

# CANARD PUSHER

JANUARY 1997

RUTAN AIRCRAFT FACTORY

VOL.12, ISSUE 1, NO. 87

by Tonya Rutan

Ten years after the flight of the Voyager Mike Melvill and Dick Rutan are prepping for yet another 'round the world adventure. Like the Voyager mission the dynamic duo expect to break a few records on the way, however this time around they will not only break records but *brake* for interesting sights as well.

Melvill and Rutan expect to launch in late March on a sweeping southern route which will encompass nearly 30,000 miles. This trip, at 30,000 nautical miles, is 38 percent farther than flying around the globe's equator! Melvill's Long-EZ N26MS will lead the way as Head Duck with Rutan's blue N169SH on his wing.

Back in 1986 Dick Rutan and Jeana Yeager completed the tour in 9 days nonstop, flying the *other* way around the world. Melvill and Rutan plan a more leisurely and (hopefully) comfortable cruise with plenty of stops in some of the most exotic places in the entire world such as Jacksonville, Florida; Belem, Brazil; Rio de Janeiro, Brazil; Capetown, South Africa; Reunion Island; Perth, ; Ayers Rock; Brisbane; Wellington, New Zealand; Fiji; Tahiti; Easter Island; Guayaquil, Ecuador; Galapagos Islands; Mexico City and Mojave. (okay, some may be considered more exotic than others — Melvill may be adventurous, but he is also a practical man).

In 1994 the boys flew to Point Barrow , Alaska — the most northern outpost in the USA — with pit-stops in Vancouver, Juneau, Fairbanks, Anchorage, Yakutat, Sitka and Seattle.

The southern route, which requires them to fly at least two 20-hour legs over oceans, will no doubt be



strenuous. However Melvill's route-projections forecast a few flying furloughs in vacation spots such as Rio de Janiero and Tahiti. He also plans to visit family in South Africa where he and his lovely wife Sally were born and raised. And of course one of his highest hopes is to get a photo of N26MS buzzing the

huge stone heads found on Easter Island.

## Mike & Dick's Excellent Adventure

Modifications are now being made to the two Long-Ezs for the long distance flying. Melvill has equipped N26MS with a new instrument panel, including two comm radios and an HSI with S-Tec 55 auto pilot. He added wing-mounted auxiliary fuel tanks and a back seat tank for a total of 142 gallons, which gives his EZ a maximum range of 4000 NM (4600 stat mls).

see Excellent Adventure page 3

# BRIEFS

**Cowling update** — Mike Melvill addressed the problem of Long-EZ cylinder head cooling in the last Canard Pusher (CP 86, page 3) promising to keep readers updated on the effect his new low-drag cowling has on over-heating. According to Mike the cooling effect is impressive. "It cools much better," he said.


Dick Rutan recently borrowed the molds from Mike and is in the process of retrofitting his Long-EZ for their 'round the world trip this spring.

The good news is that Mike's new cowling may soon be available to one and all. Larry Lombard and Michael Dilley of Featherlite have expressed interest in acquiring the molds for production. According to Mike a Long-EZ can be retrofitted with the new cowling (in fact, he says the cowling fits Dick's airplane even better than it fits his own) or you can put the cowling on a brand new airplane. We'll keep you posted.

**OOPS** — I have to apologize for an error I made in CP #86. I put the wrong price for the RAF CD-ROM Encyclopedia. It should have been \$325 instead of \$295. The RAF CD-ROM, which is of excellent quality, was developed by two young couples in their after-work hours as a means of propelling their entrepreneurial careers. The lower dollar amount was actually an introductory price meant only for Oshkosh '96. I assure you the RAF CD-ROM Encyclopedia is well worth the price for all those who are interested in the early Rutan designs. See page 10 for more details.

**Flying with Friends** — The ever-popular Central States Association, a group of over 900 builders and flyers of experimental aircraft, is planning a National EZ gathering on June 13-15, 1997. *The Seventh National Gathering for Canard Type Airplanes* will meet at Butler Memorial airport (BUM) in Butler, Missouri. Social and flying events, races, contests and away-from-the-airport activities are now being planned for your week-end enjoyment. Contact Tom Jordan, 401 Havana, Butler, MO 64730. (816) 679-3328.

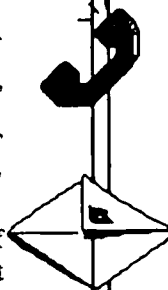
**Address change** — CCI, home of the molded vortex generators, has changed its address. See the advertisement on page 12 for more info.

	<b>To report accidents and incidents</b>	Write: Rutan Aircraft Factory 1654 Flightline Mojave, Ca 93501
		or Fax: (805) 824-4174

**RAF HOURS:** Rutan Aircraft is officially open every Tuesday. Please call between 10 am - 2 pm (805) 824-2645 and 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.

*Note — Sometimes you can catch Tonya at RAF Monday thru Friday. She is in and out. Try and try again.*

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



*The Canard Pusher* is published quarterly (January, April, July, October) by Rutan Aircraft Factory, Inc. 1654 Flightline, Mojave, CA 93501  
Editor: Mike Melvill  
Publisher: Tonya Rutan

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**VariViggen (1st Ed)**  
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**VariEze (2nd Ed)**  
CP 16 to current  
**Long-EZ**  
CP 24 to current  
**Solitaire**  
CP 37 to current  
**Defiant**  
CP 41 to current

A current subscription of the Canard Pusher is mandatory for builders, as it is the only formal means to distribute mandatory changes.

# Deep Stall in a modified 4-place Cozy

## CG error nearly kills pilot

*The following was posted on the Internet by Jeff Russell at the request of writer Pat Young. The mistakes admitted by the builder here are not limited to any single aircraft type, and should be of concern to all pilots. RAF is reprinting this story in hopes that it will prevent a similar accident in the future. Knowledge Is everything.*

by Pat Young

I would like to write about an accident in my homebuilt airplane. I know its been awhile since it happened (October 4, 1996) but it has been hard for me to come to grips with it and put down in writing just what took place.

It has come to my attention that quite a few inaccuracies have been published and circulated and I feel that I should speak up on the matter. I can't believe that there are those that would use someone else's tragedy to benefit by distorting the facts in such a manner to deface and discredit others. I see no reason that anyone else should suffer due to mistakes made by myself.

I would like to first describe the plane that took just over 3 years of dedicated effort to complete. The fuselage was built by myself, and other than widening the backseat by four inches, it was built to plans. The canard was built to plans. I had installed the canopy to

open forward ala Cozy Classic and used a Q-200 1/4" thick glass to fit my requirements. When I built the nose I exercised my option to omit the ballast compartment due to previous nose-heavy tendencies in my Cozy three-place. This was a wrong assumption on my part as the four-place is somewhat heavier in the tail. I customized the instrument panel to resemble the Glassair which seems to accept a few more switches and knobs. I designed the turtle back to contour from the canopy to the Velocity type cowlings I purchased from the AeroCanard. I also used the pre-molded strakes and main gear from AeroCad's AeroCanard. These units were superb and all worked very well. The engine was an O-360 Lycoming with the after market fuel injection mounted on a Weldtech mount. Another superb piece of work, if you know welding.

I had been test flying the airplane for 17 hours prior to the accident, doing the normal flight test maneuvers: stalls, speed envelope expansion, C.G. range expansion, ect. with no adverse tendencies. One thing I was concerned over during flight was some instability in the pitch characteristics. The elevator was between 3-4 de-grees down in cruise which fooled me into thinking I had plenty of weight in the nose. I actually believed that the canard incidence was not correct and could stand to be increased. After thorough investigation of the incidence and mounting templates, I concluded that I needed to increase the angle. The templates are very critical and very hard to distinguish such a small (.86 to 1 degree) angle.

The day of the accident I had removed three vortilons that I believed were causing a yaw problem that I had been

**see CG Error page 4**

## Excellent Adventure

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Rutan said he has modified his "ol' Blue" with Melvill's new low-drag cowling and a 49-gallon fuel tank in the backseat. Two conformal rectangular wing tanks which form around the wing extending directly forward of the leading edge have been added right at the junction between the main fuel tank and the wing, supplying N169SH with an additional 38 gallons of fuel, 142 Gallons total useable. The back seat and exterior tanks are easily removed in about 10 minutes, Rutan said.

Melvill said he will use a Trimble Flightmate Pro GPS to chart his course as well as MentorPlus Flightmap on his Macintosh laptop computer. Both pilots expect to communicate with the world (especially their loved ones, such as us) through computer E-mail (their in-flight addresses have not yet been designated. We'll keep you posted). Rutan said that once they are set up with Internet access via the Trimble Galaxy InMarsat C/GPS he and Melvill will be able to make contact with anyone, anywhere in in the world, on the ground in-flight.

"Galaxy allows us to send and receive instantaneous E-mail

messages anywhere in the world with a satellite link from the airplane," he said. "Every hour we'll make a position report or post messages such as 'send money, we're in jail.'"

While Sally is not going to travel with Mike on this trip, she is no stick-in-the-mud. Sally, who is training to be a docent for the State of California, plans to sally-forth with friends (hopefully Burt & I will be two of them) on a trek to the Great Barrier Reef in Australia (or, if Burt has his way, to Perth, New Zealand) to meet the guys halfway around the world.

EZ friends around the globe have offered to help our caped crusaders with places to stay, travel-tips through foreign countries, translators and other details. If you would like to extend an invitation to Mike and Dick please E-mail Mike at MIKN26MS@LIGHTSPEED.NET or Dick at RINGDOVE21@AOL.com. They would be happy to do impromptu presentations to small groups or EAA chapters. (Will talk & show slides for food & board!!) We here at RAF can vouch for their excellent table manners. ●

## CG Error

working on. After exhausting all other possibilities I decided they were the last possibility. Low and behold, after taking to the skies the yaw problem was corrected. Level flight and 160 kts indicated at 6500 MSL and ball in the middle. Yeaaaaah! I was exhilarated.

A person with good sense would have gone back and put the little vortilons back on straight before going any farther, but this is my second composite airplane and what about all those late-night epoxy fumes. Juuuust kidding.

What I did next was a steep climb to 10,000+ feet which puts me at 6,000 feet AGL. Without leveling to stabilize I commenced an accelerated stall — like before the canard stalled and the nose came down to the horizon. At this point I pulled power off to go into an approach stall. Immediately the airspeed fell to the bottom of the curve and the nose pitched back up. It felt as if I was doing a reverse tailslide.

All this happened at speeds of 58 to 60 mph. With the nose pointing at the sky about 1- to 20 degrees, VSI indicating 3000 feet down I had established myself in a deep stall, *NOT MY INTENT* by any means.

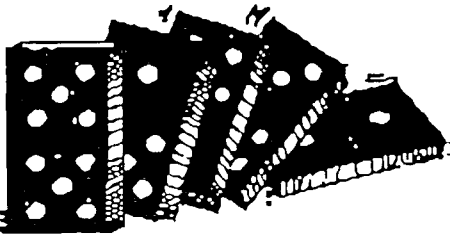
What I remember about the plummet was the initial stall and a very empty feeling in my stomach accompanied by terror. Trying to recover by full forward and aft stick netted about a 5-degree nose bob. Ailerons caused only yaw with no roll. The rudders were ineffective. Cycling power affected forward movement only slightly and the biggest change was to noise level. I believe that the prop was cavitating in the vacuum caused by the plane surface blocking an airflow. If you have ever heard an airplane prop cavitate its a sound you don't forget.

One other attempt that I could have made, but don't recall — I had departed

with my shoulder harness buckled. While in the stall I could have taken these off to throw a 25-pound shot bag in the nose. The shot bag was on the floor, copilot side, in case of a problem. When I was recovered only my lap belt was buckled. The shot bag was wrapped around the right side rudder pedal.

Luckily I don't recall the impact or much that followed. Fortunately I landed in a ravine sloping downhill. This was

## Sloppy CG Calculations



## Small changes sometimes make BIG differences to handling qualities and flight safety

looked to these people, and if they wondered if it was some alien. Thanks for coming over guys.

I was able to piece together what happened when I got home from the hospital by looking at the wreckage in my hangar. I know that the major impact was absorbed by the main gear and propeller/engine. The main gear snapped in the middle and the engine mount was bent 12-15 degrees to the left, engine still hanging on with only bends in the tubes and slight tube stress cracks around the tip-left dynofocal mount. The propeller was in splinters. The main axles sheared off at the bolts and went flying but were recovered within 50 feet of the plane. Both gear mount studs were bent slightly along with all of the engine mount bolts both at the firewall and engine. No damage to gear and engine mount box on the airframe.

After initial impact the plane then cartwheeled to the left from one winglet to the other smashing the tops and twisting and delaminating them from the wingtips. The right winglet was barely

hanging on by the bottom skin and laying on the ground. Once on the right wing the nose came down on the canard, tearing it out of the airframe shearing the mount tabs at the bolt holes. The canard was laying on the ground parallel to the nose of the airplane. The plane came to rest on its belly after the canard departed and smashed down on the right side of the nose.

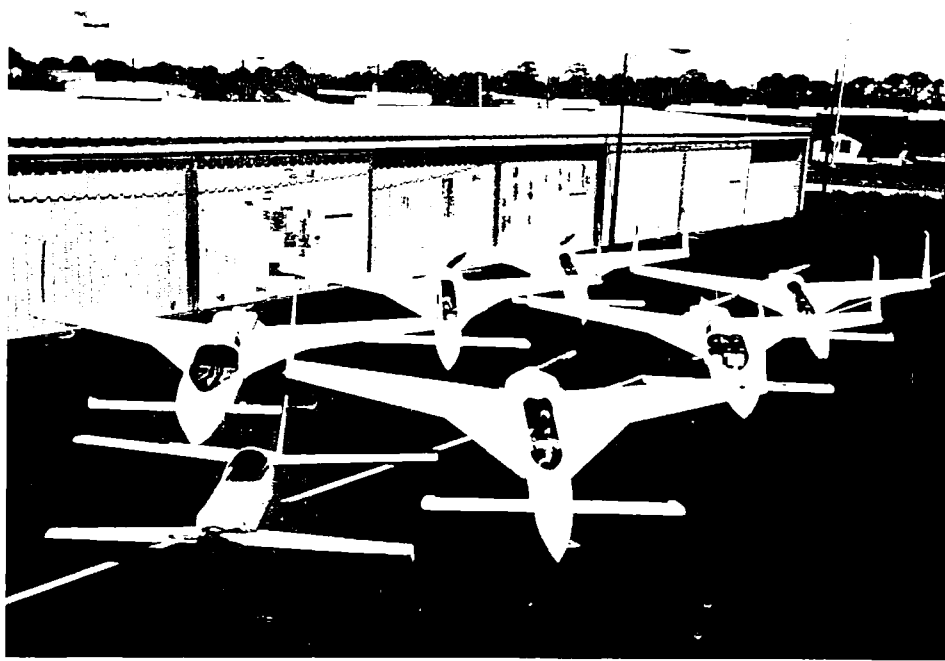
Other damage was to the instrument panel, collapsed left seat bottom, left armrest and center keel. The nose from the instrument panel forward was destroyed from the longerons down due to twisting and delamination but still somewhat intact.

There was much delamination on bottom of fuselage and around gear legs. Gear access panel was hanging on by three screws.

Left intact was the canopy, strakes, main spar and most of the fuselage aft of the front seat. The top cowling was undamaged and the bottom cowling was scratched with some small holes from the alternator and starter. I ended up with a few broken ribs, punctured lung, fractured left ankle, (and) some scratches. Hey, I'm still here thanks to the Rutan design, and just crazy enough to try it again. But no stalls, please!

This brings me to sum up what I believed caused this mess. First off when I weighed the plane I unknowingly had a 50-pound block in the front seat. No big problem just subtract weight at its station and refigure empty c.g. This is what I did. I should have left it alone. I also subtracted the weight from total on gear in another calculation, and came up with a number that was much closer to example in the operational handbook. Since the weight of the plane was only 3-lbs different than the example in the handbook I figured that the empty c.g. should also be close. Wrong choice. Very wrong by almost two inches, I know, I know, looking back you couldn't have convinced me with a 9 MM to my head.

see CG Error page 5



*Birds of a feather flock together* — These canards are from EAA Chapter 724 at Merritt Island, Florida. All are owned by their pilot/builders and all have flown. Clockwise starting from the Quickie in the lower left: Quickie Onan, J.P. Stroud, Satellite Beach; Cozy O-320, Len Van Eaton, Titusville; Long-EZ 0-236, Frank Caldeiro, Houston Texas; Long-EZ 0-235, Fred Mahan, Merritt Island; Long-EZ 0-236, Tom Teek, Merritt Island; Cozy O-320, Tom Gross, West Melbourne; and Long-EZ 0-320, Ted Yon, Cocoa Beach.

## CG Error

When I realized this, it was a little too late. It did help to explain the nose instability problem. All this time I had been flying around with my c.g. at the aft end of the envelope. I was still trying to explain the down-elevator situation, I think that the canard incidence being in error contributed, but did not cause the stall. If it had been the sole problem, I don't believe this could have happened. However, if the c.g. had been at 100? Oh well.

After an extended steep climb and not leveling off, the fuel (25 gal) could have been at the aft of the tank causing an even more aggravated c.g. problem. All the baffles were in place according to plans.

Last but not least, the missing vortilons probably contributed to the wing stalling when it had not before with them attached. If those little tabs out there can cause the entire plane to yaw when on a few degrees crooked, they certainly must be doing the job that they were meant to do when on straight. I never doubted it Burt.

So there is your deep stall in a nutshell. Well, maybe a

big nut. I hope and pray that this never happens to anyone else. I hope that my experience can keep it from happening in some way, shape or form. Those gremlins are out there looking for us all at the most inopportune times. Even though I made some disastrous mistakes, at the time I had no idea. And I usually listen to all sides, look at all the angles.

I would like to give my sincere thanks to all those who were concerned during this time. My special thanks to Jeff Russell of AeroCad for his concern and support during this period. I can not speak highly enough on the work and advancements he and his Dad Greg have made to this design. Besides that, their just "plane" great folk. To my wife Jeannine who has been the stronghold though it all. If it wasn't for her recovery efforts I don't know what I would have got back out of that ravine. She is still the best partner ever.

So we are in the process of rebuilding the four-place canard. Maybe in a year or so we will once more take to the skies.

*Happy Skies to you all,  
Pat and Jeannine Young*

# Time flies the 10th annual Voyager Reunion

by Tonya Rutan

Ten years have passed since Dick Rutan and Jeana Yeager set the all-time aviation distance record by flying the Voyager around the world non-refueled. Back then it was a heart-wrenching time for the volunteer Voyager ground crew who awaited the outcome of the flight in Mojave and Edwards Air Force Base, between December 14 and December 23, 1986.

Many of the same crew gathered again last December under the very wings of the airplane that flew the world flight, but this time the tone was much more light-hearted. Yes folks, it was a big, big party. Nearly 500 friends of the Voyager arrived in Washington D.C. to celebrate the 10th Anniversary celebration of the famed airplane's journey. They traded their flight-duds in for tuxedos and glamorous gowns this year, exchanging hugs and clinking champagne glasses at a private party held within the hallowed halls of the Smithsonian Air & Space Museum.

The sight of the Voyager hanging in the front lobby of the famous museum revived memories and renewed pride in the great American adventure for many people. Journalist and former TV host David Hartman, whose love of aviation is legendary, served as master of Ceremonies for an evening program that included a film about the Voyager in the Lindbergh Theater.

Dick Rutan was determined that the 10th year anniversary party would take place under the slender fuselage of his famed airplane, and we all have his right-hand-woman Kelly Hall to



Under the tail of N268VA — (l-r) Mike & Sally Melvill, Chuck & Joan Richey, Sid Stiber & Dorothy Seiberling.

thank for it. Those of us at RAF give Kelly a deep bow and a high-five for the months of work it took to put this party together — the newsletters, hotel arrangements at the Hilton, the catering, stage show, fancy brunch and aviation tour at the Garber facility. It was no small feat! We had a wonderful time! ●



Above — Golda Cox and John Roncz

Left — Kelly & Don Hall



Above — David Hartman, Burt's daughter Dawn Davis, son-in-law Eric Davis



Above — Suzy Bowman & Sheila Swancara



Left — Scott Crossfield, Jeana Feager and John Swancara

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# Reader Mail



Dear Rutan Aircraft Factory,

My Long EZ N60AK Ser#1172 as been operating flawlessly for 1300 hours. The only non-routine maintenance item I would mention is some fairly significant wear on the aileron torque tube at CS 152 where it is in contact with the phenolic bearing CS 150. The wear is concentrated on about 120 degrees of one side of the tube rather than around the entire circumference.

Jerry Nibler  
Anchorage, AK

Hi,

In the last newsletter you asked if anyone has much trouble with corrosion of the metal parts of their EZes. Just move to Florida and you will soon find out about such things. My VariEze sat under a flat metal shade with no walls. It is about seven miles form the Gulf. The hinge brackets started to corrode and I tried several things to stop it, but none worked. In the end I dug them out and replaced them with ones made of stainless steel.

I now have a Long EZ and made its brackets out of stainless. However the canopy hinges on it started to corrode and I had to cut up the hinges to get the canopy off. I have just a little nylon rope for a canopy stop and the little metal bracket that the rope is tied to will corrode where the rope goes through it. I just replace the bracket every year. I keep after the rudder and aileron hinges with WD-Forty and have had no trouble with them. The aircraft now has 770 hours on it and first flew in 1984. That is all the trouble that I have had with the air frame. Of course a little trouble with the engine, but that is another story.

It is a fine airplane.

Don Yoakam  
Ft. Myers, Fla.



## Now Appearing on newstands everywhere

**Two for the price of one** — Double your reading pleasure with the latest *Flight* magazine (Feb '97) which features two great articles about the Boomerang by word-maestro Peter Lert. "Aerodynamic Picassos" addresses the asymmetrical aspects of the Boomerang and other aircraft in history. The second title "Flying Burt Rutan's Boomerang" speaks for itself (Lert is one of a handful of people who have been allowed to command the controls of the Boomerang). The cover price for the magazine is \$3.95. (\$4.95 CAN). Subscription for 6 issues costs \$19.95. Write to *Flight*, PO Box 791, Mount Morris, IL 61054-8340 or call (800) 442-1871.

**It's a keeper** — The Experimental Aviation Association (EAA) published a 10-page article about the Voyager in its December 96 issue of *Sport Aviation*. You don't want to miss reading this highly enjoyable viewpoint written by one of Burt's favorite aviation writers. Call (800) 843-3612 for the back issue. I am told that Jack Cox will write a story about the Voyager Reunion for the February issue also.

**Commentary** — The current issue of *Flying* magazine features an examination of the Boomerang evolution by Peter Garrison as well as a report on the new business jet developed by VisionAire (and built by Scaled Composites). Long-EZ pilot Doug Shane, who is director of flight operations and vice president of business development at Scaled Composites, flew the maiden flight of the single-engine business jet last November. The cover price for the magazine is \$3.95 (US) \$4.95 (CAN) £2.50 (UK). Write to *Flying*, PO Box 53647, Boulder, CO 80322 or call (201) 451-9420.

**Overseas covergirl** — Our European friends can catch the latest news on the Boomerang and the VisionAire Vantage in the February issue of *Pilot*. A pretty picture of the Boomerang appears on the cover and an excellent article inside highlights Rutan history with a photo layout of our favorite canards. Oh yes, *Pilot* offers a USA subscription also. For rates call 01454 620070 fax 01454 620080 E-mail cihotline@aol.com

**Parle Vous Francois?** — I'm really sorry I don't speak French because the Octobre '96 issue of *Aviasport* magazine spotlights, what looks like from the pictures, an estimable article about Burt, *le concepteur californien*, and his designs — everything from the VariViggen to the Boomerang. For your copy of *Aviasport* write to Air Press 67, Av. de la Republique - 75011 Paris or call 01 49 29 44 22.

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# For Sale

## Spin-On Oil Filter Adapter for Lycomings

B & C Specialty Products' latest product is the neatest idea I have seen in a long time. It is a 90-degree, spin-on oil filter adapter for Lycoming engines. It is beautifully made by CNC milling out of a solid aluminum billet and bolts onto the accessory case in place of your oil screen housing or AC spin on filter adaptor. It fits perfectly, does not interfere with the magnetos, the vacuum pump or even the mechanical tachometer drive. It also has plenty of clearance on your engine mount and firewall, important considerations when you operate an EZ!

I installed one on N26MS and now have a full flow, spin on champion oil filter, with no high pressure hoses to a remote mounted filter which could leak. It comes with everything you need to install it: a new gasket, new aluminum washer for the vernatherm, and new copper washer for the oil temperature sensor. They even send a small container of the proper sealant for the gaskets. Of course it comes with new Lycoming bolts to mount it.

It is fairly expensive at \$395 but is available to EZ flyers until the end of 1996 for \$350. I am extremely pleased with mine and I heartily recommend it for anyone running a Lycoming engine on an EZ. A fuel flow spin-on filter allows 50 hours between oil changes and prolongs the life of your engine.

Give B&C a call at (316) 283-8662 or fax (316) 283-8000. You'll be glad you did! *Mike*

## RAF Recommended Suppliers

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## MOLDED VORTEX GENERATORS

These pre-molded generators are specially engineered for aircraft application. Available in white, they can also be custom molded in quantity to match specific paint colors for aircraft manufacturers and OEM suppliers. After installation, the sail appears to be molded an integral part, rather than an "add-on". The final result not only looks better, it performs better than typical hand-made aluminum fences. Molded vortex generators adhere better, do not corrode, require no painting and are easy to install: one Long-EZ canard can be equipped with a full span of generators in less than 90 minutes.

A kit containing fifty generators is available for a price of \$25.00 plus \$2.00 shipping and handling per kit. Two kits are sufficient to equip the full span of a typical canard (i.e. Long-EZ, Dragon-Fly, et al) or both ailerons on either canard or conventional planforms. Documentation is included. Please send check or money order to:

CCI, PO Box 415, Quakertown, NJ 08868-0415  
Please allow 2-3 weeks for delivery. Sorry, no COD's.  
For more information 6:00-10:00pm EST, Mon.-Fri.  
908-757-9573 908-755-9639 FAX

Note: These vortex generators are not TSO'd for use on type-certificated aircraft.



# Canopys

## Airplane Plastics

8300K Dayton Rd, Fairborn, OH 45324

(513) 864-5607

### **FLUSH, INTERNALLY MOUNTED ANTENNAS**

A complete line of antennas, specifically designed for, and flight tested on, composite aircraft. The antennas are tuned for maximum performance and in general those who have used them so far report reception is doubled over standard external antennas.

VariEze builder/flyer Bill Butters has started a company to develop a full range of buried antennas. These are normally supplied with a BNC connector built into the actual antenna, but can be supplied without connectors to include enough length of co-ax cable to facilitate easy installation with minimum weight and bulk.

Call Bill Butters 800-758-8632 Advanced Aircraft Electronics, PO Box 4111, Florissant, MO 63032

### *Feather Lite*



#### LONG-EZ PARTS PRICE LIST

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 w/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	

Feather Lite, Inc. is proud to announce another product to re-introduce to EZ builders: The original Space Saver Panel by the late Rusty Foster. This is a bare fiberglass panel with a molded recess for builder installation of an aluminum flat stock electrical panel. \$40.00

Contact Michael Dilley or Larry Lombard (both former RAF employees and EZ builders and flyers)

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

#### TITANIUM ACCESSORIES AVAILABLE!

Custom anodized to any of 15 different colors, shades of copper, purples, blues, greens, yellow/gold, even rainbow effect. Rudder and aileron gustlocks - \$20.00-30.00.

GU canard full span vortex generators with layout template - \$170.00. These are very exciting! Rudder horn CS-301L&R replacements, \$25/pair. Shipping inc.

**Ti Specialties, PO Box 1052  
Grover Beach, CA 93483-1052  
805-489-8155**



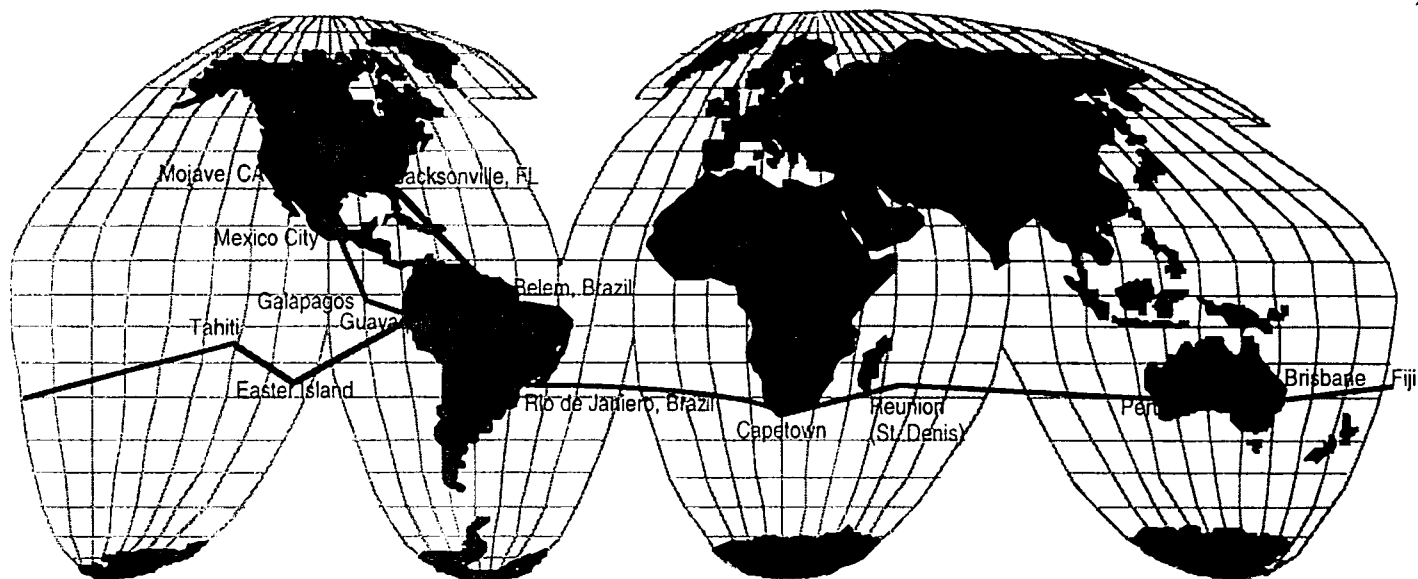
#### STARTER FOR 0-200 CONTINENTALS

B&C Specialty has introduced a beautifully made, 12 volt starter specifically designed to be installed into the accessory housing on a Continental 0-200 engine, or on an 0-240.

This starter has been thoroughly tested at Teledyne Continental (more than 5000 start cycles without a single problem!).

Bill Bainbridge has these starters available for immediate delivery and they can be had STC'd or for homebuilts.

Contact: B&C Specialty Products, Inc.  
123 East 4th Street, Newton, KS 67114  
316-283-8662



Spring Fling — Two well-known Long-EZ pilots (guess who?) have mapped out an around-the-world route for a grand flying trek beginning in March.

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