WHEELER TECHNOLOGY CUSTOMER NEWSLETTER

uly 1991

Gig Harbor, Washington

DEMONSTRATOR FIRST FLIGHT JUNE 21!

The new EXPRESS demonstrator, N300EX, has flown some 17 hours as of press time. We are pleased to report that the EXPRESS is now proven to be everything you thought it was when you ordered your kits. It is a *safe,* beautiful, viceless, superb handling airplane which has a useful load of some 1235 pounds.

Control harmony is excellent, and stalls remain benign and controllable, even at full aft CG. Slow flight with full control to 40 MIAS has been demonstrated, as has a Vso of 55 MIAS @ 2275 lbs. Coordinated steep turns without rudder input are standard equipment as with the previous airplanes, and likewise it exhibits no dutch roll in turbulence. It is solid and stable and simply a joy to fly.

We stated in our June, 1990 newsletter that builders could expect a Lycoming version to be 300 pounds lighter than N210, which was due to N210's overweight parts, the Continental installation, etc. N300EX achieved 2/3s of that prediction being 200 pounds lighter than N210. A meticulous builder could further reduce that weight. Its current empty weight is 1570 pounds, which should yield a finished weight of around 1660 pounds or less after upholstery and final paint.

Having been built almost entirely by customer volunteers and with standard production parts, N300EX is totally representative of a customer-built plane and has flown without a hitch from the start. High marks to the Volunteers.

GROUND VIBRATION TESTING

The GVT was conducted over a three day period starting June 29, 1991 by the firm of M. Berry and Associates. Mr. Berry is an FAA Designated Engineering Representative (DER) for flutter. (A DER is an individual who because of his credentials and experience, has been authorized by the FAA to act in an engineering capacity on behalf of the FAA in determining compliance with FAA criteria and procedures in a particular discipline.) Mr. Berry is a former Boeing flutter expert whose engineering firm specializes in flutter analysis.

The GVT is required to obtain certification, but seldom used on homebuilts because of its expense. It measures the vibration characteristics of the airplane, which are a function of the stiffness of the airframe and control surface balancing, and which ultimately determine the airframe's flutter potential at a particular airspeed. Required for the flutter analysis in conjunction with the GVT are measurements of other properties of the airframe such as the wing's torsional stiffness and the control surface's natural frequencies and mass moments of inertia. The actual "shake" of the airplane is done with special equipment which vibrates the airplane over a range of frequencies while strategically placed accelerometers measure the airframe's response. The outputs from the accelerometers are recorded by strip charts and analyzed along with the other empirical data to determine whether or not the airframe meets the FAA criteria. An interesting sidelight is that Mr. Berry recently used the same equipment to shake a Boeing 727 which is being evaluated for an engine modification.

Mr. Berry's experience was particularly valuable because the Rockwell 112 he evaluated for flutter is the only production plane which has the same tail configuration as the EXPRESS. In comparing results of the EXPRESS testing to the Rockwell's, the EXPRESS produced similar numbers over the entire range, which means that the EXPRESS' structure is as stiff as the Rockwell's. That stiffness is also a reflection of structural strength.

If you wonder what would happen if the EXPRESS had failed the GVT, Stoddard Hamilton did a GVT on the III and discovered that the fuselage in the tail area was not sufficiently stiff torsionally, so they merely reinforced it with additional layers of carbon fiber to raise the speed at which flutter would occur.

The FAA will rescind their flutter memo based on the successful GVT and flight flutter testing.

EXPRESS SAFETY TESTED AND PROVEN!

N300EX has undergone complete Ground Vibration Testing (GVT) by an independent flutter consulting firm , and their analysis of that testing using FAA Report 45 (Simplified Flutter Criteria), has substantiated that the EXPRESS is free from flutter to greater than 250 MPH. Flight flutter testing has confirmed the results of the ground testing to 225 MPH thus far, with testing to continue to 265 MPH, as was done with both previous demonstrators. This testing has met FAA requirements, validated the EXPRESS design and confirmed that no design changes are required for safety reasons.

FLIGHT TESTING

In flight testing, the initial concentration has been to validate the safety of the EXPRESS. After the pitot static system was calibrated, Mr. Tom Wright, an FAA Test Pilot DER, tested N300EX for unsafe characteristics in all flight regimes, with as much as 275 pounds of ballast loaded against bulkhead 162. He stalled it at all flap settings with the CG beyond its aft limit, checked pitch and roll stability, and has flown it to 225 MPH in flutter testing so far.

N300EX does not exhibit any marked difference in flight characteristics from N200 or N210. In the coming weeks we will concentrate on documenting performance figures, but we don't expect much difference from the previous demonstrators except for some increased climb and cruise performance over N210EX due to the lighter weight. We plan to conduct spin tests in September after we install a spin recovery parachute in the plane.

THE PROOF IS IN THE HANGAR...

N300EX validates all we've claimed (and demonstrated with previous demonstrators) for the EXPRESS, and thoroughly discredits Mr. Betts' and EBU's claims regarding its performance *and* safety. Here is a summary:

Q. Does the EXPRESS require redesign of any structure for safety reasons?

A. No. Both the GVT and Flight Flutter testing have confirmed the soundness of the EXPRESS structural design. There are no structural changes required or contemplated.

Q. Is the EXPRESS unstable at high speeds?

A. No. Within its CG and performance envelope, it's not unstable at any speed.

Q. Does the EXPRESS have adequate rudder authority or did you have to increase the rudder size like Mr. Betts?

A. The rudder size is unchanged from N210. Not only is it adequate, the EXPRESS has remarkable rudder authority, so much so that its angle of slip dramatically exceeds that which our builders have experienced in factory aircraft, so *reduction* of the specified rudder travel limits is a being considered.

Q. Does N300EX have sufficient elevator authority to enable full stall landings without the nose gear slamming down upon landing.

A. Yes. Full stall landings are excellent as they were with N210, which is doing just that in the photo in the August '90 AOPA article.

Q. Is there adequate trim authority.

A. Yes, throughout the entire CG range.

Q. Is aft ballast required?

A. No.

Q. Did you have to move the rudder tubes to get adequate pedal travel as Mr. Betts recommends?

A. No, the Volunteers built N300EX by the book. They're in their designed location per the manual, as they were in the two previous demonstrators.

Q. Did you have to adjust the engine angle as Mr. Betts claimed he did?

A. No. It's fine just the way it was designed.

N300EX was built following the manual by customer like you, and it's available for examination and demonstration flights wherein you can confirm any of the *facts* about the EXPRESS' construction, performance or handling. You will find it essentially identical to our previous planes and yours and *without any* of the problems which EBU/Betts have claimed.

MEANWHILE, THERE'S OTHER PROGRESS TOO...

We are pleased to report that we shipped fifteen Kit 5's in June and are backlogged through August. We have 10 laminators on the job and we're picking up the pace, as are some of the builders.

We'll soon begin to see customer planes flying, particularly by some of the Volunteers who both gained and shared a great deal of expertise and experience at the factory. Jim Warner's plane is in the home stretch.

OSHKOSH '91 - JULY 26 TO AUGUST 1

Our booth is located in its usual location on "Manufacturers row", across from Beechcraft and next to Cessna. We'll be setting up starting July 24. Many builders have called to tell us they plan on joining us in the tent, so hope to see you there too.

EXPRESS FORUMS

Friday, July 26, at 8:30 AM, Tent 8
Monday July 29 at 8:00 *PM*, Tent 3

DEMONSTRATION FLIGHTS

At Oshkosh, current builders are welcome to fly N300EX on an as- available basis. Familiarization flights are $75, except for Volunteers, who fly at no charge.

SECOND ANNUAL EXPRESS BUILDERS BANQUET

This year's banquet will be at the Pioneer Inn in Oshkosh, Saturday July 27. The guest speaker will be Tom Wright, who will speak on his experience testing and flying the EXPRESS. Tom speaks airplane fluently and has been involved with the EXPRESS project since 1986. He was trained as a test pilot at the U.S. Air Force Test Pilot School, flew F-4 Phantoms for the Marines, and was employed by the FAA as a Test Pilot. He is now a full time independent FAA Designated Engineering Representative Test Pilot, and over the years has tested a multitude of aircraft from a turbine powered Cessna 206 to the Rockwell Saberliner jet, most of the Boeing 7X7 series, and of course the EXPRESS. Tom's a homebuilder and an aerobatic pilot too. His magnificent Christen Eagle won the Reserve Grand Champion award at Oshkosh in 1985. Tom is also an accomplished RC model builder and racer, and he owns and maintains a Beechcraft Bonanza with a Lycoming 300 HP modification. The license on his car reads "AERONUT" which says it all.

OSHKOSH '91 KIT SALE

Special discount pricing will be in effect during the Oshkosh period. For the first 60 kits sold (about 20 customers), we are offering a $400 discount on each of kits through 4. Because we expect a good response to this limited offer, we are giving our current builders advance notice so they are sure of participating if they wish. This will be the only discount offered for the remainder of the year, so if you've been waiting for the good news in this letter before you proceeded with your project, this is the best time to get your next kit on order. See details below.

WHAT A YEAR...

It's been nearly a year since we lost N210EX and our three friends and employees. Since then we've experienced anguish, frustration, success, uncertainty...you name it. We've seen people at their best and, unfortunately at their worst. To say that the effort has been character building is an extreme understatement. But the good news in this letter really represents the culmination of a tremendous amount of effort by many dedicated customers, employees, and friends. To all of our supporters, WTI (and the Wheeler family) offers our heartfelt thanks.

It is our hope that your confidence is restored with N300EX now tested and flying. The EXPRESS *is* the finest kit airplane on the market and if you have been waiting for evidence of its safety, we hope you are now encouraged to complete yours. We will continue to update you with details on the performance of the EXPRESS, and you will soon see unbiased reports of its performance in the magazines once again. Meanwhile, if you have any questions, don't hesitate to call.

----------JULY '91 PRICE LIST AND OSHKOSH KIT SALE ORDER FORM ----------

Through August 15 1991, and for the first 60 kits sold only:

Save $400 each on any of kits 1 through 4

I wish to order the following EXPRESS kits during the Oshkosh special:

(x)		List	Sale	Save
__	Kit 1, Left Wing Kit	$6,225	$5,825	$400!
__	Kit 2, Right Wing Kit	$6,105	$5,705	$400!
__	Kit 3, Lower Fuselage Kit	$5,425	$5,025	$400!
__	Kit 4, Upper Fuselage Kit	$5,425	$5,025	$400!

		List
__	Kit 5, Empennage Kit: For Lycoming engine, mild steel exhaust	$5,775
__	Kit 5, Empennage Kit For Lycoming engine, stainless steel exhaust	$6,150
__	Kit 5, Empennage Kit For Continental engine, stainless steel exhaust	$6,600

*****Crating is included in kit prices*****

Sale Terms: Orders must be accompanied by full payment. All funds are held in an interest bearing trust account until each kit(s) ships. Kits must be accepted for shipment as they are available from the factory. This sale is limited to the first sixty kits ordered. Make checks payable to: Hatch and Leslie in trust for WTI.

Name_____ Date_____ Cust. No._____

Address_____ Telephone _____

WHEELER TECHNOLOGY INC.
Tacoma Narrows Airport, 1522 26th Ave. NW, Gig Harbor WA 98335
Phone (206)851-5793 FAX (206)851-5916

SECOND ANNUAL EXPRESS BUILDER'S BANQUET

Saturday Evening July 27, 1991
Pioneer Inn
1000 Pioneer Drive
Oshkosh, Wisconsin

Presenting

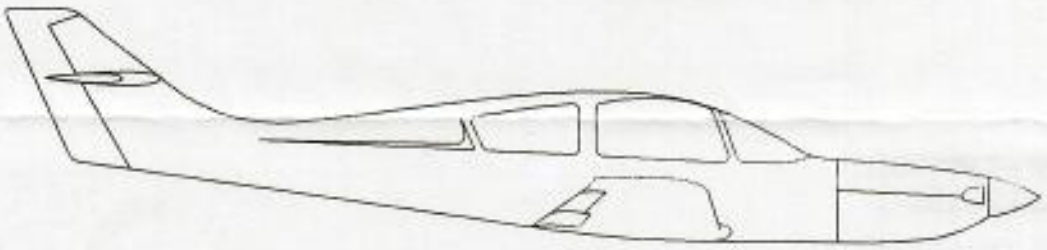
"Wheeler Technology Today"
Ken Wheeler, President, WTI

Also Presenting

"Flight Testing the Wheeler Express"
Tom "TJ" Wright

Registration &
No-Host Bar....6:30 PM
Dinner.....7:30 PM
Program.....8:30 PM

DINNER CHOICES:
#1 ROAST SIRLOIN OF BEEF
#2 LEMON CHICKEN
#3 VEGETABLE & PASTA PLATE



Seats are limited so please mail your check now. Upon arrival at the Pioneer Inn, check in at the WTI Registration Table. Cancellations accepted 48 hours prior, 206/851-5793.

---------- ADVANCE REGISTRATION COUPON----------

Please reserve Banquet seats for the following persons:

1. Name_____ Dinner #___
2. Name_____ Dinner #___
3. Name_____ Dinner #___
4. Name_____ Dinner #___

Tickets purchased:
by July 22 $18.00
after July 22 $22.00

I have enclosed $_____ for each person for a total of $_____.
Name_____ Phone_____
Address_____
___Please check if you need kid care, how many kids?___

Make checks payable to: "WTI" and mail to WTI, 1522 26th Ave. NW, Gig Harbor, WA 98335

Wheeler™

WHEELER TECHNOLOGY INC.
Tacoma Narrows Airport
1522 26th Avenue NW
Gig Harbor, WA 98335

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