

# THE CANARD PUSHER

No. 68

July, 1991

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RUTAN AIRCRAFT FACTORY, INC.  
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805-824-2645

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If you are building a RAF design, you must have the following newsletters:

VariViggen (1st Edition), newsletters 1 to 68.  
VariViggen (2nd Edition), newsletter 18 to 68.  
VariEze (1st Edition), newsletters 10 thru 68.  
VariEze (2nd Edition), newsletters 16 thru 68.  
Long-EZ, newsletters 24 through 68.  
Solitaire, newsletters 37 through 68  
Defiant, newsletters 41 through 68.

A current subscription for future issues is mandatory for builders -- as this is the only formal means to distribute mandatory changes. Reproduction and redistribution of this newsletter is approved and encouraged.

PLEASE NOTE: BUILDER SUPPORT IS ON TUESDAY ONLY FROM 8:00 TO 5:00 When you call on Tuesdays for builder assistance, please give your name, serial number, and nature of the problem. If you are not in an emergency situation, we ask that you write to Mike. However, if you require immediate assistance, Mike will make every attempt to return your call between 3:30pm and 5:00pm (our time).

When writing to RAF, send along a stamped, self addressed envelope if you have builder's questions to be answered. Please put your name and address on the back of any photos you send.

## OSHKOSH 1991

BURT'S FORUMS:

SATURDAY, JULY 27 - 10:00AM - TENT 3 - "TENT TALK SHOW" - OPEN AVIATION FORUM..

SUNDAY, JULY 28 - 8:30AM - EAA DESIGN COLLEGE "LIFE, THE UNIVERSE AND EVERYTHING ELSE" WITH JOHN RONCZ.

SUNDAY, JULY 28 - 10:00AM - TENT 3 - VARIVIGGEN, VARIEZE, LONG-EZ, DEFIANT, SOLITAIRE.

MONDAY, JULY 29 - 10:30 AM - TENT 3 - "OUR SKY IS BIG, OUR AIRPLANES ARE FEW...WHY DO WE STILL COLLIDE?"

MONDAY, JULY 29 - 11:30AM -TENT 3 - THE POND RACER WITH DICK RUTAN AND BOB POND..

## 1991 IVCHC OSHKOSH ACTIVITIES

Friday, July 26: 6PM Informal Social Dinner at The Winemaker Restaurant 414-231-1121, behind Butch's

Saturday, July 27: 11AM Lady's Luncheon Butch's Anchor Inn. (Let's meet at Cozy Flight Line, 10:30AM. We need ladies with cars for transportation.)

Saturday, July 27: 8PM UWO Bull Session Gruenhagen Conference Center Room 112, air conditioned.

Monday, July 29: IVCHC Banquet (\$14.00/person) Butch's Anchor Inn. 5:30PM (no host bar). 7:15PM (dinner) Prime rib or shrimp (pay at the door.)

Donald & Bernadette Shupe, Founders and Editor of International VariEze and Composite Hospitality Club, would like to invite EZ folks to attend IVCHC activities to be held at the 1991 EAA Oshkosh Convention.

## FLY-IN

KANSAS CITY GIG, AN EZ-TYPE FLY-IN AT JOHNSON COUNTY INDUSTRIAL AIRPORT, THE WEEKEND OF JUNE 14-16, 1991

This event was a great success. Sixty-nine aircraft flew in, mostly Long-EZs, but lots of VariEzes, 4 Defiants, several Cozys, 1 VariViggen, a couple of Q2s and a Velocity.

The fly-in was a Central States Association event. A lot of people helped and it turned out to be a really fun fly-in. Lots of bull sessions, lots of organized seminars on a variety of subjects such as engine cooling, airspeed calibration, etc., etc. Very informative - lots of answers. This is what Oshkosh used to be like years ago!

A very busy schedule included a timed speed event, spot landing contest, poker run, prop balancing, etc. The award banquet was really something - great food in a wonderful facility, a slide show and lots and lots of prizes! We sure hope this will happen again next year. Wonderful hospitality, lots of fun at a really friendly airport.

## NEW WORLD RECORD

Magna Liset has been at it again. Magna and fellow Australian Long-EZ flyer, Lindsay Danes, took off from Sydney, Australia and landed in Mangere, New Zealand 7 hours and 25 minutes later. This broke Don Taylor's previous world record for this crossing in his famous T-18 by some 35 minutes. Congratulations to Lindsay and Magna.

After arriving in New Zealand, these two intrepid Long-EZ pilots entered The First International Around New Zealand Air Race sponsored by Air BP. Lindsay finished the race in the money but Magna was not so lucky. Shortly after taking off from Wigram, New Zealand, the crankshaft oil seal popped out and Magna lost all his oil. Zero oil pressure caused the engine to seize and he was faced with an emergency dead stick landing. He picked out a road and landed without incident. Even though he was heavily loaded with full fuel tanks, he did no damage to his airplane. Considering the many miles of Tasman Sea, he had

so recently crossed, he was extremely fortunate that the seal chose this moment to pop out! Thanks to some members of the Royal New Zealand Air Force who pitched in, obtained another engine and helped install it, Magna was able to fly to the final banquet after the air race!

Long-EZ enthusiasts are apparently the same the world over. Wonderful effort - neat people.

## NEW FAA SERVICE

AMATEUR-BUILT/ULTRA-LIGHT AIRCRAFT SAFETY DATA EXCHANGE BULLETIN BOARD SYSTEM

There is now a new service through the Federal Aviation Administration for the use of those involved with Amateur-Built and Ultra-Light Aircraft. This new service consists of a Bulletin Board for those who wish to participate in the Service Difficulty Reporting System and Safety Information of said type aircraft.

By establishing the Bulletin Board, interested users can obtain service and safety information from 1530 to 0700 central time (Monday through Friday) and 24 hours on weekends and holidays. Reports which are entered on-line into the system by members of the aviation public will be available to everyone within 12 to 24 hours.

Any PC with a modem or any terminal equipped with a modem can be used. The same equipment used for connection with DUATS can be used with this system. Normal parameters are 1200-N-8-1, but any baud rate from 1200 through 2400 is usable, and the system is entirely menu driven for ease of use. The telephone number of the system will be 1-800-426-3814, and the password is SAFETY. Also, this system is programmed to use UPPER CASE letters only.

Users of this system will be pleased to know that it is designed to protect the anonymity of the submitter. No identifying information such as registration number, serial number, city, etc., can be entered into the data base. The only identifying element will be a model name such as "VariEze". Even in the unlikely event that someone should wish to use the information in the

data base for an enforcement action, it would be impossible.

Accident and incident reports will not be made available in this system in the traditional accident report format. A major complaint from users has been that accident reports were detrimental in many ways to the pilot or owner of an aircraft. Since the Safety Data Exchange Bulletin Board is interested in the rapid exchange of safety information, the service or safety problems contained in an accident report will be extracted and entered into the data base in the same format as any other safety report. (No identification).

The type of information that will be in this system will be that pertaining strictly to safety and service problems on amateur-built and ultra-light aircraft. As a general guideline, anything that happens with your aircraft which may happen to another person's aircraft, should be reported. The exchange of safety information will improve safe flying for everyone. The type of information that would be helpful is as follows:

Model of aircraft (must be entered)

Engine make and model (particularly if an engine problem)

Propeller make and model (particularly if a prop problem)

Component make and model (particularly if a component problem)

Part name and part number

Location and condition of the part or problem

Remarks, in sufficient detail to help others identify the same problem

In other words, enter the information that you would like to see if you were reading the report.

It should be stressed here again that this system is just for amateur-built and ultra-light aircraft and not type certificated aircraft. There are many regulations and statutes which cover the service difficulty system as it pertains to type certificated aircraft. The reporting of safety problems for these aircraft is strongly encouraged through the traditional system.

Please be patient with any problems you may experience since the system is still in the development stage. Your questions, suggestions, or comments are welcome. The only way this system will grow and accomplish its purpose of improving the exchange of safety information is with your support.

Bob Morrow, SDR Coordinator  
FAA, ACE-103  
601 E. 12th Street  
Kansas City, MO 64106  
816-426-3580

### LETTERS

"Dear RAF,

Just like to bring you up to date on my experience with my SNR problems with Loran C. I installed the IIMorrow model 604TCA. I immediately noticed SNR problems with alternator and strobes. In flight, at 2500 rpm station, M would read 25. I installed the RF170 and in flight at 2500 rpm, alternator only, M = 125, but when I added the strobes, M = 30. (255 = 100% and at 64% the warning light comes on.) I then talked to Technical Support at IIMorrow and they recommended installing a 3100uf 75vdc capacitor directly across the alternator. I then proceeded upon their advice and was successful with readings of 243 at 2500 rpm. I then also added a 4700uf 25vdc at the input power leads of the strobe power supply. At 2500 rpm, alternator and strobes, all stations have SNRs of 240 or better. These caps are electrolytic with screw top terminals and cost anywhere from \$4 to \$8 each.

Happy Flying,  
Ray Gonzales"

Editor's Note: While we have not tried this fix, it is such a low cost way to get such excellent results we felt we should share this information with those of you who may not have the best Loran installation.

"Dear RAF;

Re: CP 67 page 11 and request for comments concerning Performance Props and the Lydicks.

I have known Clark Lydick for about 15 years and Margie since they were married - around 6 years perhaps. Clark and I flew radio controlled airplane models while he was still an active duty AF electronics engineer here in the Eglin AFB area.

You should know that Margie grew up around and helping airplane prop builder Bernie Warnke (her father) and his "Almost Constant Speed Props". Recently *KitPlanes* reported Bernie's props won overall in a prop competition. Margie and Clark worked with Bernie making props until about 3 years ago when they began their own business. Clark built and flew one of the most beautiful Long-EZs I've ever seen - including my own. I've been using one of his props for over a year now and can say it outperforms props I've used on my Long-EZ made by other manufacturers.

I strongly recommend that "Performance Propellers" be added to RAF recommended suppliers.

John L. Hicks"

## SHOPPING

### CANARD PUSHER DIGEST

Stet Elliott's *Canard Pusher Digest for the Long-EZ* is still available. (For a complete description of the Digest, see CP57). He has just published the 2nd edition which includes all pertinent information from CP's 24-67. The 2nd edition has now grown to 654 pages and is professionally printed on double sided paper from a laser printed master.

Note that the Digest is for builders and flyers of the Long-EZ only. It does not support other RAF designs.

Quarterly updates to the Digest are also available. These updates provide additional information from newly published CPs to bring the Digest current. The updated are compatible with either Digest edition.

CP Digest for the Long-EZ.(2nd edition) \$67.00

Overseas orders add \$20.00

for airmail, otherwise, it will

be sent via surface vessel.

Annual Update subscription. \$25.00

(4 updates)

Overseas orders add \$5.00 for postage

Send payment to Stet's new address below:

Stet Elliott  
5322 W. Melric Dr.  
Santa Ana, CA 92704  
714-839-4156

### VARIEZE INDEX

Lists all plans changes from CP10 through CP64 as well as all suggestions, problems, etc. For any VariEze builder, this is a must. Bill sells it a couple of different ways. You can buy just the printed book for \$20.00 or you can get the book plus a 5-1/4" IBM compatible floppy disc with a delimited ASCII listing of the data base (or optional PFS professional file data file). Specify which you would want, for \$24.00. This index will be updated annually.

Contact: Bill Greer  
222 McLennan Dr.  
Fayetteville, NY 13066  
315-637-3795

### RAF "GOODIES" AVAILABLE

Tie tacs-Long-EZ/VariEze (gold or silver)	6.50
Charms-Long-EZ/VariEze (gold or silver)	6.50
Name patch	1.50
Silhouette patch (no Defiant)	3.50
3-ship poster (17"x22")	3.75
2 Long-EZs in trail (11"x17")	3.00
Defiant on water (11"x17")	8.00
RAF Chronological poster	15.00
Long-EZ lithograph	10.00
Color photos (EZs, Solitaire, Defiant)	1.25

### LONG-EZ EXHAUST SYSTEM

All 321 stainless tubing 1-3/4" diameter with 1/4" thick stainless steel flanges. Pipes exit the cowling one above the other, two each side. Fits all Lycoming engines from 0-235 to 0-360 (no heat muff). This is the same exhaust system Dave Ronneberg designed and built and has been flying on his Long-EZ for several years. It is very similar to the 4-pipe system Mike Melvill has on his Long-EZ, N26MS, for over 4 years and 600+ trouble-free hours.

Hal Hunt  
6249 Longridge Ave  
Van Nuys, CA 91401  
818-989-5534

Note: Hal Hunt also makes and sells a really fancy air intake with filter and carb heat valve that provides filtered carb heat. Contact Hal for details.

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**LONG-EZ PARTS PRICE LIST FROM FEATHER LITE**

Main gear strut	\$ 349.00
Nose gear strut	58.00
Engine cowls, pr. (glass)	329.00
Engine cowls, pr.(Kevlar)	480.00
Cowl inlet	48.00
Wheel pants (3.5x5)	150.00
Wheel pants (500x5)	180.00
Above item in Kevlar	215.00
NG 30 cover	21.00
Pre-cut canard cores	160.00
Pre-cut wing & winglets	1199.00
Leading edge fuel strakes with bulkheads	524.00
Strut cover SC	19.50
Nose wheel cover NB	19.50
Sump blister	19.50
NACA inlet	47.00
3" extended nose gear	70.00

Contact Michael Dilley or Larry Lombard (both ex-RAF employees and EZ builders and flyers) at:

Feather Lite, Inc.  
PO Box 781  
Boonville, CA 95415  
707-895-2718

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**NOTE: NEW ADDRESS FOR ORDERING FLUSH  
RUDDER BELHORN SPRINGS.**

John York  
903 W. 24th Street  
Lawrence, KS 66046  
913-832-2049

**FOR SALE**

NARCO MK-12D with ID825 glideslope and wiring harness - perfect condition - \$1800.00.

Pete Simmons  
219 Pendelton Hill Rd  
North Stonington, CT 06359  
203-535-2040

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**USED LONG-EZ PARTS FOR SALE**

Lyc. 0-235 starter ring gear assy.	\$110.00
B&C 35 amp alternator w/ reg. (14V)	115.00
2 Cleveland chrome brake disc. New	90.00
Throttle & mixture control cable	10.00
ATC Terra transponder - inop	7.26
Infra-red cabin heater	80.00
Hoffman 3-blade constant speed prop	3200.00
New auto fuel boost pump system	110.00
Gascolator - 1/4" pipe	10.00
Facet fuel pump - 24V	40.00
Rochester fuel pressure gauge - 12V	40.00
Brock exhaust for 0-235-320/360	60.00

All of the parts listed were used on my blue Long-EZ, N169SH, or are brand new. For more complete information contact:

Dick Rutan  
Voyager Aircraft, Inc.  
805-824-4608

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**TIFFT VARIEZE CRUISE PROP, factory refinished  
with Urethane leading edge. \$300.00**

Alan McPherson  
PO Box 195  
Stewarts Point, CA 95480  
707-785-2947

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**RAF RECOMMENDED SUPPLIERS**

Aircraft Spruce PO Box 424 Fullerton, CA 92632 714-870-7551	Wicks Aircraft 410 Pine Street Highland, IL 62249 618-654-7447
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FeatherLite PO Box 781 Boonville, CA 95415 707-895-2718	Brock Mfg. 11852 Western Ave. Stanton, CA 90680 714-898-4366
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These suppliers are still the only authorized RAF dealers for all your various aircraft materials and components.

PROPS FOR EZ'S AND DEFIANTS

RAF recommends the following prop manufacturers:  
Bruce Tiff  
B&T Props  
375872 Mosby Creek Rd.  
Cottage Grove, OR 97424  
503-942-7068

Ted Hendrickson  
PO Box 824  
Concrete, WA 98237  
206-853-8947

While we still have not had an opportunity to try one of Performance Propellers (Nogales, Arizona) props, we have now had a chance to see and touch several of them, and to talk with pilots who fly them. We have also received nothing but enthusiastic letters of recommendation for these props. See their ad in *Sport Aviation*.

**PLANS CHANGES AND OTHER IMPORTANT MAINTENANCE INFORMATION**

**VARIEZE, LONG-EZ, DEFIANT MANDATORY GROUND**

MODIFY THE LB-9 BRACKET AND INSTALL A 1/4" BIRCH PLYWOOD DOUBLER PER THE DESCRIPTION ON PAGE 8 OF THIS NEWSLETTER ALSO, A MANDATORY WEIGHT AND BALANCE MUST BE DONE. NOTE: VORTILONS ARE MANDATORY ON THESE 3 AIRCRAFT.

VARIVIGGEN ----- NO PLANS CHANGES  
SOLITAIRE-----NO PLANS CHANGES  
DEFIANT-----NO PLANS CHANGES

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Since RAF is no longer active in the development of homebuilts, we are not likely to discover many new errors or omissions in the plans. For this reason, we need your help. Please submit any significant plans changes that you may come across as you go through the building process.

OVERVOLTAGE PROTECTION

SOME THOUGHTS FROM THE AEROELECTRIC CONNECTION.

"Some kit plans and newsletters are recommending the installation of automotive alternators with built-in regulators and NO OVERVOLTAGE protection. In speaking with authors of these publications the rationale offered is that they've never seen or heard of anyone having a catastrophic overvoltage event. Folks, I kid you not. The Feds will not allow me to design a certified system which lacks such protection. I too have never experienced nor talked with anyone who has experienced such a failure. However, my engineering job assignments over the years have included many failure mode effects analysis (FMEA) and mean time between failure (MTEA) studies. I can tell you that while the event is indeed rare the probability of occurrence is not zero. I can also tell you that the effects can range from trivial to life threatening.

So please, irrespective of what type of alternator/regulator combination you install in your airplane, include an automatic overvoltage protection device. In some instances of small alternators charging fairly hefty batteries, an overvoltage warning light is sufficient. See the chapter on OV protection. Any questions? Write or call."

Editor's comment: Contact Bob Nuckolls at

The AeroElectric Connection  
Medicine River Press  
6936 Bainbridge  
Wichita, Kansas 67226  
316-685-8617

if you have any problems. Bob designs electronic controls for a living and is an expert in the field.

This editor has seen what happens when a voltage regulator stops controlling the alternator's charge to the battery. Bob's comment about "life threatening" is not an exaggeration. The results are spectacular. Thank heavens my example occurred on the ground! The best way to take care of this problem in my opinion is to install one of Bill Bainbridge's high tech voltage regulators

(designed by Bob Nuckolls). These have built-in instantaneous overvoltage protection. Contact Bill at: B & C Specialties 316-283-8662

### ACCIDENTS AND INCIDENTS

#### FAILED MAIN LANDING GEAR DUE TO HOT BRAKES.

This is a subject that has been addressed before but we continue to hear from builders who are having problems in this area. We are revisiting this problem because recently we have received two reports from builder/flyers who have had this problem on airplanes with 300 to 500 flying hours on them. These were not new airplanes. Originally the problems were associated with new airplanes doing taxi tests with wheel pants on. All the braking used while learning to drive a different airplane like an EZ, simply overheats the brake discs. This heat radiates into the strut and literally boils the epoxy out of the strut locally opposite the brake disc. Well, we are now finding out that this scenario also holds true on older airplanes. At one time, we had figured that the strut, over a period of time, gets postcured by repeated heat cycles due to braking and, thus, the heat distortion temperature goes up and makes the strut less prone to this type of problem. We still believe this to be true but only to a point. If you, for example, go to check out a new EZ pilot and have him or her conduct high speed taxi runs and stops on a runway, be certain that you will have this failure occur if you do not remove the wheel pants. There simply is not enough cooling available with wheel pants on to allow for this kind of operation. Normal take-off, go somewhere, then land operations do not put the thermal load into the discs that high speed taxi and runway flight tests do.

For additional protection from this radiating heat damage, install a 1/8" thick aluminum plate between the axle flange and the gear strut such that it extends up an inch or two above the brake disc and is somewhat wider than the strut. This will act as a heat reflector to reflect radiating heat from a red hot brake disc. You will still need to wrap the strut with Fiberfrax and aluminum foil tape to insulate the glass strut.

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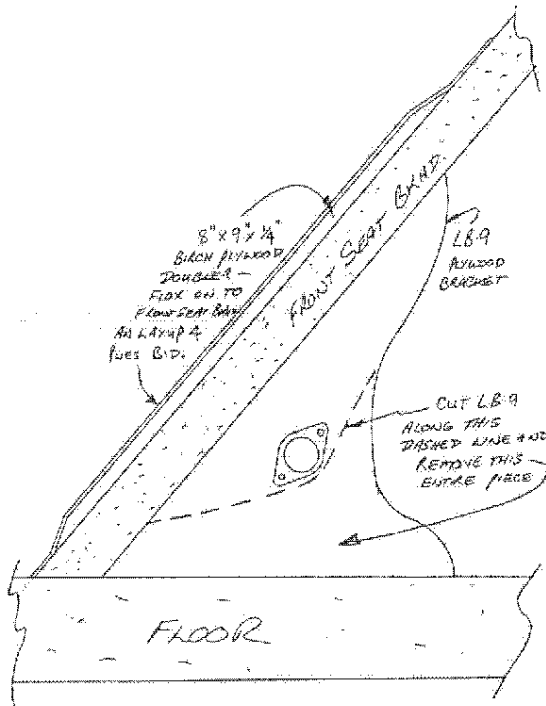
A Long-EZ was involved in an accident in Utah recently that resulted in serious back injury to the pilot who was flying solo. This pilot was a relatively new private pilot with only a few hours in type. While attempting to cut a roll of toilet paper, this pilot managed to get the airplane too slow, with too much angle of attack and the airplane apparently entered a "deep stall" condition. The pilot did not recover from the deep stall condition, and the aircraft descended in a flat attitude (75 to 85 degrees AOA), striking the ground slightly nose high with very little forward speed. The pilot suffered serious back injuries and the entire aircraft bottom and landing gear were heavily damaged.

There were a number of eye witnesses to this accident and our investigation leads us to suspect that the aircraft was being flown with a CG that was well aft of the published aft limit. This aircraft also was not equipped with vortilons.

If you are currently flying a VariEze, a Long-EZ or a Defiant and you are not positive of your aircraft's center of gravity, ground your aircraft until you have conducted an accurate weight and balance using calibrated balance beam scales or calibrated load cells. Do not bet your life on bathroom scales. You must not fly your aircraft unless you know exactly where your CG is. Do not fly a Long-EZ or VariEze without vortilons. In addition, due to the variance in aircraft shapes, and indeed, airfoils shapes possible in a homebuilt aircraft, we would strongly recommend that you conduct a stall test at least 10,000 feet above the ground while wearing a parachute. This will clear the stall envelope on your particular aircraft which, as we have said, may not be identical to the RAF prototype or to anyone else's aircraft. If you see any sign of an unusual or uncommanded pitch up or any hesitation in nose down control power when at full aft stick, go to full power and full forward stick immediately and recover! If your aircraft hangs in a high sink condition, rock it out with ailerons and rudder, using maximum available engine power. Ballast your aircraft to a more forward CG and retest. If you do not want to take the risk of doing this stall test program, do, at least, limit your flying to mid or forward CG.

This particular accident and injury pointed again to the advisability to modify the LB-9 plywood

bracket that supports the landing brake actuating weldment. This was called out as a mandatory change in July 1981, CP29, page 7. We have noted that few builders have made this modification. We would like to reiterate this requirement and add an additional change as shown in the sketch below. Cut away the entire lower portion of the LB-9 bracket as shown and remove the lower piece and discard it. Cut out a piece of 1/4" thick birch plywood (firewall material) approximately 8" wide and 9" long. Bevel the edges and flox it onto the forward face of the front seat bulkhead, centering it over the LB-9 bracket. Lay up four (4) plies of glass BID over the entire piece of plywood lapping onto the front seat bulkhead a minimum of 2" all around.



This change is mandatory and should be completed before next flight. Also, strongly consider the use of the energy-absorbing Tempa-foam cushions for both seats. Now, this may seem ridiculous to modify your airplane in order to protect yourself from a full-blown deep stall crash that on a normal airplane would be fatal. However, we continue to be surprised at the protection provided by the EZs composite structure and we always take the conservative approach to increase safety as much as possible.

## THE FOLLOWING IS AN ANALYSIS OF THE UTAH ACCIDENT

The Utah accident involved a deep stall, flat descent (angle of attack of about 80 degrees). The fact that the pilot survived and that a slower-than-expected sink rate occurred (confirmed by video tape evidence of the last 2.3 seconds of descent) presents somewhat of a dilemma. We are baffled as to why this can occur. A similar phenomena has been experienced during several deep stall accidents with the Velocity aircraft. All were survivable and one went into water with the pilot experiencing no injury at all! (See article in July '91 *Sport Aviation*.)

The Utah Long-EZ had a wing-loading of about 12.2 lbs./sq. ft. and, considering all its area, including the wings, strakes, cowl and fuselage, a "flat-plate loading" of about 9.2 lbs./sq. ft. (1150 lbs. divided by 125 sq. ft.). A basic calculation of the predicted rate-of-sink in a flat descent would use a flat-plate drag coefficient of about 1.2 and would predict a sink of about 4820 ft. per minute or 80 ft./sec. This would definitely not be survivable.

Using two different methods, we have calculated that the Utah Long-EZ probably had a drag of about 2.8 times that predicted by simple flat-plate theory, i.e. a co-efficient of about 3.3. This results in an energy at impact of only about 1/3 that which would result from the "calculated prediction" sink of 4820 ft./min. Here's the two methods:

1) Analysis of the video tape shows a sink rate of about 48 ft./sec. (2900 ft./min.). This required measuring the size of the airplane image and may be off as much as 30%. The post-crash video data show the rate of drift of dust from impact. Comparing this rate of drift of dust (wind was about 20 knots) to the rate of sink of the airplane (on video) confirms the approximate 48 ft./sec. estimate.

2) Assuming a 48 ft./min. descent, the main landing gear would absorb 18 ft./sec. before the fuselage strikes the dirt - this is a relatively accurate calculation knowing the gear's stiffness and strength. Absorbing the remaining 30 ft./sec. over a total deflection of approximately 6.7" (cushion, plus fuselage, plus dirt), results in an average deceleration of about 25 G with a peak deceleration of about 40 G. Considering the



support and attitude of the pilots back, this is consistent with the injuries he sustained. An 80 ft./sec. descent would result in a fatal 150+ G impact of the spine.

Both these methods are very rough but (along with the deep stall accident experience with the Velocity) they tell us that an unusual phenomena is occurring. It is likely that a large, trapped vortex forms above the aircraft. It's relatively easy to see how this could increase the drag by 25 to 50%, but it makes no logical sense that it could increase drag by a factor of 2.8 - this would require the airplane to decelerate a column of air that is more than 3 times the size of the airplane! What is even more baffling is the report (not confirmed by us) that the Velocity aircraft sinks at less than 1500 ft./min. (15 knots!). If that were true, it would have to have a "flat-plate" drag coefficient of about 12!! (A totally illogical result). We suspect that the Velocity and Long-EZ have similar drag coefficients and that the cushion of water landing provided the difference in pilot injury.

The Utah pilot had one thing going for him, he was sitting on seat cushions fabricated from Tempa-Foam an excellent impact absorber.

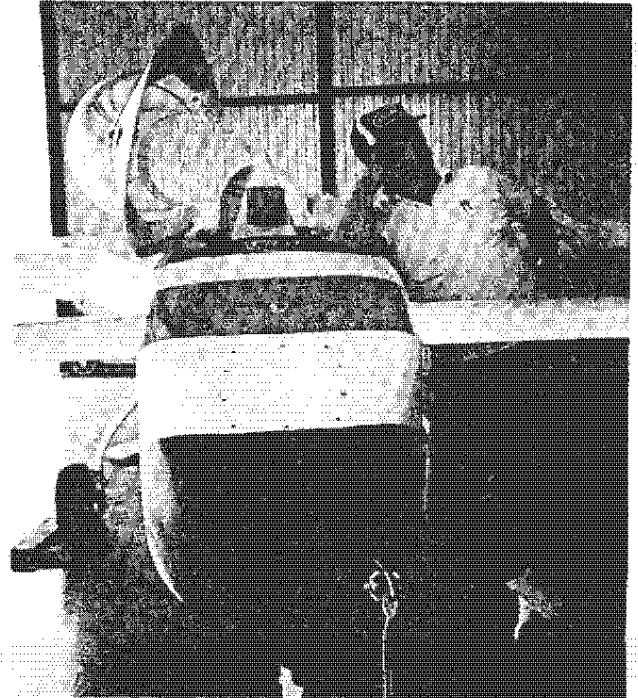
**CONCLUSION:** What can we learn from this accident? First of all, don't just jump into someone's homebuilt airplane and go flying. Insist on seeing a current weight and balance and discuss any possible "quirks" the airplane may have with the owner.

Do not let peer pressure tempt you to fly beyond your experience or capability. Cutting a roll of toilet paper requires absolute knowledge of your aircraft without referring to the instruments. You will be looking over your shoulder for the toilet paper ribbon for most of the flight which requires some aerobatic experience at least. This is not a sport for neophytes. If a VariEze or Long-EZ is not equipped with Vortilons on the leading edges of the wings, do not fly it!

#### WHAT'S NEW?

If you haven't been to Mojave's airport lately, you've missed what may be the world's largest commuter hub. Since a number of airlines have

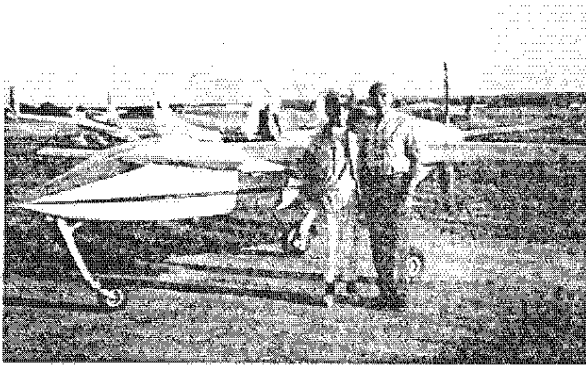
filed for protection under Chapter 11, what was once desert and greasewood is now covered with many dozens of airliners. There are DC-9s, 727s, L-1011s, 767s (brand new!), 737s, a 747-400!, BA-146s, 707s, DC-8s, etc., etc. Has to be seen to be believed.



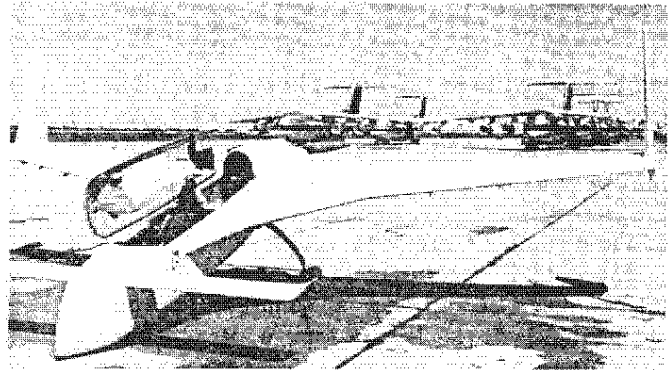
Is this a happy man?! John Hicks, Mary Esther, FL



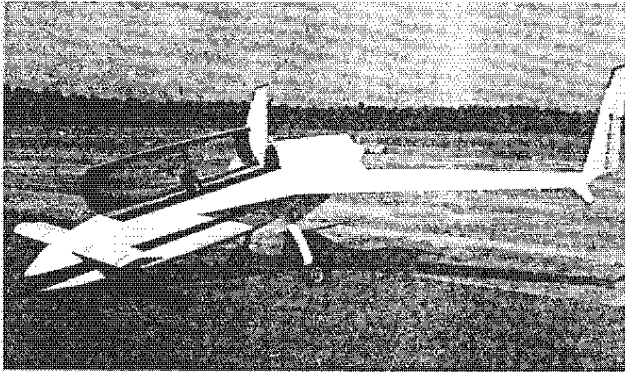
Frank Rowton, Alb. NM. has a way(s) to go.



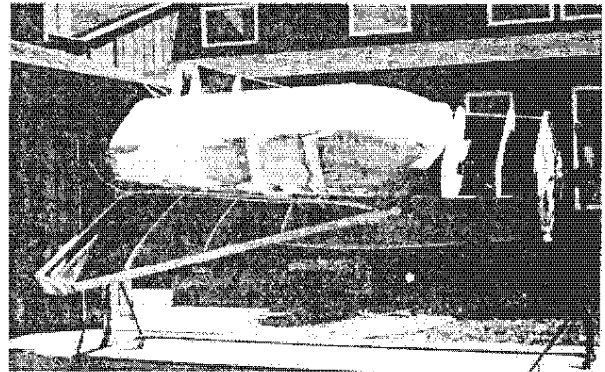
Nick Saliba and his wife, Lillian, with their recently completed Long-EZ. Nick is 78 years young and his first ride in a Long-EZ was when he made his first test flight - Good show, Nick!



Chris Weiser's Long-EZ, N202EZ. Dick Rutan did the first flight on Valentine's Day 1991. Chris is an engineer at Scaled who took 9 yrs. to build - but says it was worth the effort.

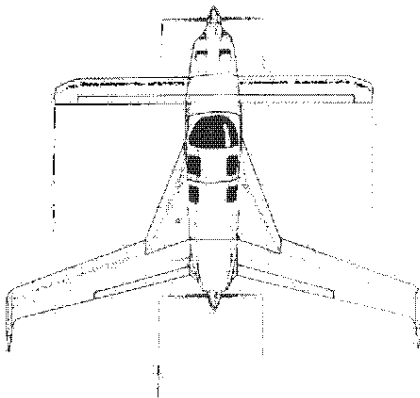


Martin Fagot's neat little VariEze - Martin's from Bay St. Louis, MS



Bill Helland's clever turn over/roll around fixture lets him handle his Defiant project with no help at all!

**Rutan Aircraft Factory  
Building 13, Mojave Airport  
Mojave, CA 93501**



**TO:**

**July '91**

The line which appears above your name lets you know through which Canard Pusher you are paid. If your label says **LAST ISSUE CP 68** then this is your last issue, and you need to renew.

**CP 68**