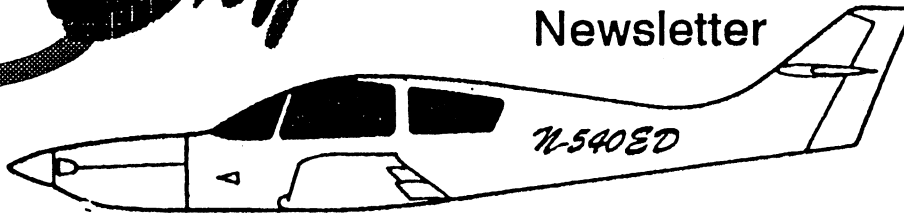


EXPRESS LINK

Newsletter

Volume 1 No. 6



May- June 1994

SUN 'N FUN WAS !!

The cross country capability of the *EXPRESS* was dramatically demonstrated again by the recent trek of

four *EXPRESS* aircraft from the West Coast to Sun 'n Fun held in Lakeland Florida, April 10th through the 16th. The four included N-55EX of Ed Bernard, N-93HE of Hardy Huber, N-540ED the Factory LOADMASTER, and a new version of the *EXPRESS* from the factory, N-550ED (the tail wheel configuration). Without detailing the whole trip down, it was a delight to find all four together at Wichita Falls TX (Shepard AFB) having lunch the second day with Jim Anderson's son, who is doing a tour of duty with the AF there. All four flew the rest of the way together, after stopping at the end of the second day enroute at Monroe, LA., where we caught up with the backside of some weather. There was a lot of performance numbers compared on the leg between Wichita Falls and Monroe. The consensus was that 195 to 200 MPH was a good average cruise speed to plan for for the three standard configuration aircraft, considering the differences in loads being carried, fuel burn and the cargo pod on 540. Actually, at a 195 MPH cruise the IO-360 Continental in Hardy's airplane burned somewhat less than 10 GPH, the IO-360 Lycoming in Ed's airplane burned 10 GPH almost exactly, and the IO-540 in the Loadmaster with the cargo pod could be leaned to about 12 GPH at that speed. Take your choice !!

N-550 ED, the taildragger, is powered with a IO-550 Continental producing 300 HP and was noticeably faster and more fuel efficient than the IO-540 Lycoming. Direct comparisons would not be valid based on the fact that the taildragger was in (very) rough finish form, and instrument calibration testing had not been completed before the flight to Florida. For any of you with plans to operate out of short, rough fields and haul a big load it is apparent that the tail dragger will be an outstanding performer in the air and on the ground once its full performance envelope has been explored: More information on page 2.

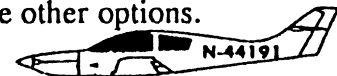
On the return trip with Ed Bernard, it went like this: Left Lakeland at 8:30 EDT, stopped in Monroe La (again?) for lunch and some fuel, then on to Santa Fe NM. Overnight at Santa Fe. Next morning nonstop to Livermore in 5.1 hrs on the Hobbs, then on to Medford in about two more. A real "easy rider". Ed promised a compilation of his performance numbers on the whole trip. See article on page 5.

LENN BROTHERS WOES CONTINUE

The factory team at Sun 'N Fun '94 received some bad news soon after they arrived in Lakeland. The Lenn brothers telephoned to report that they had, unfortunately, had a rather serious mishap as they were attempting to take off from the sod strip on their farm enroute to Sun 'N Fun.

All three brothers were in the airplane, but no one was injured. Apparently, the airplane dropped a wing in gusty wind conditions very close to the ground, went sideways for a while and then backwards for a while. There was extensive damage to the landing gear, both nose and main, and the engine took a hard prop strike. To quote Boots ...

"those cowl flaps sure put a lot of dirt in the engine compartment". A great sense of humor! They have not decided whether to repair the damage, or explore other options.

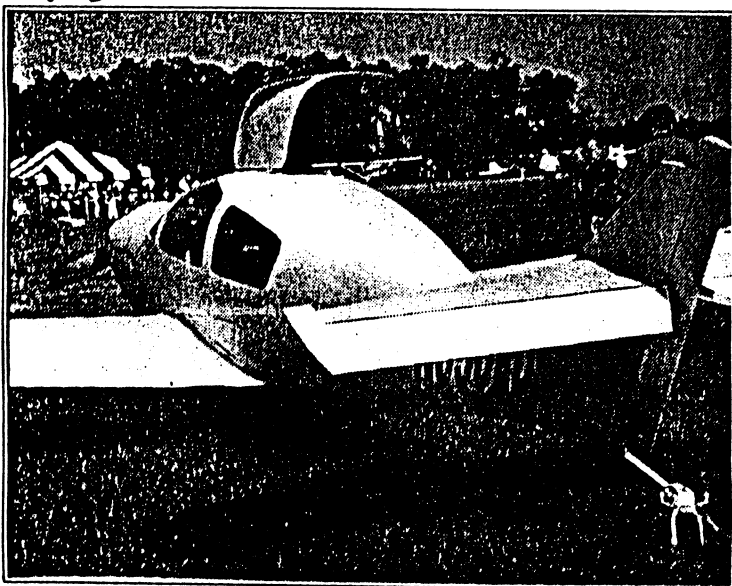


While on the subject of mishaps, it has been reported on good authority that Mike Betts Auriga was sold recently and the new owner experienced a gusty x-wind landing accident with three passengers aboard which resulted in the total destruction of the airplane. All aboard walked away without injury with the exception of a sprained ankle. (deja vu Santa Monica?)

EXPRESS TAILDRAGGER MAKES DEBUT AT SUN 'N FUN

If you haven't heard by now, the latest product of the EDI factory team is a tail wheel version of the *EXPRESS* - N-550EX. (see picture below) This version of the *EXPRESS* is powered by a Continental IO-550 producing 300 HP, and swings a short, fat McCauley prop. The prototype was in rather "unfinished" form but easily made the trip to Florida and back via Southern California. David Ullrich flew it down, and Mike and Carol McDaniel flew it back. No performance numbers are being published pending the flight test program, but I can tell you that it "blew the doors" off of the other three *EXPRESS* versions on the way to Sun 'n Fun.

I can guarantee that the first thing to be worked on will be the ventilation system. Ask Mike (or Carol) about their experiences in the "flying sauna".



Above: A view of the working end of the tail wheel version taken at Sun 'n Fun



LOOK BEFORE YOU LEAP!

Matching elevator skins:

When initially selecting the elevator skins to be used to install the shear web, ribs etc.; i.e., the bottom skins, try to get the best match of the radius on the leading edge somewhere near BL 10. Try to

use the skins with the largest radius. The reason for this is that the elevator horn, which connects the elevators together and drives them, and their associated nut plates are a very close fit and you will need all the room you can get. In addition, if the two lower skins have a significantly different radius, there will be some difficulty maintaining a completely straight hinge line between the elevators.

Also remember the earlier caution to avoid trimming the inboard ends of the skins until the shear webs are in place and the exact location of the elevator horn is known



BERNARD WINS SUN 'n FUN AWARD!!!

The note on his prop hanger said, "your aircraft has won an award. We hope you can attend the award ceremony Saturday evening".

COULD WE ?? You can bet your s. a. we could. But what was the award for ?

I was proud to be there with Ed on Saturday evening when he was awarded the "Outstanding Workmanship" plaque. Needless to say Ed was pleased as he had made an extra effort to be fully prepared for the judging, which went on for most of the week. He made a lot of excuses to the *EXPRESS* contingent for not having a sparkling engine compartment, the wrong carpeting on the floor, and on and on, but the judges recognized outstanding workmanship when they saw it. For those of you who have not seen Ed's 55EX up close, do so at your earliest opportunity. It is an outstanding example of workmanship and performs flawlessly. Congratulations Ed!! (and thanks for the GREAT ride home).



ELEVATOR SHEAR WEB(S)

If you are proceeding in accordance with the latest edition of the construction manual as produced by the Factory, you will be constructing the elevator shear webs from two pieces of 1/2 inch 4.5lb foam. I have seen at least 3 different



Elevator shear webs Cont'd...

approaches to this procedure and can suggest at least two alternative procedures which will produce shear webs more easily and accurately while producing a unit of comparable utility and weight (personal opinion).

A. Using a single piece of 1/2 inch, 4.5 lb foam of the appropriate dimensions (call CBROS if that is a problem), secure it in a straight line on a flat surface which is impervious to resin (such as tightly taped bagging film). Each shear web will be tapered from its inboard end to its outboard end and should be sanded to "lean" aft, approximately 5 degrees for its full length.

Proceed by installing a Q cell fillet on the "outward" side. Doing both shear webs simultaneously, in close proximity, will allow taping to the bench and each other to help maintain the "lean" and to keep them straight. Next, install a Q cell fillet on the other sides using similar techniques. After the fillets have cured, the appropriate amount of glass can be applied to both sides, either continuing over the top of the foam and down both sides if you are sure of the finished height, or one side at a time, leaving extra on the top edge to facilitate future trimming to the correct height. Using either glass technique, allow the glass to extend at least 1 inch onto the work surface. When cured, remove from the bench and the glass, which now forms a flange, trimmed to 1/2 inch on either side of the shear web, you will now have a flanged shear web which can be mill fibered to the lower elevator skin in the proper location. After the shear webs are in place, locate the areas required to support the hinge backing plates, marking the area by the minimum width on the front glass of the shear web and widening on a 45 degree angle toward the aft side. Remove the appropriate amount of glass and foam from the aft side of the shear web, fit and mill fiber 1/4 inch 40 lb. foam blocks the full height of the shear web, against the front glass, and finish by installing the appropriate glass schedule over the back side of the hinge support area. Before you get to this procedure you should have installed the elevator hinges on the aft side of the STABILIZER shear web. The hinges thus installed should be used to determine the location of the hinges on the

ELEVATOR shear web.

B. Construct a shear web of the appropriate dimensions with hard points in the correct places similar to the parts furnished for the horizontal stabilizer shear web. Now that I think about it, simply order an additional set of shear webs (Wheeler part no. 113-12-015) and use them (Factory please note). Seems to me what's good for the Stabilizer should be good for the Elevator.



STRINGS TO SHORT TO SAVE

.. According to reports from factory sources N-540ED experienced an in flight door opening.

On the return flight from Sun 'N Fun with D.B. solo, somewhere near Rawlins, WY in turbulence, the door suddenly came completely open at cruise speed. While it was very drafty for a few minutes, the door did not come off. After slowing the airplane down, D.B. managed to grab the Tee handle of the latch system and close the door enough to enable him to land safely. After catching his breath (and probably changing his undergarments) D.B. was able to continue the flight to Redmond without further incident. While it is good to know that the *Express* will fly with the door open, and the hinge system is secure, builders are encouraged to carefully review the door latch system they intend to install, to install the system with care and consider the installation of some type of auxiliary "safety" latch system to avoid the obvious. Uh, guys, there must be a less stressful test protocol that you could use.

... If you are getting started on your rudder, and get to Step 3, page 6.150.2 which locates the rudder shear web, the dimension shown in Fig. 6-150.3 from the aft edge of part to the aft side of the shear web comes out to 10.85 inches. Recommend considering using 11.0 inches (using the 0.25 inch shear web as furnished - Wheeler Part No. 113-12-028) as the rudder seems to fit better with the shear web there. If you are using the 1 inch thick shear web as shown in the manual, you may wish to consider removing some of the foam aft of the shear web to allow a better bond

Strings Cont....

between the shear web and the skin. Also, carefully check to confirm that the "23 inch" dimension shown on that same drawing will work on your rudder so that it will fit relative to the elevator hinge center line cut out required later.

... If you are looking for an alternate fuel level indicator which will fit almost any application you can imagine with simple installation, get in touch with AIRBORNE ELECTRONICS at (707)542-6053 and ask about the "Skinny-Dipper" electronic dip stick.

... CBROS has been contacted by several builders (read "kit owners") who are interested in selling sub kits, some partially completed and some still in the original crates. Included are Wheeler sub kits 1, 2, 3, and 4. If you are interested, give CBROS a call and we can get you in touch.

... The factory has just finished installing a new IO-540 Lycoming in N-540ED in preparation for the coming air show season. As it was a slightly different model, some modifications were required.

... Jeff Miller of Fremont, CA has purchased all five Wheeler sub kits from Lou Testaguzza. Jeff presently has his kits stored in Peter Becker's hangar at LVK and is a likely prospect for the proposed CBROS Builder Support Center. Lou, and son Brett, had finished the wings, ready for close, and had done some of the work on kit 3. All of the work completed is well done. Jeff has a

good foundation on which to build and a significant jump start.

... Jerry Sjostrand is quickly running out of excuses. He has had some significant help recently from the likes of Jim Warner, Ed Bernard, Hardy Huber and Bob Hockett. Jerry tells me that he has purchased the paint for the exterior - sounds serious. As this is written, many EXPRESS builders are anticipating attending the next in a series of EXPRESS builders workshops which he continues to conduct at his shop in Oakhurst, CA. The dates for the workshop are June 11th and 12th.

... Talking to several Auriga builders at Sun 'n Fun revealed that there may be one or two versions at Oshkosh. Florida seems to be the center of Auriga activity. If all the kits supported by the Auriga parts production are completed, there will be 34 of the two doors doing their thing.

... I also got the chance at Sun 'n Fun to talk to builders from Australia, Switzerland, and Germany. Being only 2.5 hours by air from the factory I can only imagine how difficult it must be to coordinate parts shipments and technical support from that distance.

... Peter Becker and Dave Smith/Dick Clayton have completed the installation of empennages constructed with the assistance of CBROS, Inc. Smith/Clayton will return their completed fuselage to their home shop and are agonizing over the delay of the retract design. How about a tailwheel configuration with retractable mains?



LOG OF N-55EX LAKELAND, FL TO MEDFORD, OR - APRIL 17TH AND 18TH, 1994

LEGS	NAUTICAL MILES	STATUTE MILES	ELAPSED TIME	AVERAGE MPH	ALTITUDE
Lakeland/Monroe LA.	413.9	695	4:05	170.2	8500MSL
Monroe/Santa Fe NM.	723.5	833	4:50	172.3	8500MSL
Santa Fe/Livermore CA.	767.6	883.9	5:07	172.8	10,500/ 12,500MSL
Livermore/Medford OR.	285.3	328.5	1:45	187.7	8500MSL
		2412	14:02	172	

NOTE: IO-360 Lycoming engine. Average fuel consumption 10 GPH.

SAMPLE

Important note: The following data is furnished as a **guide only** to provide the builder with the basic elements and typical results of a weight and balance exercise on an *EXPRESS*. The numbers shown were obtained from aircraft N-300EX following the installation of the Lycoming IO-540 engine. All Station numbers must be confirmed for your aircraft. In this sample there is some question as to the accuracy of the CG moment stationing for the main landing gear, particularly, since the weight of the landing gear has increased measurably. **USE THIS INFORMATION WITH CAUTION !!**

Reference Datum point	33.5 inches forward of forward face of firewall
Leading edge of Mean Aerodynamic Chord (MAC)	Station 67.0
MAC	51.3 inches
Max. forward CG	Station 74.7 (= 15 o/o MAC)
Max. aft CG	Station 87.5 (= 40 o/o MAC)

EMPTY WEIGHT

	STATION	X	WEIGHT	=	MOMENT
Left main gear	94.2		734 lbs		69142.8
Right main gear	94.2		735		69237.0
Nose gear	15.5		435		6742.5
TOTAL EMPTY WEIGHT			1904 lbs		145121.8
EMPTY CENTER OF GRAVITY					Station 76.2 = 17.9 o/o MAC
Fuel	80.0		324		25920.0
Pilot seat	77.0		180		13860.0
Co pilot seat	77.0		180		13860.0
Passenger - Fwd	123.0		150		18450.0
Baggage - Fwd	97.0		100		9700.0
TOTAL WEIGHTS/MOMENTS			2838 lbs		226911.8

CENTER OF GRAVITY THIS CONFIGURATION = $226911.8 / 2838 = 79.9$ (25 o/o MAC)



Subscription Information: It was the intent of *Express LINK* to furnish 6 issues for the original subscription cost. Reviewing publishing expenses to date, it is apparent that the original payment will be good for 8 issues. Please do not send any additional money until requested to do so.

Documentation: CBROS, Inc has retained an extensive file of patterns and templates for all procedures through flap and aileron construction. We will be happy to share them with any builder for the cost of copying them. If you have a particular need, give us a call at (510) 455-1036.

Materials/supplies available: CBROS, Inc. can furnish vacuum bag material, 7781 fiberglass cloth, precast flanges, and precast cable tunnel for use on your *EXPRESS*. If you are interested in any of the above, call John or Bill at CBROS, Inc. for prices.

Component construction: CBROS, Inc is prepared to assist other builders with their projects. It is not our intention to build complete airplanes, but to assist with component construction of parts such as wings, lower fuselage/firewall, empennage, and control surfaces. Our plan is to parallel the Factory "quick build" program, but on a more customer controlled basis. As each project is unique, if you are interested in speeding up your *EXPRESS* project, call CBROS, Inc. to discuss costs and scheduling.

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