

March, 1975

Dear Sonerai Planholder,

Once again more time has past since the last newsletter than we would have liked. I guess the old saying "time flies when you're having fun" really is true. We have just been so busy with so many things it often seems we are getting nothing done. One major problem has been solved - the canopies for the II. We have green or bronze available now. John feels they are better for eliminating sun glare and heat buildup which can be problems with a clear canopy. We have found a supplier for these that is making them to our specifications and has been doing a fine job. Until just recently he was making them faster than we were able to ship them. To speed up shipment, we had to figure out some simple strong crate for shipment. We also needed to make these boxes in relatively large numbers, so we made a large panel saw, similiar to the ones you may have seen at the lumbar yard. Well after two weekends of building it, then re-designing it, and re-building it, we finished and have all the various pieces to the crates ripped up. The first batch of 20 canopies want to the freight terminal today. Hopefully by the time you read this we will have all the early orders caught up. We are sorry the crates are not returnable for refunds as first stated but an additional \$5.00 is charged for the crate. The canopies are \$100.00 and are full canopies - untrimmed. Other back orders include, fiberglass wing tips and wheel pants. So if you get your wing kit and the tips are marked B.O. don't worry, we've been hounding the fiberglass maker. ON the wheel pants, seems the Pitts drivers have really fallen for them, number one reason being light weight!

As yet we haven't gotten the fiberglass shell attached to a fuselage, but we are working 14 nights a week on it. We really hoped to have one about ready to fly by now but filling orders and boxing things has been number 1 priority and kept us pretty busy. In between we have finished Little John's room in the attic, re-painted the Honda Car to match the airplanes (of course), developed a conversion for the Corvair Engine, are still developing an electrical system and starter for the V.W., negotiating around for some cheap commercial land to build a little building to use as a sort of warehouse as the shop and hanger are just overflowing, built the panel saw, and who knows what else. By next newsletter we really hope to have some details for you on the fiberglass shell.

Enclosed with this newsletter you will find our latest catalog, latest price list, a summary of the Stress Analysis for the I & II, and a summary of tips to builders included in all past newsletters. We have tried to hold prices as much as possible and there are several items where our costs have gone up but we have not raised your price. John feels those items are expensive enough. We have been getting a few questions about the stress analysis so have included the summary. However, we have a few copies of the complete analysis if anyone is genuinely interested in it let us know. Also have had inquiries about past newsletters. Betty only ran off limited copies of these so we have just pulled the most important items from them to include here.

WE have been getting strong interest in the complete engines and the fellow that puts them together seems to really want to work with us. He has been giving good service. This is one place we have really tried to hold the price on. Remember these engines have all brand new parts!!

Some items that are no longer available are: the 1 fiberglass cowl - (the full cowl goes from instrument panel to spinner, the nose bowl is available to fit just about any VW powered airplane but not needed with our cowl) The spars and ailerons separate from the wing kit - (sorry but we are having a difficult time getting even lots sheered and bent to keep up with the wing kits) Another item that has brought about some confusion the slide set is strictly for loan. The \$5.00 is for the privilege of using it and to cover wear and tear. The \$10.00 deposit is to make sure they get back in time. The slides have literally been out all the time. We're working on updating them and are considering having another set made, but the cost is \$175.00. Please when you send them back make sure they are insured.

When any of you write John for a particular problem or question, it would help if you include a self-addressed envelope. Then he can sit down and answer immediately!

One of our builders, Mel Lamb, has written a detailed Operations and Flight Manual and we are in the process of plugging in the proper figures. If the new Custom Class ever comes into being this will save you lots and lots of time. It is very professionally done!! Available soon.

It's getting harder and harder to keep the office area in shape as the twins are starting to crawl. When they start coming to the shop, we'll be in trouble! All the boys are getting along fine and it's amazing Betty manages to hold up at all. See you all at Oshkosh!! only 18 weeks away!

Gregg

Summary of Tips to Builders

Please note if the suggestions are for I builders or both I & II.

For I Builders:

1. The 2-place manual is helpful. Available for \$5.00.
2. Make lightening holes in the spars  $3\frac{1}{2}$ " unflanged not 3" so you can fit your hand through them for bucking AD Rivets.
3. Taller people may want to raise the turtle deck height from 14" to 15 or 16" to allow for more headroom or padding on the seat.
4. Keep the tail light! Everyone seems to want to beef it up here. The complete stress analysis had shown that outside of the ailerons, the tail is the strongest area. If you're going to install a fancy padded interior or are gaining weight yourself, add three inches to the engine mount. Remember the optimum CG is about 14.25 inches behind the wing leading edge. Any further back and the elevator starts to become sensitive. This is for the I builders! You'll have a hard time getting the II tail heavy but don't add any weight to the nose.

5. It is a good idea to fabricate wedges to fit under the gear at the longeron so the gear flies parallel to the top longeron or thrust line. The gear attach bushings can be placed either through the longerons or alongside the longeron on the inside.

For both I & II Builders:

1. We have put .020 aluminum sides and bottom in the cockpit area. You may want to do this. It eliminates and simplifies the fabric process and makes possible uncovering the entire front half of the fuselage at inspection time.
2. On the wing jig, mount the two vertical 2 x 4's on the carry through end at least 8" apart. This allows for adjustment back and forth on the rib centerline for right and left panels.
3. The Gopper "Super Shield" process is by far the simplest especially for you first timers. From start to finish we have only six coats. Four of the filler and primer and two of the final paint. Anyone having trouble finding a  $3/4$ " bolt for landing gear axle might try a John Deer Tractor outlet. They have a high strength  $3/4$ " x 7" bolt in fine thread and a  $3/4$ " castle head nut. Bolt part is #08H4452. Install a  $7/8$  OD x .058 x  $7/8$ " long bushing spacer between the brake drum and the inner bearing of the wheel assembly. ( thanks to D.Stewart for this tip)
5. John has worked out a simple modification for a push, pull system on the injector carb which eliminates throttle cable and slide spring. If you need it write to us for it. It will be supplied with the carb from now on.

Monnett Experimental Aircraft  
March, 1975

## STRESS ANALYSIS OF THE SONERAI I AIRCRAFT

### Summary

The Sonerai single place mid-wing tractor monoplane was analysed in accordance with appendix A, FAR part 23, acrobatic category for material stresses resulting from the design loads required by these standards. The areas investigated are listed below with the margin of safety over part 23 requirements based on the yield stress of the material used. Details of the calculations, assumptions, and analysis rational follow on subsequent page. Structural details common to the single seat and dual seat Sonerai are so marked.

<u>Area of Investigation</u>	<u>Margin of Safety</u>
Main wing spar attachment	1.34
Main carry through spar attachment	1.23
Fuselage longerons aft of main gear	1.27
Engine mount	1.69
Horizontal tail spar	1.73
Vertical tail spar	6.73
Aileron	23.00

## STRESS ANALYSIS OF THE SONERAI II AIRCRAFT

### Summary

The Sonerai two place mid-wing tractor monoplane was analysed in accordance with appendix A, FAR part 23, utility category for material stresses resulting from design loads required by these standards. The design was also analysed for acrobatic category operation with a single occupant in the aft seat only. The two tables below list the areas investigated with the corresponding margins of safety over the applicable part 23 standards. Details of the calculations, assumptions, and analysis rational follow on subsequent pages. Structural details common to both the single place and two place Sonerai aircraft are so noted.

Utility category operation at 925 lb. gross weight:

<u>Area of Investigation</u>	<u>Margin of Safety</u>
Main wing spar attachment	1.27
Main carry through spar	1.16
Fuselage longeron aft of cockpit	2.27
Horizontal tail spar	1.68
Vertical tail spar	4.45
Aileron	23.00

Acrobatic category operation at 755 lb. gross weight:

Main wing spar attachment	1.16
Main carry through spar	1.06
Fuselage longeron aft of cockpit	1.66
Horizontal tail spar	1.53
Vertical tail spar	3.99
Aileron	20.50

Prepared by: Steve Craigle 11-17-74

PRICE LIST  
 Monnett Experimental Aircraft, Inc.  
 March 15, 1975

Plans

\$50.00 Sonerai I Purchase of plans requires signing an agreement. Purchase includes newsletter.  
 \$75.00 Sonerai II II plans include a construction manual.... available to I planholders for \$5.00.

Slide Presentation for Rent

\$15.00 ( \$10.00 refunded if returned on time. Available to anyone for two weeks.) On construction of I & II, 150 slides,

Instruments

131-1 39.90 tach - aircraft  
 132-1 28.70 C.H.T.  
 132-1 29.70 E.G.T.  
 134-1 43.60 carb temp.  
 131-2 33.90 tach automotive  
 131-3 39.90 tach  
 132-2 22.70 C.H.T.  
 133-2 22.70 E.G.T.

Gear  
 160 114.00 gear  
 260 124.00 gear  
 162-1 pr. 52.00 5" wheels & brake  
 (used on Sonera  
 \*162-2 pr. 62.50 6" wheels & brake  
 163-11 pr. 4.00 cables  
 164 35.00 wheel pant- reg.  
 164-2 45.00 wheel pant- split  
 165-1 ea. 16.50 tires  
 165-2 ea. 3.50 tubes

Fuselage

141-1 45.00 clear canopy  
 141-2 50.00 green  
 141-3 50.00 bronze  
 241-2 100.00 green- Plus \$25.00  
 241-3 100.00 bronze- crating Charge  
 142 17.00 canopy cap  
 143-1 170.00 cowl  
 243-1 170.00 cowl  
 143-2 50.00 cowl nose bowl  
 144-1 16.00 fiberglass spinner  
 144-2 25.00 aluminum spinner  
 (specify 2" or 2 1/4" centering  
 hole for backplate of fiberglass  
 or metal spinner)  
 145 95.00 tank  
 245 95.00 tank  
 247 NYA motor mount spacers

Tail  
 171 8.50 tailwheel  
 171-2 8.00 caster  
 \*171-2a 4.00 2 bronze bushings  
 for caster.  
 171-3 NYA wheelpant  
 172 42.50 tailspring  
 (now formed and heat-  
 treated)

Components Packages

150 440.00 wing for I  
 250 450.00 wing for II  
 140 NYA fuse for I  
 240 350.00 fuse for II  
 146 NYA hardware for I  
 246 NYA hardware for II

Wings

151 100.00 ribs  
 251 100.00 ribs  
 153 22.00 wing tips  
 155 7.80 taper pins

Decals

3.00 white, green,  
 black

(over)

### Engines

1600 F.V.      \$1350.00  
1700 S.V.      \$1395.00

### Engine Conversion

111-c      285.00 complete  
111-1      198.00 back  
111-2      198.00 front  
111-3      50.00 rough back  
111-4      50.00 rough front  
111-12      90.00 magneto  
112-1      25.00 adaptor  
112-2      6.00 oil cooler adaptor  
113-1      50.00 manifold-single  
113-2      50.00 manifold-dual  
114      50.00 earb  
\*115      1.75 throttle cables

### Rivets

#### Cherry N Rivets

AAP-42      11.55/1000  
AAL-42      13.75/1000  
AAC-42      11.55/1000  
CCP-42      25.30/1000  
CCP-44      27.50/1000  
CCC-42      25.30/1000  
264SS-34      48.04/1000

\*SSC-32

\*SSC-34

### Rivet Tools

G28      22.00  
GH780      125.00  
Dimpler      3.00  
Special      23.00  
(G28 and Dimple die)

2.50/100      3/32" dia. x 1/8" grip Steel Flush  
1.65/100      3/32" dia. x 1/4" grip Steel Flush Her  
2.50/100  
2.80/100  
3.02/100  
2.80/100  
5.50/100

(These are excellent for nutplates on  
aluminum or fiberglass)

Illinois Residents add 5% Sales Tax.

Prices subject to change without notice. Prices do not include shipping.  
NYA - Not Yet Available. Will be available sometime at a future date.

\* Item not included in brochure.

Due to the custom built category of many of our components, allow 8 weeks  
for delivery. It is not always an 8 week wait but plan ahead to be sure.