanding - dribbles. Perhaps a combination

→ See 12/21 will work best for wings.
Rounded T.E. $3/16"$ Top ^{cap} & bottom ^{cap} are smooth with or below surface of Top & bottom of spar all along spar. 4 hrs.

12/27 Cut UN1 for outside aft Spar (4 ply UN1 $\pm 45^\circ$). Milled 1×3 spruce blocks forward of spar caps. Held in place w/ sticks & string



12/28 Plaster film on table, Grey tape on end bulkheads 4 ply UN1 @ $\pm 45^\circ$. LWA 2 & 3's placed, weighted & peel ply along leading edges & for layup 7. Cut glass for layup 6 hrs

12/30 Floor fairing along edges of LWA 2 & LWA 3's, 3 ply UN1 over Aluminium & BID on Forward floor per plans. Peel ply. Knife trim 90° 2 hrs

12/31 Carved hole for baggage access in forward face of spar. Grey Tape on rest of spar not to be covered in layup 8 & cut 2 ply UN1 @ 45° . Cleanup. 2 hrs

(91) 1/1/91 2 ply UN1 $\pm 45^\circ$ over forward face spar peel ply 2 hrs

1/2 Cut baggage access hole, 1 layer BID on each end CSS & CS8. 1 hr

1/3 Weighed CSS spar 29 lb !!! CP26 p3

December 16, 1988 Plastic covered table. Peel ply on trailing edge of canard. Grey tape on CLT's Plastic wrap on RG58 cables. Ready to glass.

December 20 Glassed bottom of Canard per plans. Removed Grey tape from CLT's (Dry Micro in RG58 grooves)

December 21 Knife trimmed Canard. This lower surface took at least double, possibly triple the time specified in the plans.

December 27 Cut 130" $1\frac{1}{4}$ " Black Steel pipe. Degreased (+ de-waxed) Mounted on Canard @ Bondo. Cut 4 $1 \times 4 \times 8$ " boards + bonded in place approximately 40" apart. Shim as necessary to be level with each other - per plans. Water pipe was the straightest one available but had a distinct bow (- esp. when on the Canard)

December 28 Freed from jig's [K] & turned over + bonded to table - level

August 24, 1989 Microed 7 foam blocks into Styrofoam of Canard. — below surface! Micro bead at forward edge of spar cap trough. Laid up Spar Cap & preplied 12 plies (2.9 yds tape) (8 hours total)

August 26 Sanded spar cap flush with surface — 8 hrs!

Micro injected into all spaces between foam blocks like frosting.

→ August 28 Filled dings, 7 ^{small} foam blocks & edges of spar cap. Glassed upper surface of canard. Peel ply on ends & rest edge. 5 hours (8.5°)

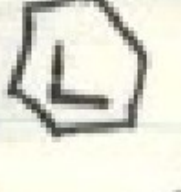
August 29 Admitted Canard Anodized NC-2's & NC 3A's prepared to anodize Torque Tubes

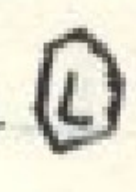
August 30 Anodized ^{both} torque tubes. 3 hours including all set up time. 1 more for the Dying & Sealing

August 31 Freed Canard from jig & cleaned up. 19 1/2 lb.

NC-2 hinge inserts riveted into torque tubes; hot stuff along edges; Slots filed in torque tubes to match the hinge slots in the inserts

September 1 Microed Torque Tubes to elevators

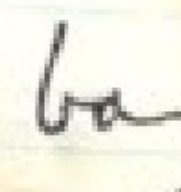
September 13, 1989 Made master of
template  on formica

September 14 Made 4 identical template 
from $\frac{1}{4}$ " plywood

September 15 Flox corner on outside
ends of elevators + 1 ply B/D

September 16 Knife trim end. Clean
out Torque Tube. Insert NC-6's
and pop rivet - MSC 43 - in place

September 17 Trace NC-6 on Swan wrap
(Plot fine point) Tape it over the NC-6
in end of Torque Tube + drill ^{#10} access hole
for the 10-32 set screw.

September 23 Template  banded to
elevators, then Canard. Places
marked for NC 3's + 3A's. 7 holes drilled
+ cleaned out. (had to remove pin + NC 3's
+ 3A's). Put together + Hot Stuffed
scraps of wood over NC 3's + 3A's per
CP 47 p 8. Bothe Template  is free +
checked elevator down movement -
only 12° !! Must be 15°

September 24 sanded trailing edge
per plans 10-10. Shimmed up all
template  off canard @ Tongue
depressors. Repeated 9/23 $\Rightarrow 14^\circ$ movement

October 16, 1989 Filled slots @ wet flop.
First remove elevator from canard to
get room. Jiggle with in slot to remove
any trapped air. 1 hr.

October 17 leveled canard on table +
reinstalled elevator. Difficult to
thread hinge pin through the holes + washers.
(alone)

October 21 NC-12's bolted together, @
Rod end bearing. Everything in position
Bondo end of NC12 to mix stick to canard
to jig in position. Drill hole thru
Taper tube + NC12, about $\frac{1}{2}$ " in from end
of Taper Tube. Bolt together.

October 28 Foam cut for ends of
canard. Canard @ elevator
jigged in place. Turned over. Placed up
on blocks, leveled + bonded.
End blocks microwaved in place. 3 hrs

October 29 Right block sanded to shape
(make jig $\boxtimes$ before doing either side) 2 hrs

November 3 R+2 tips matched @ curve
surface pin matching device. Sanded
1.25" of top skin, ready for glassing 1 hr
Cleanings

5/29/90 Knife trim. Remove $3/16$ " pins +
add 1 ply BID over Top bearing surface
(see p 12-2) with $1/4$ " flox corners.

6/9 checked level, sweep & incidence
Drilled left tabs + F22 bulkhead up to $1/4$ "
Then (w $5/8$ " counterbore, drilled F22 holes
up to $5/8$ ". Floxed pins in at F28

6/10 Removed NG Ratchet mechanism +
cleaned. Cut new NG 61 + prepared
to install new Ratchet lock on NG 64
Glazed inside nose roof (3 ply over hinge
pins) (one connecting the 2 areas) +
covered with peel ply.



6/11 drilled clear thru 2 hinge holes, installed
battery door

6/20 Moved RG 58 Cable Conduits - See
pg 7-2

6/22 Drilled EZ Nose Gear Ratchet thru NG 65
Sunk down NG 65 to fit inside NG 61
Shortened NG 61 to fit (19.75") Drilled
out instrument panel for Ratchet housing. Pinned
gear on NG 65 + filed both ends flush w/
gear teeth. Lubed - (wheel grease + Temp Royco IR)
+ closed up housing. Painted ($ZnCrO_4$) forward
face Ratchet + NG 65. Air Seal around NG 61
where it penetrates F 22, made of BID + RTV

- 10/11/90 Sanded LWA's 1, 2, 3, 4 & 5 @ 220 grit 3 hrs
- 10/15 Cleaned LWA's in TSP 30 min
- 10/16 Soaked LWA 4's in Acetone 3 min +
anodized + dyed 1 hr
- 10/17 Soaked LWA 2's & LWA 5's in Acetone
3 min, anodized + dyed 1 hr
- 10/18 Completed anodizing all LWA's.
- 10/21 Cut foam for Main Spar 2 hrs
- 10/22 Cut foam for Main Spar 2 hrs
- 10/25 Fitted + Microed CS-1's on jig 2 hrs
- 10/26 Fitted CS-2 & 3's on CS-1's. Microed
CS-2's onto CS-1's 2 hrs
- 10/27 Microed CS-3's, CS 5 + CS 8 in place
all Square + Vertical 3 hrs
- 10/30 Step 4 pp 14-1 & 14-2 5 1/2 hrs
- 11/1 Trimmied + sanded flat the interior
Main Spar. Drilled holes (2" diameter)
in CS 6 + CS 7 for Radio Cables/wing
lights. Test layup - 5 ply of UN10
Spar Cap material - only 0.127" thick
CP 25 p6
- 11/2 CS 4 Microed to Spar + Weighted in
place 1 hr
- 11/10 Cut out Spar Cap Templates, Main Spar;
Removed CS 1 lips + laid out Top +
Bottom Spar Caps. began carving troughs 3 hrs
- 11/11 Completed bottom trough, turned over
+ leveled 4" Contoured top + carved top trough

July 26, 1988 Removed SC prefab part.
'To SLOPPY'. Reinstalled SC
@ 5 min flox between NG30's & foam
repaired (minor) @ micro. 2 ply B.D
lapped on per plans. - Nice.

July 31 Drilled out NG3/4 to 5/16 per
CP54 p6, also the inserts in
^{Red End Bearing} the Heim HM6 is on the LST & NG62
to 5/16". Aluminum PR4 cut
drilled + tapped + grooved per CP30
p8 + plans 8-1A. Wooden dowel
cut + drilled to fit PR4

August 12 Glued guides for Templates
page C3 of New Canada plans to
formica sheet @ 3M Super 77 Spray
adhesive. Made steel form from
1/2" Square Steel rod as template for
PR2 & 3 of canopy stay (pg 8-1A)
Made PR2, PR3

August 13 Drilled PR2 & 3 per plans
Made + drilled PR1 & PR1A
Anodized + dyed all parts of Canopy Stay
Anodized (NOT dyed) handle for Nosegear
Retractor NG66A

November 15, 1988 Received form for
CLI's. $\frac{1}{8}$ " radius on forward edges
of Spar troughs. Supports (cut +
bonded in place per New Canard
Plans pg C5 #5) for AI Strips to
jig the CLI, CLT pieces

November 16 Dry Microed CLI-CLT
into Shear Web per New Canard
plans pg C5 #5. CLT is $\perp$ to
W.L. 19.8 line on front of Shear Web

November 17 Reset Canard in jig -
it had moved on the rails. Reset
the AI strips to be able to find the 3 blind
holes for the CLT. Cleaned Gooty pump.

November 23 Gressed Shear Web +
peel plyed per New Canard plans p1.

November 24 Knife trim Shear Web

November 25 Removed Peel Ply. Checked
for Straightness. Drilled out 6 holes
to bolt on CLT onto CLI. (Placed jigs
in place, drilled inboard hole - undersize +
filed up to proper size, then bolted jig to
CLI. Drilled remaining holes)

8/20 1 ply BID in Slots, Flox corners

8/22 Trim. Dry Micro on top, T.E. Canard
(w) peel ply on top. NCSA (w) Chromate paint
inside slid on Torque Tube + drilled for
12 rivets

8/25 Removed, Chromate + white painted the LB12345
assembly from Landing Brake - it was rusting
Installed NB housing for nose wheel (- altered
near left edge to miss nut plates for Landing Light)

9/2 Reinstalled LB 12345, + test of LB system
Glossed inside Nose roof 1 ply BID + 2
extra ply on flange

9/5 glossed over inside fuselage, floor
where Co-ax conduit was moved
2 ply BID, overlap 1" See 6/20/90

Ch 14 10/1 Cut LWA 2's & LWA 4's & LWAS's
for Main Spar 2 hrs.

10/2 Laid out parts ABCD for Spar jig.
Cut out D (1 1/2) 1 hr

10/4 Cut D to final shape - 1/16" oversize
+ sanded to shape

10/5 Cut + sanded to shape A, B & C 3 hrs

10/7 Assembled Main Spar jig 6 hrs

5/8" particle Board, Reinforced (w)
5/8" particle Board - every piece A-D

10/8 Set up + Bonded jig to Work bench
Level.

- Carvel front edges - upper & lower, 6 hrs
 11/12/90 floped 6 hard points into Shear Web
 (LWA4 + 5's). Checked on location @ $5/64"$ (2 hrs)
 hole thru opposite side & bright light
 11/14 Rounded corners of Shear Web, Covered
 foam with grey tape. Anchored Spar
 to table & covered table w plastic. 2 hr
 11/16 2 ply U1 at $\pm 45^\circ$ on Shear Web &
 Spar Caps. Peel ply. 3 hrs
 11/19 Grey Tape on Shear Web aft. 3 $1 \times 2"$
 furring strips bonded at top, rear of
 top spar cap
 11/21 Top Spar Cap - 18 layers - pal ply
 each stippled & Squeezed air if it was the best 6 hrs
 12/1 New, heavier hinge for Battery Access
 Door made of 0.125" Al (see pg 13-104)
 12/2 Finished edges, drilled up holes to size
 fitted to door & anodized & dyed hinge.
 2 hrs
 12/6 Fitted to fuselage & added the 2
 bronze bushings to the Battery Access Door Hinge -
 needed 1 AN ^{PD} 960-10 washer as spacer at R screw
 1 AN ^{PD} 960-10L washer as spacer at center screw this
 12/7 + 12/8 fitted S/S hinge pin into L Canard
 elevator & filed slot for set screw -
 Set Screw changed to $1/4-28$ from 10-32, 3 hrs
 12/11 fitted S/S hinge pin into R Canard elevator &
 filed Set screw slot. (changed to $1/4-28$) 2 hrs

12/13 Top Spar Cap is wider than it should be - the dam was not smooth & in some places pulled bonds free - also cap is about 1 ply below spar surface. Added 1 ply UNI type.

12/17 Ground @ drumel + sanding block, the rear edge of spar cap, right side so it is smooth @ the shear web. 2 hrs.

12/21 Ground @ drumel + Sanding block, the rear edge of Spar Cap left side + Center so it is smooth @ Shear web. 3 hrs. NOTE: It seems that the amount removed is about equal to the extra 1 ply added 12/13. Try Rutan method

→ 12/26/90 next time - No Grey tape on Shear Web for before bonds 1/4 ply dam to it - also use braces to hold it firmly against Shear Web.

12/23 1/4 ply dam installed per plans @ 1" x 2" board banded to table to ensure closeness to shear web. Cut all bottom spar cap plies. Shop clean + ready.

12/24 Glued bottom Spar Cap per plans. Added 1 ply full length extra since dam is not airtight fit & some (small amt.) will have to be removed; plies may be slightly thinner than plans specs. & trough may be (?) slightly deeper than called out (doubt this time). Peel ply: 3 visitors! 90° 6 hrs.

Measured
5 plies
0.120"
0.123"

January 5, 1989 Mixed in inserts.

Used gray tape around hole + weight on top of insert to ensure that it was completely in hole. Tops are all flush or depressed.

January 7 Mashed off the Spar Cap.

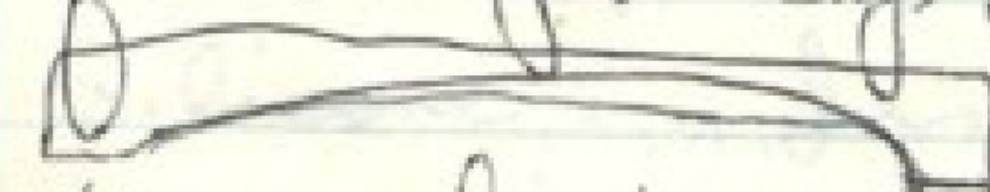
January 14 Laid up ^{TOP} Spar Cap on Carad.

First, Sanded the Shear web Upper Surface, then laid up 11 layers (at center) of UNI tape. Hanger 85° + even with heat gun, the tape took forever to wet out. Each layer Squeezed as if it was the last. All fibers appear straight. Peel plyed.

8 hours!! About 6 - just for cutting + wetting + squeezing!!

Cut glass for top Covering 3 ply UNI, 1 B/D.

January 15 Sanded down the Spar Cap to match template (F)

It does not match the center of the template (F) over 90% of the length of the Spar Cap. — There is a gap.  even though the forward + rear edges are fine.

January 17 Laid 1 ply UNI tape over Spar Cap. It will provide a smoother transition from 1 ply to the next & when sanded

September 29, 1989 Repeated, shimmed up
template L's by thickness of 2 tongue
depressors. (0.135"). T.E. gap almost .3"

October 6 Tacked sheet C-1 to wall,
(w) W.L. 21.8 on the sheet measured
level. angle of bottom of NC-3 is
7°. Shimmed all NC3 to that
angle + bonded.

October 7 N.G. Shimmed all Template
L's 0.095" (w) plexiglass. Bonded all
NC3 + NC3A's to 5° not 7° T.E. gap
about .2"



October 8 15 1/2° on left + 16 1/2° on right.

Injected (used clean Saline container)
some wet flox into bottom of slot to
hold NC3's + NC3A's. Finally!

NC3A Bolts are 0.55" from Vertical, forward
face of turbine tube.

October 11 Jigged Canard (upside down)
at approx 40° nose down (w) foam
& bonds. Injected wet flox (w) squeeze bottle
+ soda straw into slots, jiggling (w) wire to
be certain all air bubbles escape. Hanger
is 90°F. 3 hrs

December 12, 1989 Removed R wheel
Sanded all corrosion off mg wheel;
buffed @ Scotchbrite; cleaned @ acetone
+ sprayed interior @ $ZnCrO_4$ paint

December 14 Sprayed exterior

December 15 Put together wheel halves,
tube + tire

December 16 Disassembled Nosewheel +
sprayed @ $ZnCrO_4$. Wet flopped NG 15A *
to Nose Strut. Temporary use of AN 3-14A
bolts to hold it in place

December 18 Forward Gear door holes drilled
to match NG 15A Casting

December 23 Alum spacer cut to fit
behind Rear NG door. 3 holes drilled
then spacer, then NG-16 Then Rear door.
#21, Tap $10-32$, then open spacer + door holes to
#13

December 24 Anodized Front + Rear doors
+ rear spacer. Installed rear door + spacer

* December 25 Removed NG 15A - The pivot
shaft (See New Shimmy Damper Plans
part # 2) is Not at 90° to Reference + ground -
is 85° . Added 4 ply B/D to end of NG-1
strut + ground away some ^{strut} at upper
end of NG 15A. Wait to set.

December 27 Replaced NG 15A - Shaft at $90^\circ \pm \frac{1}{2}^\circ$

February 9, 1990 Cut hole for landing
light, under (future) left thigh support
per LEZ addendum May 1980. Drilled holes
in LL 6 & 7 for rivets. Make Plywood Support.

Feb. 10 Sanded, cleaned & anodized
all Al parts (except hinge) for landing
light. Glassed inside hole for LL
1 ply. B&D. 2 ply only on forward face
over plywood support for hinge -
Similar to C/L of Canard.

February 14 Riveted Land. Light assembly (2x)

February 16 Installed Landing Light
assembly on fuselage 2 hrs

February 17 Glassed sides of hole for
Nose gear. 2 hrs

February 18 Knife trim NB hole. Fairied
in landing brace @ dry mix
1 3/4" on sides, 2" Fore & aft.

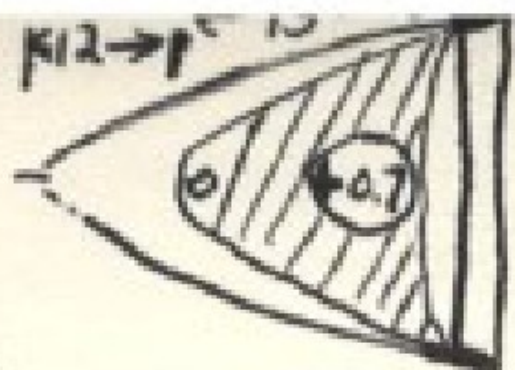
February 19 Sanded in LB Fairing.
Not too bad. Fairied in Land. Light &
area near Nose stop + where NB pivot
emerges from bottom.

February 22 Sanded in fairings.

March 2 Turned over onto wheels

(All evening sitting in cockpit)

March 8 X-40 expanding foam on top of
glass over top of Nose - to be 0.7" of
higher when sanded to Matchstrate. IP



See 7/15/88

March 10⁴⁰ Cleaned Epoxy Ratio Pumps -
Complete disassembly + Refill. New batch
is perfect.

March 16 Cut glass 2 ply BID to go over
urethane, lapping onto glass + applied
to nose. 80° 2 hrs Micro fairing

March 23 Sanded micro flunk on Nose.
2 ply Plastic wrap over Nose + Battery
door laid up 1 ply BID, 1 UNI, 1 BID 2 hrs

March 25 Bonds frame on Battery door +
trim.

April 18, Added pour in place Urethane
foam to inner surface (Sanded) of
Battery door. (0.7" margins). Shaped
NG doors + attached to NG Strut. 2 hrs

April 20 designed hinge for Battery door.
(brazing hinges do not work) Cut
hole for Battery door. Bonds frame on
Top nose piece around battery
door. Removed Top Nose piece 4 hrs

April 21 Made NG 30 Cover - 2 ply BID
over male form. 2 hrs

April 22 Knife Trim NG 30 cover. Covered
interior Nose Top. Mounted Canard

4/9/90 2 Tabs made H250 foam to mount
Canard. #10 holes drilled in Longeron
Doubler, Tabs, & F22. Tabs 5 min'd
to Canard @ $\frac{1}{16}$ " Shim in place

5/11 Glassed top/Forward Side H250 tabs
5 ply BID + since the outer side was
somewhat $< \frac{3}{4}$ " r of pg 12-1 I added 1 ply
BID on the vertical portion 1 hr

5/12 Knife Trim Tabs, back drill #10 - holes
Glassed Bottom/Rear Side H250 Tabs
4 ply BID 1 1/2 hr

5/13 Knife Trim Tabs

5/14 Back drill Tabs. Cut glass pads $1\frac{1}{2} \times 2$
to shim right left tab on F22

5/24 11 ply BID to shim on right side
of F22

5/26 Mounted Canard on fuselage. Fitted
elevators to trailing edge + then removed
1.6" to allow for elevator facing 1 hr

5/27 Closed down clearance holes
originally cut in fuselage sides for
the Canard + Torque tubes with
Pour in place Urethane foam, sanded
smooth.

5/28 Covered inside + outside with 2 ply
UNI, overlap onto fuselage sides, 1 ply
extra on outside like the fuselage sides

February 18, 1988 Measured LB 1, 2, 3, 4, 5
in Furulage — it is perfect according
to plans & to short in the LE-Z 1 Why do they
assume that I will question every dimension
and direction? Return to Roland for a
0.80" addition in center section. Drilled
LB 4 + 5 for twisting + AV3 bolt (- 7 holes)
Countersunk holes in NG5 for screw heads.
Anodized + dyed NG5

February 19 Attached NG8's to NG30's
with 4 machine screws/nuts & flox
per plans. I could have used shorter
screws. That was hard work.

February 20 Assembled NG30's @
NG Retract. Mechanism, NG6 etc.
Aligned @ ± 0.01 "

February 21 Measured 6.71 ± 0.05 " dimension
on LG Stout:

Needle file thru hole in NG3
Ruler butted to outside
of the $\frac{1}{2}$ " dia Steel tube thru NG6 = 6.46"
Off to 4 & 6 tube 6.71"

February 26 NG3 + 4 are Not a loose fit
as plans state. Already very snug.
Sand, flox & mount per plans (no any
extra BID plies Made NG63, drilled

July 17, 1988 Glassed Side 2 of IP + F28
bulkhead extensions (Debbie
Irwatate). Sanded IP + F28

July 18 Sanded again. Prepared
to glass them. Added Foam
blocks to nose, centered on
Pitot tube + Large cover block.

July 20 Carved Nose + sanded
smooth. Patched tears.

NGSB Stainless block drilled +
+ K 1000-3 riveted to 1.1" x 0.7" x .063"
Al

July 21 Finished up details of Nose
prepare to glass. Prepared SC
prefab part for installation
Clean up

July 22 Glassed Nose outside
2 hrs top, 3 for bottom @
3 in between to allow set up time before
turning over

July 25 Rubber Bumper for nose
cut from old tractor tire to
match NG-SB. Fuselage sanded

both Anodizing & for dipping -
Keep pointing in Hot, (Boiling) Edge.

February 10, 1989 Canard top surface
glossed. 2 1/2 hours for filling nail
holes, dings + depressions, getting ready.
etc. 3 1/2 hours for 4 plies. Knife
trimmed + added dry micro per pg C-1
at trail edge, upper surface. 98°F



10% February 11 More lean areas than
I like, but small, mostly $\leq .1 \text{ m}^2$ each
and total far less than the criterion
of 10% (pg 3-12). Top surface looks
excellent. I have a wing!
Canard w/ hardware - just attachment
tabs weighs 19 lbs - compares nicely
w/ original which is thinner + ^{should} weigh 17 lbs
letter sent to Rutan Aircraft Factory w/
photos (poor quality, but adequate)
because it is .1" - .13" to thick -
does not match template E & F!
In fact E & F do not match the
Canard cutting templates A+B or C+D

turned out perfect. 1st had drag on leading edge. 2nd had poor coordination between two ends.

July 5, 1989 Squared up another piece
54.1" x 7" x 4" 30 min

July 7 Cut two elevators
2 sec between the #, more on the top of the curve. Looks good. Trim flashing off. Mounted left elevator torque tube on NC-7 figs @ S/S hinge pin. Micro in groove & torque tube rolled onto it. Set on table @ 5 5lb weights per plane 1 1/2 hr

July 9 Microed second elevator to torque tube per 7/7/89. Replaced grease in UNC-2 per 6/29

July 12 Faced in foam to ^{last use} tubes. Cut 8 plies 7' x 59' (UNI)

July 13 5 min'd both elevators onto table - bottom side up. 2 ply UNI @ $\pm 30^\circ$. (3 hours) Knife trim. hanged at 90°F

December 29, 1989 Installed new NG 67 Nylon bearing - old one had holes for screws that would interfere w/ rivets in the torque tube. Installed door covers on Noisgear. - Still problems w/ NG 67 nylon bearing

January 1, 1990 Made Nylon bearing #5 - took $1\frac{1}{2}$ hr. - larger than original, 2 AN 525-10R10 screws installed from the back. Looks nicer than original. This was bearing #5!!

January 6 Began wiring intercom 5 hrs

January 7 Completed RST intercom 3 hrs

Began making wiring harness - comparable w/ other aircraft - to be customized in future 2 hrs

January 8 Completed wiring harness 2 hrs

Sent to RST for testing

January 10 Soldered control board for RST lamp dimmer. 2 hrs

January 11 Completed lamp dimmer. 2 hrs
10 watt 4 36 watt loads work fine, 5 watt blinking output is steady - varies 11.41 $\leftrightarrow$ 11.42 Volts. Replaced transistor same results. Brought to School 1/18 tested & transistor replaced. They said perfect. I found it the same. Brought back to school 1/24

8/9 Foam blocks for right wing assembled
and fastened together @ Studs + 5 min;
large blocks trimmed to the proper shapes
8/20 2nd Set of blocks Cut

9/15 3rd set of blocks Cut

10/4 1" hole cleared for cables thru wing

10/29 Finally finished fixing insulation
+ roof. Do it right the first time -
next time!

10/29 5 min ed the inside (outer) shell back
onto FC1. Filled slice in surface
of FC1 where Aileron cutout was
made @ Pour in Place. Filled slice
in surface of FC4 & FC5 where cut
was made for radio + electrical
wires. NOTE: After hot wiring these
2 cores did not leave - seemed
to be narrower in center of piece
compared to ends; Had to make a
circular saw - $\frac{3}{4}$ " A tube to cut,
& push them out + later to trim
drops where Pour in place Urethane
entered passageway. 3 hrs

11/30 Cleared up + set up 5 wing jigs

Square + Straight + Plumb 4 hrs

12/4 Reset jig #5. Moved 118.1 block back into
FC3. (Needs Pour in Place) Pump Needs cleaning 2 hrs

12/6/91 moved fig 1 & fig 3. All are plumb,
Square and in line Top, bottom &
middle, as best as can be arranged —
1/32" in 8 feet. 2 hrs

12/7-4/92 install new tools when time allows.

6/30/92 Surprise. It took 3 days to clean up
hanger from junk & to recycle wing into
building insulation.

Note: Go to 8/14/93

7/2/92 Square up 3 blocks for new wing 3 hrs

7/6 Square up 3 blocks for new wing 3 hrs.

7/8 Square up 1 block for new wing 1 hr

7/12 Inboard section, right wing
platform cut. Templates mounted
WL 17.4 (3.5" up from table). Scrap 1.2" x 32.55"
added. Blocks weighted, 5 min + ready
for airfoil cutting 4 hrs

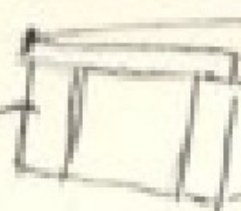
Cut airfoil + Torque Tube hole @ E. Darcy
30 min

7/14 Cut wedge from FCI 1 to table 6x1"
Mounted template to make 0.6" wall
shell

7/16 Made up center section right wing, 5 scrap
added + cut platform 3 hours

7/17 Mounted templates - WL 17.4, "up 2.5," added
"bridges" to slide over spar cap
depressions, additional foam for

12' x 5 1/2" x 5"



12' beam used as step
to work on table, used
as base for jigs

8/15 Cut² Wing attach access holes in FC 1
with router + sanded floors to have a
slight depression. Repaired a ding in upper
one @ blue foam + pour in place. LWA 4 +
W 18 inset into surfaces so they are flush
Cut (inset) inboard Wing attach fitting
LWA 6 so it's flush 6 hrs

8/16 LWA 6's & W 18's Anodized + dyed 2 hrs

8/17 Glassed WA access hole (top) 1/2 hr

8/18 Glassed WA access hole (Lower) 1/2 hr
Setup Wing jigs^{#1-4} on 12' beam that
is level, square + true. jigs are
plumb + true + bonded in place 3 hrs.
Aligned @ laser beam!

8/20 Set wing in jigs. jigs needed some
trimming. FC³ 3x8 block moved in place 3 hrs

8/25 LWA 6 + LWA 4's moved into place 1 hr
Ailven in FC 3 & Cableway in FC 5 5 min floor closed 1 hr

8/28 WA 18's 5 min moved into place

9/1 Moved FC 1, 2, 3 together 1 hr

9/2 Removed top 1/2 jigs, Sanded Shear Web edges 1 hr
0.2" r

1/9/93 Removed Graytape from edges of trough ^{1 1/2}
cleaned up work table Sanded
spar cap flush @ wing. ² Prey for next
layups

1/10 8 Ground wires (24 AWG Radio Shack) placed ^{4 hrs}
in slits in lower surface. 3 ahead of
Spar Cap, 5 behind ^{3 hrs}

1/11 Completed connecting ground plane
wires + connector wires ^{2 hrs}

1/12 Covered work table @ plastic ^{1 hr}

1/14 Wing marked for layups, UNID BID cut
& bagged; Bolt attach depression covered
w/ tape + Peel Ply, edges of depression
removed for flex corner Grey tape along
LE, inboard & outboard faces; peel ply
along TE & forward of aileron ^{4 hrs}

1/16 Glassed lower surface wing 2 ply UN1
& 1 partial ply BID etc per plans ^{5 hrs}

Knife trim & add dry micro ^{1 hr}
Wing has some bubbles - air in ^{+ along ribs} nail holes
forced way up thru micro + was trapped
under skin. Punctured & weighted
down. Hanger 90°-100° F

1/17 Removed Peel ply + grey tape

1/21 Began Sanding out bubbles ^{1 hr}

1/24 More Sanding

7/24/93 More Sanding of defects in
Rt wing lower side ^{2 1/2}

7/25 Note: Fill all voids early @ pour in place or micro early to allow all bubbles to escape. This sanding/repairing is for the birds 4 hrs

7/26 Sanding Rt Wing 4 hrs

7/29 Same (also some Pour in Place) 4 hrs

8/2 Same - Sanding galore 2 hrs

8/5 Same 2 hrs

8/6 Same 2 hrs

8/10 Same 1 hr

8/11 Same 4 hrs

8/12 Same + epoxy injections under ~~the~~ the suspect parts of glass - (w hypo. Very little could go. 2 hrs

8/13 Sanded over glue areas (8/12); squared out the areas, preparatory to glassing. 2 hrs

→ 8/14 Right Wing is trash! Build new one. Ordered parts. Use it to practice Aileron cut outs etc.

8/15 - 8/31 Cut new LWA 2, 3, 4, 6 & W18's
Cleaned up hanger 3 hrs

9/4 Polished up LWA 2, 3, 4, 6, prepared to anodize 1 hr

9/5 Anodized LWA 2, 3, 4, 6, W18's 3 hrs

9/7 Prepped & Anodized PTB & CCB 2 Lrs
(Read Plans & Changes)

9/11 Anodized BA1; CS181; CS131 2 hrs

- 9/18 Clean + anodize A2 & A5's
- 10/1 Clean + anodize LWA9's
- 10/20 Received Wings + Winglets + Strakes from Featherlite
- 10/30 Opened boxes + sorted out the Right Wing. Checked their pre cut sections against my templates. Every foam section is slightly smaller than my templates
- 10/31 Cut out centerpiece of shell on FCI with Hot Wire. Glued FCI together with wet micro 4 hrs
- 11/1 Glued FC2 + FC4 together @ wet micro 1 1/2 hrs
- 11/2 Glued FC3 + FC5 together @ wet micro. Glued 3"x8" block back in FC3 1 1/2 hrs
- 11/5 Cut Notches for access to wing bolts in FCI 2 hrs
- 11/6 Added LWA4 AI pieces to notches, Pour in Plave foam to fill some dings 2 hrs
- 11/7 Notched FCI for LWAC, & for W18's. Glued Lower Wing access hole 2 ply BID 2 hrs
- 11/11 Trimmed BID flush @ wing surface, notched BID for W18 + LWA4; Turned over and 2 ply BID upper notch access hole 3 hrs

2/6 Remove weights, dapes & grey tape 1hr

2/8 Began sanding for level spot cap 1hr

2/9 Sanded Spot Cap. 2hr

2/11 Sanded Spar Cap flush w forward
face shear web, Sanded Spar Cap
+ wing lower surface flush 2hr

2/12 Sanded Spar Cap flush 3hr

2/13 Sanded Spar Cap; 2 ground plane wires
put in slots, behind Spot Cap. 3hr

2/14 2 more ground plane wires put in slots

forward of Spar Cap. all connected 1hr

To prevent
problems

re lat
wing

2/15 Started filling holes, gouges, shies
etc w pour in place; cut & sand smooth
Going to take a while 1hr

2/17 Ditto 1hr

2/19 Ditto - 5 min flex every 2-4" along
cable conduit, then pour in place, trim
& sand 2hr

2/21 G/S antenna made & installed (RST type)

(See plans for location) bottom, forward side

Right wing: filled Bolt access hole w grey
tape & pour in place to provide smooth surface
for skin. 4hrs

2/22 Finished filling & shaping. Cleared up
~~filled~~ Grey tape tangent to L.E. & on inboard
& outboard ends & on tops of jigs. Cut glass 4hrs

2/23 Knife & trim & remove grey tape 1hr

Note: Still some bubbling! - Temp changes (?) Fill all holes!

7/6 Nyloflow Conduit cut; Groove cut in
 upper wing surface for Rudder Cable 1hr
 7/10 Spotted Nyloflow @ dry Nitro
 to tack into place in groove. 1hr
 7/11 Pour in Place in groove to anchor Nyloflow
 + fill groove. Trim. Dremel Router
 to level + smooth Pin P. (works great)
 Used on nail hole fills, etc. also 3hr
 7/12 Sanded Spar Cap groove + L.E. 2hr
 7/15 Grey tape on both edges of Spar Cap;
 "Dam" installed at inboard L.E. @ grey tape;
 Wing draped @ plastic film; Foam Cap
 "weights" to level top of Spar Cap covered @
 grey tape; UNI tape cut (10 ply) 5hr
 7/16 Laid Spar Cap; Peel ply; "Foam caps"
 @ lead weights placed on top 80°F 4hr
 Knife trim @ 6hr
 7/17 Removed "foam caps", Grey Tape &
 draping. Sanded Spar Cap to fair.
 "Steps" & blend LE + TE of Spar Cap
 as needed. LE, inboard Rounded.
 Removed fin from TE 5hr
 7/19-7/28 Sanded Spar Cap to fair in; Pour in.
 Place to fill dings, nail holes, ground wire
 slits + any spaces/gaps at juncture of
 foam blocks. Dremel ROUTER to smooth
 the pour in place.
 7/29 Cut UNI & BID. Draped table + jigs
 @ plastic; Peel ply 3hr

80°F

- 8/1 Glasseed top skin R wing; peel ply 6hr
8/2 Knife Trim; Cleanup
8/4 Fitted pieces for Aileron control.
8/7 Removed foam for layup[#] 6, inboard wing (forward) rib (0.7" glass to glass) hr
8/8 Removed large foam block from wing inboard end (rear); Removed foam for glass to glass join (0.7" except by LWA7 (0.5") and under Top Spar Cap (0.5") as in View MM p19-16
Carved depressions above & below CS1324 weldment; removed foam for "Weldtech Aero" W111-1 imbed plate for ball bearing rather than phenolic bearing; removed foam from Shear Litch for LWA7 and under CS 127 6hr
8/9 Sanded glass at inboard end for glass to glass bond & also under CS127's ~~#~~ above Lower Spar Cap, removed most of foam for wrench access to bolts in CS127 6hr
8/13 Sanded glass at inboard ends (8/9) 4hr
8/15 Removed from jigs, Noted down on foam blocks, bonded airt + TE sanded smooth + straight. 1 hr
8/16 LWA 4 made, anodized + dyed; Glass cut for inboard ribs; Wing turned TE down + bonded 5hr

8/17/94 Glossed Wing ribs (layup 5+6) forward
area. Knife trim 2 1/2 hrs

8/18 opened cable hole, wing rib; opened
lower attach depression cutout 1 hr

8/20 opened upper attach depression cutout 1 hr

8/23 glossed wing rib (layup 7) rear area
4 hrs

8/24 knife trim, opened hole for Tongue Tube +
for wing ground plane wire, 1 hr

8/25 Root of Ground Plane wire in heat shrink
tube, potted in Silicone Sealant; Root of
glide slope antenna wire in heat shrink
tube + potted in Silicone Sealant. 1 ply
BID over LWA7 2 hrs

8/28 Turned wing L.E. down. Laid out
dimensions for aileron cutout
aileron 2 hrs

8/30 Removed peel ply + foam from aileron
cutout. Removed foam each end of
cutout 1 hr

9/2 Glossed Wing T.E. Spar 82°F 3 hrs

10/15 Lower Surface, cut out for aileron is 0.2"
to wide incut. Glossed wing to replace surface (inside)

10/16 glossed outside surface - Total 6 ply.

11/20 Cut glass aileron cutout to proper
size + trimmed aileron.

11/24 Cut hinge cutouts 0.2" deep 2 hrs

* Beautiful
Dig + 40
m3 V5

- 7/13 Opened hole in W111-1 + bolt holes
 7/14 1-2 ply BID inside TT hole in wing
 at outboard end - interference from
 wall with MS20271 B10 bearing required
 internal grinding of TT & roof is very
 thin. Top skin flexes there. In hole
 about 2" all around, 2 ply on top,
 1 ply rest. Peel ply. Sanded aileron 3 hrs
 7/15 Ready for CS129 et al. Aileron moves
 $\pm 30^\circ$ no binding Edges of aileron
 cutout tried up
 7/16 Installed aileron. Removed
 7/18 West System Micro on upper surface ^{30m}
 7/19 Sanded

- 7/22 Hung wing from ceiling
 8/1 Organized Left Wing Joints 1 hr
 8/3 Cut (but wire) inboard case of
 FC1 for access to wing attach &
 aileron controls 30 min
 8/4 FC1, 2, 3, 4, 5 Slurried &
 bonded together, many nails. Stand
 on Shear Web face. Bonded ~~3 hrs~~
 aileron cutout in FC-3 back into
 FC3 3 hrs
 8/5 Removed Nails
 8/7 Box beam Setup level x level 1 hr
 8/8 Digs Setup Square, Level & Graced 3 hrs

- 8/24 RF58 cable access for MKR BCN antenna filled @ Power Place + trimmed. Electrical continuity checked both sides. Dressed ^{wing} for glassing. 6 hrs
- 8/28 Landed Spar Cap glassed, peel ply + Foam @ weights 2 1/2 hrs
- 8/29 Removed Foam/weights; peel ply from spar Cap + Dry Tape/plastic Sheet from wing.
- 9/30 Sanded Spar Cap; filled dings + gaps at edge + elbow points @ power in place. Trim + Route trim 2 hrs
- 9/1 More work on dings + trim. Dressed Wing + table @ grey tape + plastic. Clean up 4 hrs
- 9/2 Glassed ~~bottom~~ of wing 2 ply UN1 + ply BID outboard end. Peel ply 3 hrs
- 9/3 Removed peel ply. Dry Micro in TE 1 hr
- 9/5 Turned over. Rudder Conduit Marked
- 9/6 Cut Rudder Conduit
- 9/7 Repaired edges of Spar Cap @ Insta Foam
- 9/8 Dremel Routed foam repair smooth
- 9/10 Dressed Wing + Cut UN1 tape for spar Cap 10 ply 3 hrs
- 9/11 Top Spar Cap 10 ply 80° 3 hrs
- 9/12 Cleanup of Wing
- 9/13 - 10/10 Fair in Spar Cap "Steps" + blend LE & TE of Spar Cap as needed 8 hrs

See
7/19

Sand + Contour Pin P

7/16 Clean up drupe. Ready to glass ^{silva}

7/17 Install A 4, 5, 10 & glass
Forward face; remove grey tape
from ~~silva~~, Knife down ends 2

7/20

10/11

Installed Top Motor mount extension (w)
^{spine wedge, then}
2 ply BID 2 in inside, over longeron
to 2 in outside 1 ply 2 in inside over
longeron ~~4 more~~ ~~Sp~~ & 1" forward
1 ply BID 1.5" inside over longeron
to outside Spar; 4 more ply
BID 1" x 1" x 6" onto inside Spar
up onto longeron + over Spar
Cap 1" x 1" x 3 3 ply on L & 4 on R
Bolted on mount + (w) ratcheting
Tie down straps pulled into position
peel ply all around
80°F

2.5hr

inboard end 2 hrs
Widened table to permit turning
block + to cut foam easier 1 hr

7/20 Cut wing section (FC2, FC4) Cut out
shell for FC1 end (m. Soja) 30 min

7/23 Bonded (Epoxy) FC4 together & FC1
Cleaned Epoxy Katus Pump

7/29 Cut cable passage in FC4 &
Aileron cutout in FC2 20 min

7/30 Bonded FC2; resealed up FC1 & FC4
joints. Squared up blocks for FC3 & 5 3 hrs

8/3 Planform set Outboard section, & set (up 3.1")
Templates set on & + pinned to foam 2 hrs

8/4 5 min @ flap to close cuts in wing sections
for ailerons + wire cut outs 3 hrs.

8/11 Cut outboard section + made 2 LWA 6's
& 2 W 18's 2 hrs

8/12 Cut Outboard block into FC5 & FC3, set
up wire tunnel templates on FC5. Cut out
3"x8" block in FC3 & set up aileron templates

11/13 Cleanup jigs & bolt together
Set up on beam. Used laser to
check alignment 3 hrs

→ 11/17 Jigs double checked for Straight
level & alignment @ 4 strings and laser,
2 moved slightly. Bonded 1 hr.

11/19 2nd brace bonded to jigs.

Jigs split to put wing in. 1 hr

11/20 Fitted foam core to jigs on floor.

Drilled drain hole between 2 wing bolt

access pockets & fitted straw w/ 1's

installed @ 5 min. Mixed FCI, 2, 3

together 3 hrs

11/25 Removed upper half of jigs; nails
voids/holes in Spar Cap / Shear web
area filled @ pour in place & trimmed
flush. 1st row duct tape on edges
of trough. Cleanup 4 hrs

11/26 Cut Scraps into $1\frac{1}{4} \times 4 \times ?$ for
Spar Cap weights 1 hr

12/2 Right wing, posterior section in jigs,
draped @ grey tape & plaster film,
ready for shear web 2 hrs

12/3 Cleaned Epoxy Pump 2 hrs

12/24 All glass for Spar Shear Web cut
all foam dings in SW & in interior areas of
forward sections filled @ pour in place &
leveled. Ready to glass. Hurry up RAF! 4 hrs

- 1/9/94 Shearweb glazed 3ply reinforcements added + LWAZ, LW13 weighted in place 6hrs (hangar 80°F) Respirator mask works OK
- 1/10 Knife trim; Removed drapery
- 1/15 Photo Shearweb; clean off all dust. Check jigs for squareness
- Moved Forward half cars FC4 + FC5 onto Shearweb. Bolted on Top half jigs. 1hr
- Checked for Straightness + squareness.
- 1/16 Blue day all day - 80° in, 0° out
- 1/19 added some pour in place to small gap between FC4, FC5 with syringe
- 1/20 Sawed off corner of FC4 jiggle
- 1/22 Moved wing up onto table. Seems Level.
- 1/23 Checked @ string + sighting + bonded to table top.
- 1/24 Removed jig bottoms for access to wing surface.
- 1/29 Cleaned up edges of Spar Cap trough 1hr
- 1/30 Dam built inboard forward edge of Spar Cap; Grey tape along trough
- Steps moved along table. Tablet Wing draped @ plastic film 3hrs
- 2/2 Cut Spar Cap glass 1hr
- 2/5 Pour in place in few locations, forward edge Spar Cap, so glue does not drain out. Trim light sanding trough. Vacuum 4hrs

11/26 Cut A4 & A3 aileron hinges; Trimmed both
A4's, one leg to 0.85"; Cut 2: 3/8" A130 Steel
rods for Mass Balance & trimmed 3/8" foam
from L.E. aileron, sanded aileron 4 hrs

12/3 Cut A10 tube, anodized; bonded two
A13 mass balances to aileron; fitted A2 &
two A5 pieces to aileron (had to bend all
three to fit (were not 65°)) 3 hrs

12/10 Aileron on T.E. per plans; fitted
A2 & A5 + wet microed in place, with
A10 tube dry microed. Injected epoxy
into any voids at LE mass balance

The A2 & A5's are flat, (held w/ nails) and
parallel 2 hrs

12/11 Sanded skins, LE aileron 1 1/2 hr
1.25" back from LE

12/13 Pow in Plan used to fill dings
in LE aileron + trim 2 hrs

12/14 Air Pump for Respirators installed
in "attic". Connected A4 + A5 w/ ground wire 4 hrs

12/22 1 ply BID, LE of aileron 2 hr

12/23 Removed 0.4" foam, ends of aileron 2 hrs

12/25 Layup", 2 ply BID end ribs-aileron 2 hrs

12/28 Drilled holes for attaching A3 & A4 hinges
installed K1000-3 nutplates with AN426
AD3-3 rivets 3 hrs

12/31 Bonded Hinges per pg 19-9 (w/ Sponge rubber) 1 hr

1/1 Drilled + Pop Riveted hinges to aileron 3 hrs

2073.5g

(1/5/95) Hung aileron from wires. Hangs with bottom level. Aileron, Mass balance, hinges, Torque Tube + Universal weighs 4lb, 9.2oz. Lighter than Mike Melville by 9oz + still does not balance properly. Profile Matches plans.

2/5 Received letter from Mike Melville.

6/29 Followed Mike's suggestions & added weight - 13.8 oz allowed added 13.5 oz in space behind Mass balance. Hangs properly.

6/30 Pairs in Place to bring holes flush

7/1 1 layer BID over additional weights overlapping 1" all sides

7/2 Sanded

7/3 Reas edge ^{TOP} dry micro to make smooth

7/4 Reas edge Bottom dry micro

7/5 Sanded + Ready to finish

7/8 Drilled A10 for MS2027 B10 Bearing

7/9 Drilled MS2027 B10 bearing for CS151 Torque tube. Cut CS151 to 28.6"

Drilled other end for W111-5 (=CS152)

7/10 Anodized CS151. $ZnCrO_4$ on W111-1

Imbed plate and W111-7 bearing

7/11 Installed W111-1 Imbed plate @ dry micro

7/12 2-ply BID over W111-1 Imbed plate

- 1/20 1/8" LW47 Cut, Rounded, Anodized 1hr
 2/10 Mounted Tail down on floor.
 2/12 Pour in Place filling Voids
 2/14 Router Trim 1hr
 2/20 Router Trim 1hr
 3/1 3 ply tib, forward half with UNI
 strips over hardpoint + upper/lower
 wing surface 3hrs
 3/9 3 ply tib Rear half (w) 3 ply UNI
 Strips over Hardpoint inside 3hrs
 4/30 Cut Upper Bolt access + cleaned out
 foam. Flap in Slight delamination outer skin
 5/1 Cut Lower bolt access + cleaned out
 foam
 7/4 Cut out Aileron. Holding my breath!
 Removed foam from wing at each end
 for spars 4hrs
 7/6 Trimmied up foam. Layup 9 3 ply BID
 + 1 ply extra at hinges. Peel ply 4hrs
 7/7 Cut 0.2 indentations for hinges 1hr
 7/8 Cut hinges — + — David
 7/9 Cut hinge — + David
 7/10 I tin — to 0.85" LE Sand Strait
 7/11 Cut Counterweight
 epoxy on Counter weight
 7/12 Cut + anodized A — ? 4
 Cut foam for insert hinge + —

Trim foam & cut

1/5-1/11/91 Adjust firewall + Main Spot to Square,
level + verticals are as per plans 4 hrs.

1/24/91 Going to build wings prior to installing
main spot CP 53 p6. Drew jig (1/2" plywood)
templates, glued (rubber cement) pgs A11, 13, 13
together 2 hrs.

1/27 Cut hole in jig template @ trailing edge so
as to be able to line up TE @ line marked on
plywood; glued template to jig. Put Foam
Cutting templates together (rubber cement)

1/28 Cut 2 jigs for wing 1 hr

2/4 Finally the 5 jigs are all cut, filed +
sanded exactly to size - external

2/15 Finally the 5 jigs are all cut, filed +
sanded exactly to size - internal 5 hrs

2/21 All templates for wings cut, filed
+ sanded to shape - To many hours.

3/16 All wing ~~templates~~ ^{jigs} have doublers at
edges to prevent warping + coated w
epoxy - all sides then cut 8 hrs

3/18 17 "links" flopped to jigs 2 hrs

3/23 Holes drilled in "links" for 1/4"
bolts - drilled "F". Sanded. 2 hrs

3/24 17 "links" coated w epoxy, all
voids in plywood filled w flox 2 hrs

5/16 Wing jigs bolted together.

Hanger Cleanup started.

8/8 Battery access door - Santhco #160 fasteners
added - locks closed very firmly

9/3/92 Cut glass, layup #2+3 2hr

9/8 Trailing half wing "dressed" w dust tape & plastic sheet, to avoid drobbles 1hr
floor swept + vacuumed

9/9 Shear Web laid up 5hr

9/10 Removed "dressing" & peel ply 1 1/2 hr

9/12 Forward portion microed on wing
jigs put back in place 1 1/2 hr

9/14. Removed joggle from FC4 10min

12/24 Merry Christmas. Moved wing to table, aligned + bonded to tabletop 1 1/2 hr

12/29 Sanded top of Shear Web for Spar Cap. Repaired some dings + cutting errors w pour in place. Dam along forward side, inboard area covered w grey tape + bonded in place. Grey tape along spar cap + rest of surface covered w plastic 3hr

12/30 Fitted foam cap strips to Spar Cap, 2x1" weight strips on top + weights

12/31 Glazed Spar cap R wing bottom 7plies UNI tape, peeled. Weighted in place 4hr

1/1/93 Removed weights + peel ply. Photos

(95°F)

2/25 Sanded straight inboard + outboard ends
and trailing edge. Fitted top of jigs
onto battens, removed peel ply 2 hr

* 4/2 Received letter Mike Melville & OK
to remove wood from jig to make it
fit the wing shape - only critical
areas are the Forward + Postward
inches

4/3 Sanded jigs to fit, bonded to
wing, Turned over 1 hr

4/4 Table extensions bonded on under
jigs 1 hr

4/5 Jigs V'd for square, straight etc.
Bonded to table 30 min

4/8 Removed jig tops, began finding
holes, pits, depressions to be filled 1 hr

5/7 Cleaning up wing top 1 hr

5/29 Clean up wing top & (grey tape remnants) 1 1/2 hr

7/1 Top surface ground plane wires
embedded in R. wing. Wing attachment
depression lined @ grey tape & filled
with pour in place

7/3 Filling holes @ pour in place + trim
level 2 hr

7/4 Filled holes @ pour in place + trim 4 hr
Micro in gap between Spar Cap + forward Section

7/5 Gaps in L.E. of wing repaired (grey tape + epoxy
removal from bottom skin) with Pour in place 1 hr

8/9 Check alignment @ laser beam - Still OK
Cut depression for bolt access holes
in Wing @ router; LWA4 + LWA6
+ sand depressions @ dremel router & ~~trim~~
Glossed lower access hole 2 ply
BID. Knife Trim

8/10 Glossed upper access hole 2 ply BID
Knife Trim 4 hrs
2 hrs

8/11 FC 1, 2, 3 mounted in jig
+ microed together @ many
nails LWA4 + LWA6 microed
in place 2 hrs

8/12 Removed Top half jig. Pow in Place
into small gaps at joints + trim 2 hrs

8/13 Nicks, dings, Nail holes in Shear Web
+ Spar Caps filled @ Pow in Place.
Saw Trim + Dremel Router

8/18 Two W18 made, anodized + installed 2 hrs

8/19 Wing + jigs dressed. 12 pieces UNI
and 6 pieces BID cut. UNI + BID
applied to shear web. Peel ply. Knife
Trim 8 hrs

8/20 FC4 + FC5 installed + microed 2

8/21 Put up on Table, Square + level, Bonded
to table. Grey tape removed. Dings, Nicks
filled @ Pow in Place. Trim 6 hrs

8/22 Pow in Place for dings, Trim, Router
trim. Marker Beacon Antenna installed
Coax buried 4.5 - 0.2
5 min every 2 hrs

12/11 Paint in Place in dings, holes etc; trim
w back saw blade when "firm" 1hr

12/13 Dremel Router trim + Move Pin in
Place 2hrs

12/15 Dremel Router trim + Move Pin P. 1.5 hrs

12/20 Dremel Router Trim + move Pin P; Nylaflex
tubing placed in routed trench per 19-7

BUT Wet micro drops every 1-2 inch, Dry
micro at both ends. Held flat w/needs 3hrs

12/23 Dremel Router Trim; Move Pin P; Repeat 5hrs

12/24 Dremel Router Trim; Move Pin P, Remove
peel ply from T.E. Dress up T.E. 5hrs

12/25 Measured 0.65" T.E, glass to glass, tip
to tip; Marked for glassing; Cut
peel ply for Aileron Lead. Edge; Dremel
router trim. T.E Shimmied Straight 4hrs

12/27/95 Final Dremel Router Trim. Clear up
wing + hanger. Dress Table. Photo 5hrs

12/28/95 Glassed Top Surface Left Wing ~~5hrs~~

12/29 Knife Trim. Hanger 80°F 6hrs to Knife
Trim 5hrs

12/29/95 Clean up. Photo 1hr

12/31/95 Bondo level brass onto top wing

1/1/96 Dremel Router 0.7" rib, Fairlead
half of wing

1/5 Routed edges of 0.7" rib Rear half

1/8 Sanded contours, Rear half rib

1/10 Sanded contours, Rear half