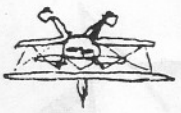
# Starduster

MAGAZINE

**July 1996**

Dedicated to the ACTIVE Homebuilders

July "96"
Comments from the "Prez"



By now most of us are aware that a "Starduster Too" got a "Grand Champion" award at Sun & Fun, "96". Al Tomlinson and Neil Reyngoudt are very proud of their "Too". They fly a lot and keep their craft new looking. They received the Designers award from Starduster at Sun & Fun, "96". Congrats again and hope to see you guys and your bird at Wautoma/Oshkosh "96".

We had another "Great May Fly in" at Oroville CA. We were hosted by EAA Chapter #1112 and all their handiwork paid off. It was well organized and ran smoothly-Was first cross country for Ken and Jane Ware in their **New "Too".** Got to see the "Italian Stallion"s Acro "Too" at long last. Jeff Chamblis's 300 hp "Too", Les Homan's super Starduster is looking good and "Fast", will be racing at "Reno 96". As I write this, can't remember the totals but we were well represented. Ben Scott came in his T-28 and Kelly Scott brought their Starduster Too. A past Grand Champion. Hope Dave includes a list of Acft, he usually does.

We just finished some work on Art Viturellis Starduster Too. Lucky for Brenda and I, he was white water rafting that weekend so he let us have his airplane. Thanks again Art.

Back to work - we are still very busy and the near future looks the same. They say it pays to advertise. Well the builders and flyers are doing our advertising. All the good looking airplanes and award winning news - I may not show it but am a proud owner.

Looking forward to Wautoma/Oshkosh. See you all there, Fly or Drive or Ride. Just get there.

Bill Clouse
aka "B.C." Prez

**Stolp Starduster Corp.**

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# JULY 1996

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We would like to thank all of this issues contributors and respond to one and all, for some interesting information and photos.

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FRONT COVER - N76BC Open House Grand Champion Starduster Too. Owned and built by Sam Davis, 873 Poppy Seed Lane, Corona, CA 91719. Picture taken at Willows Airport California, Dawn Patrol Destination.

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BACK COVER - N77AN Grand Champion plans built Starduster Too at Sun N Fun. Aircraft owned and built by Al Tomlinson and Neil Reyngoudt of 1406 Lee Court, Lake Worth, FL 33461. This airplane was recently featured on the cover of Sport Aviation this past June.

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**REMINDER : SUBSCRIPTION RENEWAL**

Please mail your checks to Stolp Starduster Corporation. They are due by the first of January 1996. Subscriptions run from January to January of each year. Those who subscribe in the middle of the year will receive all four issues for that year. Current subscription rates for 1996 are still $12.00 per year. I don't know how much longer we can do this, due to postage, printing and handling costs. By 1997 we will more than likely have to raise the cost of a subscription. Checks should be made out to STOLP STARDUSTER CORPORATION and sent to 4301 Twining St, Riverside, California 92509. Thanks.

D.C.B. Editor & B.C. Prez

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THE EDITOR IS ALWAYS LOOKING FOR TECHNICAL AND EDITORIAL CONTRIBUTIONS TO THIS MAGAZINE, WHICH IS DEDICATED TO THE HOME BUILDER AND SPORT AIRCRAFT ENTHUSIAST. PLEASE INCLUDE YOUR NAME, ADDRESS, TELEPHONE NUMBER AND YOUR "N" NUMBER ALONG WITH THE ARTICLE SUBMITTED.

# ODDS & ENDS FROM YOUR EDITOR

Wow where to begin. How about our 16th annual Starduster Open House, great weather, great turn out, 24 airplanes in attendance. We had a free house boat tour of the lake with food and drink. The host of the open house was EAA 1112 Oroville chapter City of Gold. A great time was had by all, and the wonderful thing is that they want us to do it again next year. Story and information about Oroville elsewhere in this issue.

I was also able to attend Merced, the 39th West Coast Antique Fly-in on June 7th & 8th. Mike Mattei was my wing man during the round trip flight and received an award for his beautiful Acroduster Too N8121B in the homebuilt category, congratulations Mike!

Sad News. As many of you know, Robert Overmeyer was killed while test flying the new Cirrus VK30 kit plane. Articles about him have been printed in numerous aviation magazines recently, but, what most people do not know is that he was a Starduster Too owner and former astronaut. He was also a good friend of Dick Scobee, the commander of the space shuttle Challenger that exploded several years ago. Scobee was also a Starduster Too owner. We offer our condolences to Bob's family.

Other interesting things afoot that you should be made aware of. Here locally, the Port of Portland has proposed landing fees and other lease fee increases to offset their budget short fall. They are aimed mostly at commercial part 135 operators. But, will also include lease fee increases on hangers. I am currently based at Hillsboro, which is one of the four airports owned by the Port of Portland, and I suspect that our hanger rent will increase substantially. This of course is bad enough, but many people think that once the landing fee is implemented for the 135 guys, the next step will be all users. The ports landing proposal is part of a so called General Aviation Financial self sufficiency plan. But, also falls into place with the latest trust fund crisis. Air traffic control and other FAA functions that are funded primarily from the trust fund, which is financed by user taxes on aviation fuel, air cargo, and airline ticket fees. Those taxes expired at the end of 1995, and congress has not yet renewed them. The crisis has been ignored because the trust fund surplus has so far covered expenses.

But, the fear is, once the fund balance approaches zero, there will be a last minute panic with Congress scrambling to find some quick fix, which could easily be user fees. If this happens, I can guarantee that yours truly will not be using any FAA services. It will probably also force me to move my airplane to an uncontrolled airport. Let's hope that this is not to be, and until they require user fees, I would encourage pilots to give pilot reports, this was recently voiced by the National Weather Service. Pilots reports are still there best source of real time accurate reporting, in spite of all the new computer and satellite reporting systems.

I am sure that most of you by now have heard about over flights of our National Park system., and the intent to limit them by the Department of Transportation. I personally can't speak for other parts of the country, but my experience with the Grand Canyon several years ago, with it being closed to light private aircraft use, left me with a very poor opinion of how this situation is regulated. I can certainly understand why most people would want to restrict or even stop air tour flights all together, as they are unbelievably numerous, and leave from all areas around the Grand Canyon. But for light

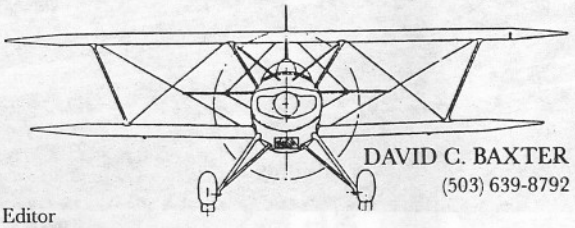
General Aviation aircraft like what we fly, the chance of us over flying the Canyon once or twice in our lifetime at most would be realistic. And if you look at the special use airspace chart for the Grand Canyon you will only find four corridors that allow aircraft like ours to cross, yes cross, not fly up or down the canyon, and what's even more restrictive is the altitudes at which we must cross - 10,500 to 12,500 feet southbound, and as a high as 11,500 to 13,500 feet northbound. This is high country of course, but it is also the upper limit of your aircraft performance. I do not know where this will end up, but I am sure it will not be beneficial to us.

As for my travels so far this spring and early summer, with the fuel crunch I am still buying fuel here locally for $1.65 per gallon 100 LL gasoline. But the average is more like $2.05 to $2.10 per gallon, and in some places as high as $2.19 to $2.56 per gallon. This of course makes owning airplanes like ours more expensive to operate, and speaking of higher expenses, what do you think a new Cessna 172 will sell for? The current guess is between $60,000 on the low side to $200,000 on the high side, pretty spendy for thirty year old technology. That is why I think that more pilots and builders are returning to our kind of airplanes, and speaking of our kind of airplanes, we have had several new aircraft fly for the first time, like Bob Anthony's Starduster Too. Bob is from Olalla, Washington and had about 14 hours on it when he asked me to fly it at Bremerton, Washington, so that I could tell him what I thought. If all goes well he should be at the NW EAA Fly-in at Arlington, Washington the second week of July. Another first flight was Les Homan's Super Starduster One, the first plans built aircraft of this type. A super aerobatics performer. Les is currently planning on attending Oshkosh/Wautoma, and to race it at Reno. I do not know about his plans to compete with it in I.A.C., and last but certainly not least was Kenny Ware's first flight in his beautiful blue & white Starduster Too. He was able to attend the open house due to the efforts of Bill Clouse, Rick Loomis and Hank Schmel , who helped fly the time off.

Regarding my Great Lakes trip to Sun & Fun, I must apologize to all who promised to put me up along the way, Les Homan CA, Larry Rydberg Albq.NM, Allen Young Godley TX or John Snyder Richardson TX, Bernard Patrick Jackson MS or Dan Miller Gulfport MS, and last but not least Bill VanMeter of Niceville FL. I sincerely appreciate your generous offers of hospitality. This planned trip fell through at the last minute. The reason being they felt it would sell just as well here as it would in Florida. They do however want $89,000 for the airplane, but after flying both I would not trade straight across for my Starduster Too! With that in mind, I would like to close with the fact that my airplane N96576 now has almost 1,300 hours hobbs, and I am currently planning on attending Oshkosh/Wautoma again this summer. As long as compression holds and I have a few bucks I will be going. I am looking forward to seeing you all there.

D.C.B. Editor

STARDUSTER MAGAZINE



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## SAFETY AD's, SERVICE BULLETINS AND THE LIKE...

In keeping with issues regarding safety, it has been brought to my attention that several Starduster Too owners have recently found cracked motor mounts. Both cracks occurred on mounts with Dynafocal rings. Both were on airplanes that had four cylinder Lycomings O-360 and IO-360 engines. One had a fixed pitch, the other a constant speed prop. The cracks occurred in the same place, on the upper curved tube between the two upper lord mounts, and right next to the tube and lord mount holder on both sides, neither of these aircraft were flown through much aerobatics maneuvers. But both aircraft had almost 1,000 hours of flight time. Also the mounts were homebuilt, not purchased from Starduster Corporation. The ring on one came from an aircraft salvage company, and the other was off a wrecked airplane. So both could have been cracked or damaged from the start. This also could have been cause by hard landings.

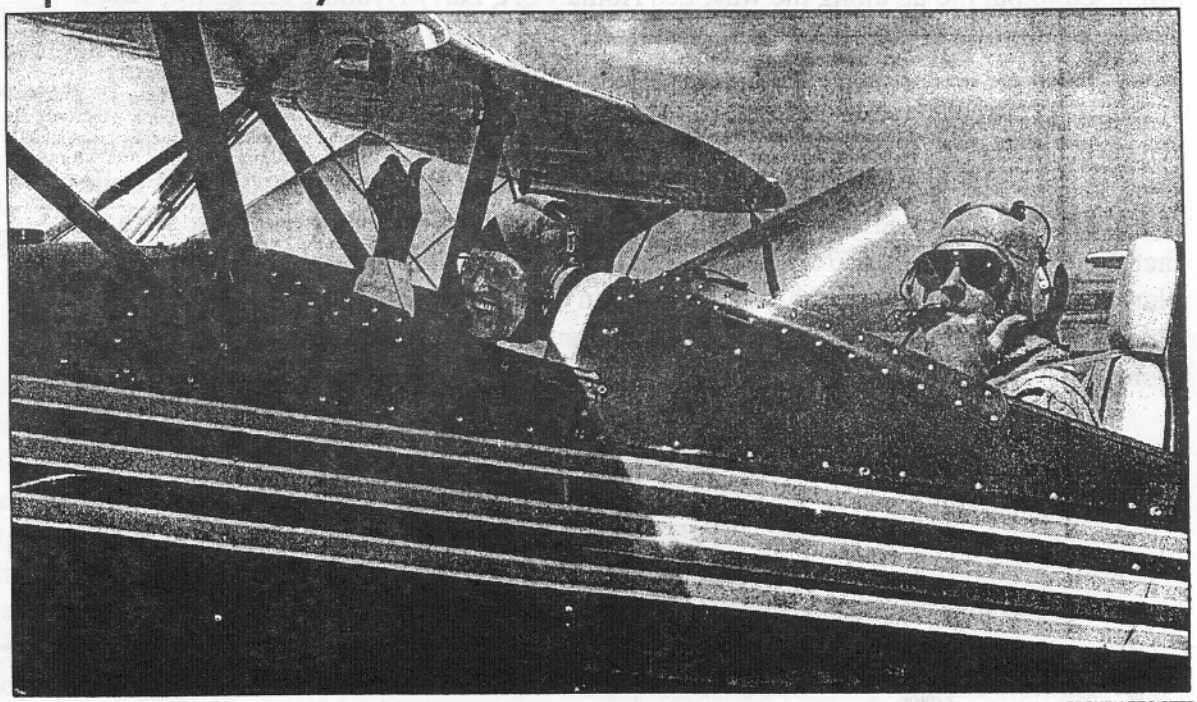
So with this in mind, please inspect your engine mounts, no matter what kind of engine is installed, and report to me if you find anything out of the ordinary. Also this summer, fly safe, use your check list, do not take off on one mag or with your carb heat on, especially at high altitude and in hot weather. Remember there are no hard numbers for homebuilt aircraft performance in unusual or extreme conditions. So stay on the safe side with plenty of margin, because if you don't you will become a test pilot without being paid for it, and the results could be disastrous.

Also the owner advisory printed in April 1996 issue of Starduster Magazine regarding oil pump replacement has now become an AD. A copy of this AD final rule is in the following pages.

One other thing that needs to be noted is carbon monoxide. It is usually not a problem with open cockpit biplanes but it could be. Read Les Homans letter and IAC Magazine copy in the Tech Tips of this issue.

Up and away! D.C.B. Editor

A6 Oroville, (Calif.) Mercury-Register, Friday, May 24, 1996



DAVID C. NEILSEN II / MERCURY REGISTER

Kathryn Lindquist, who just turned 91, recently took a ride in Dave Baxter's Starduster Too airplane. Airplane fans will get a chance to see other types of aircraft at the Oroville Air Fair to be held in June.

# Crankshaft AD would cost owners millions

By MICHAEL SWEENEY

WASHINGTON, DC—AOPA has asked for a two-month extension on the public comment period for a proposed airworthiness directive that would affect more than 46,000 four-cylinder Lycoming engines in the United States and cost owners tens of millions of dollars a year.

The proposed AD would require initial and repetitive inspection of crankshafts in 235, 290, 320 and 360 series Lycomings, and command that all cranks with inner diameter corrosion pits be replaced within five years.

■ Waste of money: Another AD involving Lycomings was issued unnecessarily, 40 thousands of owners / Dorothy Collins / Page 17

The public comment period of the proposal ended Jan. 29, and as this edition went to press in mid-February the FAA had still not responded to AOPA's request for an extension.

Neither had the FAA responded to AOPA's Freedom of Information request for all the accident and technical data used by the FAA to justify the proposed AD.

## Crankshaft AD

Continued from Page 1

"We don't think they provided enough data to support the action," said AOPA spokesman Warren Morningstar.

Meanwhile, Roger Fuchs, the respected and influential technical director at Engine Components Northwest, has called on the FAA to withdraw the proposal.

"The FAA has completely failed to justify this crankshaft replacement requirement," Fuchs said, adding that it will "do very little to enhance safety or prevent further failures."

Fuchs, chairman of the Aeronautical Repair Station Association's general aviation council, has been instrumental in challenging the FAA's 1993 proposal for an AD that would require the replacement of crankshafts in tens of thousands of Continental engines.

That proposal, which remains bottled up inside the FAA, would require replacement of "airmelt" crankshafts on series 360 and 520 TCM engines built before 1981.

The FAA insists that both crankshaft ADs are needed to address "unsafe conditions" that could lead to engine failures, forced landings and aircraft damage.

Skeptics see little justification for either action from the standpoint of safety, but note that the ADs would produce economic windfalls for both of the country's major piston aircraft engine makers as the result of increased parts sales.

Crankshafts for the engines covered by the Lycoming AD currently sell for about $4,700.

The FAA proposed the Lycoming crankshaft AD (Docket No. 94-ANE-44) following 11 reports of cracks or failure of the crankshaft behind the propeller flange on various Lycoming engines.

The cracks were all traced to corrosion pits in the crankshaft bore.

At least half the reports that prompted the AD apparently involved aircraft operating in England and Northern Europe. The only one cited by the FAA involved the 1993 in-flight failure of a crankshaft in England on an O-320-D3G engine that had more than 4,400 hours on it, and had operated nearly 2,000 hours since its last overhaul.

In the wake of that incident Lycoming issued a mandatory service bulletin calling for repetitive inspections of crankshaft bores for corrosion and cracks.

Private aircraft owners are free to ignore such service bulletins, but must comply with ADs.

The FAA said more than 46,000 engines installed on U.S. aircraft would be affected by the AD, and it estimated that the inspections required by the directive would cost owners about $11 million a year.

The FAA appears to be significantly at odds with the industry, however, in its estimate that only 10% of the engines affected by the AD will require new crankshafts.

Based on that FAA estimate, the cost of replacing crankshafts will total only $3 million a year for parts and labor.

Engine overhaulers, however, predict that a majority of engines covered by the AD — particularly those that operate fixed-pitch props — will likely have cranks that show evidence of core corrosion, and will have to be replaced.

Based on their projections, the economic impact on general aviation would be far more severe than calculated by the FAA.

In his comments on the proposed AD, Fuchs said Engine Components Northwest had been unable to find evidence of any crankshaft failures occurring in O-235, O-290 and O-320 engine models rated at 140 and 150 horsepower.

He said those engines should be exempted from the proposal unless the FAA can present "justifiable data which support their inclusion."

More generally, Fuchs said the requirement to replace all pitted cranks was not supported by the small number of crankshaft failures reported by the FAA.

Further, Fuchs questioned the need to replace a pitted crankshaft without cracks, and "without regard to hours of engine operations."

Quoting from the FAA's attribution of crankshaft failure to "high cycle fatigue," Fuchs argued that "any replacement requirement should be based on time in service, which is directly proportional to stress reversal cycles, rather than on calendar time, which has nothing to do with cyclic fatigue."

Fuchs estimated that "many thousands" of crankshafts with interior corrosion "have gone decades" without failure.

"Just the presence of corrosion pits themselves doesn't determine whether cracks will develop," he said.

Indeed, Fuchs said Engine Components Northwest has inspected a number of Lycoming crankshafts since the manufacturer issued its 1994 service bulletin, and has found "wide variations in surface finish, crankshaft wall thickness, and erratic boundaries between the nitrided and non-nitrided portions of the crankshaft.

"These conditions can serve to create localized stress concentrations just as well as corrosion pits, yet the proposed AD does not address them," he said.

*Comments on the proposed AD should be submitted in triplicate to FAA, New England Region, Office of the Assistant Chief Counsel, Attention: Rules Docket No. 94-ANE-44, 12 New England Executive Park, Burlington, MA 01803-5299.*

# GOVERNMENT UPDATE

By Earl Lawrence, EAA Government Programs Office



Reprinted from EAA Chaptergram, Vol.X, No.3

## AMATEUR-BUILT MAINTENANCE

The EAA Government Programs Office has recently received many questions about who can do maintenance and what maintenance is required on an experimental amateur-built aircraft. So I thought this would be a good time to review the regulations.

**FAR Part 43.1 (b) specifically excludes experimental aircraft.** It states, *"This part does not apply to any aircraft for which an experimental airworthiness certificate has been issued, unless a different kind of airworthiness certificate had previously been issued for that aircraft."* I stress the word aircraft so that it is not interpreted to include an engine.

What about major repairs and alterations? First, you never have to fill out a form 337 for an experimental aircraft. Repairs, major or minor, can be done by anyone — remember Part 43.1 (b). However, alterations are different. If you alter the aircraft with a different propeller or engine, for example, then it is not the airplane for which you received an airworthiness certificate. This would also apply to changing pistons or magnetos. It is a new and untested airplane. If you change propellers, you must notify the FAA (not by a 337) of your change.

Your aircraft's operating limitations should have a statement such as the following in regard to major changes: *"The FAA Cognizant Flight Standards Office must be notified, and their response received in writing, prior to flying this aircraft after incorporating a major change as defined by FAR 21.93."*

If you do not have such a statement on your operating limitations, then you can claim you do not have to notify the FAA. However, EAA suggests that you do so even if you do not have this limitation.

The FAA inspector will make a determination as to whether he needs to come out and inspect the change and/or assign a new test-flight period. If the inspector gives you an OK by letter (which is often done), you should note the date, time, name, and change in your aircraft log book. If the inspector wants to inspect the aircraft, it is the same as when you first received your airworthiness certificate. You start all over. It is a new airplane. **This information is covered in the FAA ORDER 8130.2C paragraph 142 "Issuance Of Experimental Operating Limitations."** Every FAA inspector has a copy of this ORDER.

If the aircraft received its original airworthiness certificate based on the fact that the engine was certified and you alter it in any manner that would render it no longer within certification requirements, then you must notify the FAA of your change and receive an approval.

Look at it this way, you may use any combination of parts you wish to build your aircraft. However, once you receive your airworthiness certificate you cannot alter it without getting the FAA to reinspect the "new" aircraft.

ADs apply to all aircraft, aircraft assemblies and parts the AD is written against, no matter what type of aircraft they are installed in. The key to this statement is, *"that the AD is written against."* For example, if an AD is written against a particular make, model and serial number propeller, it only applies to that particular make model and serial number. It applies to that particular make model and serial number propeller no matter what aircraft it is installed on. Now this is where I complicate things. You, as an amateur builder, remove the data plate of that propeller, send it to the FAA, the FAA notifies the manufacturer, and you make it a Ross propeller model R1, serial number 001. Now the propeller is no longer the propeller listed in the AD, so it does not apply. The FAA may, however, issue a new AD against the Ross propeller model R1 serial number 001. To date the FAA has never done this, but they can.

If you install an electronic ignition system on a Lycomming engine, you are still responsible for ADs on other accessories on the engine and the engine itself if you have the component list on the AD on your engine. And, of course, if you haven't changed its designation to the Ross model R1 serial number 001. In general, you can say if your AC received its airworthiness certificate based on the fact it had a certified engine, then the ADs apply. If you received an airworthiness certificate based on the fact that your engine was not certified, then the ADs don't apply.

Isn't this fun?!

Now about who can do work on amateur-built aircraft. Anyone can normally work on an experimental aircraft and sign off the work, including your two-year-old son. Some FAA field inspectors do not believe this. Remember FAR Part 43.1(b) "This part does not apply to any aircraft for which an experimental airworthiness certificate has been issued." The operating limitations that each experimental aircraft must have are what replaces Part 43. Each set of operating limitations is different. However, an FAA inspector has the power to place a requirement in the operating limitations that all work must be done by an FAA certified A&P. So far to EAA's knowledge, this has never happened on an amateur built aircraft. Most operating limitations contain a statement that says an annual "condition" inspection must be performed per the scope and detail of FAR Part 43 Appendix D. It also states that an FAA certificated A&P or repairman must perform this inspection. Note it says, "A&P or Repairman." It does not require an IA.

Let me clarify this. Anyone can work on an experimental aircraft and sign off the work. However, the annual "condition" inspection must be completed by an A&P or a Repairman.

I hope this clarifies some of the confusion that is out there.

## It May Be Secret, Overlooked, Misunderstood or Ignored...

# BUT IT'S THE LAW!

BY FREDERIC E. ZIMRING

Secret regulations, secret laws — do they really exist? The FAA must publish Notices of Proposed Rule Making (NPRM) and allow public comment on these proposals prior to adopting most regulations. Congressional politics do not allow for secret laws. Although there are no truly secret laws or regulations, there certainly are obscure, ambiguous, hard-to-find, virtually unknown and/or ignored regulations and laws.

For example, recall the so-called Civil Penalty Demonstration Program adopted by Congress several years ago which gave the Federal Aviation Administration the power to assess civil penalties against airmen and others for violations of the Federal Aviation Regulations and establish their own rules of practice to adjudicate contested assessments. This law went virtually unnoticed by the aviation community until the FAA promulgated regulations which it intended to [illegible] the civil penalty assessment proceedings. The FAA maintained that the regulations it proposed were not subject to the requirements of public notice and public comment. A furor in the aviation community followed, complete with litigation and serious political activity. Ultimately Congress adopted a law which gave the FAA the power to assess civil penalties and gave airmen the right to appeal those assessments to the National Transportation Safety Board rather than through the FAA. We cannot reasonably say that the regulations and law involving the civil penalty assessment program were secret; however, they certainly went unnoticed for awhile.

Obviously all regulations are not known by everyone. One of my experiences with unknown regulations has to do with the annual inspection required on the ELT. In addition to the annual inspection **[FAR § 91.207(d)]**. Last year during a telephone conversation with an FAA Flight Standards District Office inspector, I inquired about the methods which might be used to perform the ELT annual inspection. I was quite surprised to learn that none of the inspectors in that particular office knew anything about that regulation or had even heard that there was an annual inspection requirement for an ELT. I was assured that the only item necessary to inspect on the ELT was the battery date. Secret regulation?

Another interesting regulation with which many people are not familiar is the regulation which requires notification to the FAA when an airman changes his permanent mailing address. Most people have the general idea that at some time or another the FAA should be notified of their new address. The regulation, **FAR § 61.60**, does not simply say notify the FAA when you change your permanent address.

The regulation **makes it illegal** to operate an aircraft using the certificate after 30 days have elapsed from a change of address **unless the FAA has been notified**. Conceivably, rather than the FAA merely bringing an enforcement action for a single regulatory violation, that is, failure to notify them of a change of address as one might expect, they could bring an enforcement action declaring each and every flight occurring after the 30-day period to be a separate violation. Secret regulation? No, just generally ignored.

While on the topic of change of address, there is an FAR which required notification of a change of address for the person to whom an aircraft is registered (**FAR § 47.45**).

Part 47 of the Federal Aviation Regulations is not a part with which pilots are ordinarily familiar. Obviously it is not a secret regulation, but it is just one of those regulations that we do not learn about in ground school. Speaking about learning regulations in ground school, we have all been taught that we must have an appropriate and current airworthiness certificate properly displayed and a current registration certificate in our airplane when operating the aircraft. I could find no regulation which mandated that the certificates be shown to an FAA inspector during a routine ramp inspection, except, of course, for air carrier and other "certified" operations. Congress adopted a law which requires that the registration certificate be made available for inspection upon the request of a federal, state, or local law enforcement officer. There is also a regulation "buried" in Part 21 of the Federal Aviation Regulations, a part which deals with the certification of products and parts under a heading of "Airworthiness Certificates" and the subheading of "Duration" which states:

"**§ 21.181(b)** — The owner, operator, or bailee of the aircraft shall, upon request, make it available for inspection by the Administrator."

At least one very knowledgeable aviation lawyer/writer interprets this regulation to say that upon request, the **airworthiness certificate (it)** must be made available to the FAA for inspection. Secret regulation? No, just well hidden and maybe a bit vague. Part 21 of the FARs is another part generally not mentioned in pilot ground school.

The FAA has other legal and regulatory devices available to them which gives them the power to inspect the certificates, such as issuing a subpoena under Part 13 of the FARs or reexamining the airworthiness of the aircraft. It makes lots of sense to be sure, in advance, that the airworthiness and registration certificates are proper so they can be shown to an inspector during a ramp inspection and avoid the inevitable confrontation and possible enforcement action in which the question of whether or not one is obligated to show those documents during the ramp inspection may be litigated.

It seems to be a common practice among private aircraft owners to wait until each annual inspection of their aircraft to comply with airworthiness directives (ADs). The fact is, however, many ADs require either immediate action or action within a specified time which will pre-date the time for the annual inspection. Delaying action on an airworthiness directive not only could be a violation of the regulations and subject one to legal enforcement action or a civil penalty, but it could, as well, present a serious situation from a safety standpoint.

Another regulation, which deals with returning an aircraft to service after maintenance, is often overlooked by private aircraft operators is **FAR § 91.407**.

Most people comply with section (a) of the regulation; however, it is this writer's experience that many people overlook § **91.407(b) and (c)**.

The lesson to be learned is that we should each take the time to periodically review the regulatory requirements of our particular type of flying. The flight review goes a long way toward accomplishing this goal. It is one thing to inadvertently get caught in a situation which raises questions of regulatory compliance. It is quite something else to get caught in a situation which we could have remedied while comfortably sitting in our living room or hangar.

*(Fred Zimring, EAA 322605, focuses his practice primarily on aviation, including defense of FAA enforcement actions and litigation. He is a member of the EAA Legal Advisory Council.)* ◆

## FAA FINALIZES PART 67 REVISIONS, RESPONDS TO AOPA AND PILOT INPUT

AOPA has commended the Federal Aviation Administration's final rule revising FAR Part 67 pilot medical certification regulations. The new rules, published in the *Federal Register* on March 19, will take effect on September 16.

"This time, the FAA listened to pilots," said AOPA President Phil Boyer. "The FAA withdrew the five most Draconian proposals that would have increased the cost of flying and forced many qualified pilots out of the cockpit."

Responding to a series of AOPA petitions, the FAA also extended the duration of a third class medical certificate to three years for pilots under 40.

Boyer said that the new medical standards are a step forward because the FAA responded to pilot concerns. "The FAA paid attention to the more than 5,000 comments filed by pilots and by aviation and medical groups," said Boyer. "Throughout the final rule document, the FAA cites those individual comments as reasons for withdrawing objectionable proposals."

Boyer said that the five most objectionable proposals withdrawn were:

**1. Annual physical for pilots age 70 and older.** The FAA dropped proposed annual third class physicals for pilots age 70 and older and created a two-tiered system centered on age 40. For pilots age 40 and older, a third class medical will remain valid for two years. But the duration of third class certificates for pilots younger than 40, will be three years.

**2. Second class ECG.** The FAA withdrew a proposed requirement for a resting electrocardiogram (ECG) annually for pilots over age 40 applying for a second class medical certificate. The FAA agreed with AOPA's analysis that ECG testing wouldn't significantly increase the chances of detecting heart conditions leading to in-flight incapacitation.

**3. Cholesterol testing.** Citing AOPA arguments, the FAA abandoned its proposal for cholesterol tests for first class applicants over age 50. That test would have added up to $100 to the cost of each first class exam.

**4. Blood pressure standards.** The FAA withdrew a proposed 150/95 blood pressure standard for all medical classes. In addition, the agency dropped the blood pressure standards currently specified for a first class medical. Responding to comments from the medical community, the FAA said that a specific blood pressure standard was unnecessary. The agency said that each pilot's medical condition and treatment will continue to be evaluated on an individual basis.

**5. The "catchall" phrase.** The Trojan Horse hidden within the FAA's proposal was a catchall phrase that gave the FAA unrestricted authority to disqualify any medical condition. Proposed changes each contained the statement that standards "include, but are not limited to" those listed. AOPA objected strongly, saying that the language was not constitutional. The FAA withdrew the catchall phrase.

"Those five proposals would have done great damage to our efforts to revitalize general aviation," said Boyer. "But because of the tremendous input from the aviation community, the FAA was forced to abandon these onerous rules."

For an analysis of the the new Part 67 medical certification rules, see "Jogging to a Different Medical Standard," p. 93.

An AOPA summary of the rulemaking is available through AvFax, AOPA's fax-on-demand service. Call 800/GO-AVFAX and select document 2210. The summary is also available on AOPA Online on CompuServe (Library: Medical Matters; filename: PART 67_1.txt).

QUESTION — I have problems with lead fouling of spark plugs. What can I, as a pilot, do about it?

ANSWER — Several things. See that you have the correct spark plugs that are recommended by the engine manufacturer's charts, not oddballs recommended by some well-meaning friend. Avoid prolonged idling on the ground. Avoid power off descents. Lean out at cruise; even on short cross-country flights. Rotate plugs from bottom to top every 50 hours — or 25 if necessary.

## Arrivederci, Mr. FCC: radio fees annulled

WASHINGTON, DC — Landmark telecommunications legislation signed by President Clinton on Feb. 8 is expected to deliver long-sought benefits for aircraft owners: abolishment of registration and associated fees for aircraft radios.

The legislation spells financial relief for aircraft owners, who were required to register radio equipment with the FCC every 10 years at $115 per transmitter, though protests reduced the fee in recent months to $75.

AOPA, which has lobbied Congress for years to allow the FCC to eliminate the registration requirements, finally struck pay dirt with a rider to highly publicized legislation that overhauls U.S. telecommunications law.

"In practical terms," AOPA President Phil Boyer said, "enforcement of proper aircraft radio installation and use is handled by the FAA, not the FCC."

Spokesman Drew Steketee said AOPA will now petition the FCC to repeal the fees.

"Soon, aircraft owners should be free of expensive and unnecessary FCC fees for registration of the radios in FAA-regulated airplanes," Steketee said.

# AIRWORTHINESS DIRECTIVE

REGULATORY SUPPORT DIVISION
P.O. BOX 26460
OKLAHOMA CITY, OKLAHOMA 73125-0460

U.S. Department
of Transportation
**Federal Aviation Administration**



**96-09-10 Textron Lycoming**: Amendment 39-9586. Docket 93-ANE-48. Supersedes AD 81-18-04 R2, Amendment 39-4395.

Applicability: Textron Lycoming O-235, O-290, O-320, IO-320, AIO-320, AEIO-320, LIO-320, O-340, O-360, IO-360, LIO-360, AIO-360, HO-360, HIO-360, LO-360, LIO-360, TIO-360, TO-360, LTO-360, VO-360, IVO-360, O-540, and IO-540 series reciprocating engines, except for the following models: O-320-H2AD, O-360-E1A6D, LO-360-E1A6D, TO-360-E1A6D, LTO-360-E1A6D, IO-540-P1A5, IO-540-R1A5, IO-540-S1A5, and O-540 and IO-540 series engines built with large capacity oil pumps and dual magnetos designated with "5D" in the model suffix; for example, IO-540-K1A5D. These engines are installed on but not limited to the following aircraft: various models of single and twin engine powered Cessna, Piper, Mooney, Beech, Gulfstream American, Maule, and Socata.

NOTE 1: This AD may not contain an exhaustive list of aircraft that utilize the affected engines because other aircraft may have an affected engine installed through, for example, approvals made by Supplemental Type Certificate, or FAA Form 337, "Major Repair and Alteration." It is the responsibility of each aircraft owner, operator, and person returning that aircraft to service to determine if that aircraft has an affected engine.

NOTE 2: This AD applies to each engine identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For engines that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must use the authority provided in paragraph (f) to request approval from the FAA. This approval may address either no action, if the current configuration eliminates the unsafe condition, or different actions necessary to address the unsafe condition described in this AD. Such a request should include an assessment of the effect of the changed configuration on the unsafe condition addressed by this AD. In no case does the presence of any modification, alteration, or repair remove any engine from the applicability of this AD.

Compliance: Required as indicated, unless accomplished previously.

To prevent oil pump failure due to impeller failure, which could result in an engine failure, accomplish the following:

(a) For Textron Lycoming Model HIO-360-D1A, -E1AD, -E1BD, and -F1AD engines with serial numbers (S/N) of L-22579-51A or prior, except for the following: S/N L-22311-51A through L-22313-51A, L-22396-51A, L-22397-51A, L-22416-51A, L-22546-51A through L-22549-51A, L-22563-51A, L-22568-51A through L-22571-51A; for Textron Lycoming Model HIO-360-D1A, -E1AD, -E1BD, and -F1AD engines that were overhauled in the field or remanufactured prior to April 1, 1981, regardless of S/N; and for engines listed by S/N in Textron Lycoming Service Bulletin (SB) No. 455D, dated January 2, 1987; accomplish the following:

(1) Replace the sintered iron oil pump impeller and shaft with a hardened steel impeller and shaft in accordance with Avco Lycoming Textron SB No. 454B, dated January 2, 1987, or Avco Lycoming Textron SB No. 455D, dated January 2, 1987, as applicable, or Textron Lycoming SB No. 524, dated September 1, 1995, within 25 hours time in service (TIS) after the effective date of this AD.

(2) No action is required if engines have complied with AD 81-18-04, 81-18-04 R1, or 81-18-04 R2, and have incorporated oil pumps with a hardened steel impeller and shaft. Engines that incorporate oil pumps fitted with an aluminum impeller and shaft must comply with paragraph (c) of this AD.

(b) For engines listed by S/N in Textron Lycoming SB No. 456F, dated February 8, 1993, or Textron Lycoming SB No. 524, dated September 1, 1995, that incorporate a sintered iron impeller, accomplish the following:

(1) Replace any sintered iron oil pump impeller and shaft with a hardened steel impeller and shaft in accordance with Textron Lycoming SB No. 456F, dated February 8, 1993, or Textron Lycoming SB No. 524, dated September 1, 1995, within 100 hours TIS after the effective date of this AD, or one year after the effective date of this AD, whichever occurs first. Total time on the sintered iron impeller must not exceed 2,000 hours TIS since new or overhaul, whichever occurs later

(2) No action is required if engines have complied with AD 81-18-04, 81-18-04 R1, or 81-18-04 R2, and have incorporated oil pumps with a hardened steel impeller and shaft. Engines that incorporate oil pumps fitted with an aluminum impeller and shaft must comply with paragraph (c) of this AD.

(c) For all other affected engines, replace any aluminum oil pump impeller and shaft assembly with a hardened steel impeller and shaft assembly in accordance with Avco Lycoming Textron SB No. 455D, dated January 2, 1987, or Textron Lycoming SB No. 456F, dated February 8, 1993, or Textron Lycoming SB No. 524, dated September 1, 1995, as applicable, as follows:

(1) Replace at next engine overhaul (not to exceed the hours specified, for the particular engine model, in Textron Lycoming Service Instruction 1009AJ, dated July 1, 1992), at next oil pump removal, or 5 years after the effective date of this AD, whichever occurs first.

(2) No action is required if engines have complied with AD 81-18-04, 81-18-04 R1, or 81-18-04 R2, and have incorporated oil pumps with a hardened steel impeller and shaft.

NOTE: Engines originally manufactured prior to 1970 did not incorporate sintered iron impellers. For further information, refer to engine maintenance/overhaul logbook records, Lycoming build records, and the following SB's provide additional guidance: Avco Lycoming Division SB No. 381C, dated November 7, 1975, and Avco Lycoming Textron SB No. 385C, dated October 3, 1975, describe a method for determining if the early design oil pump with aluminum/steel impellers are installed. Avco Lycoming SB No. 455A, dated August 18, 1981, and Textron Lycoming SB No. 455B, dated January 2, 1987, and Avco Lycoming SB No. 456, dated August 21, 1981, introduced steel driving impeller, P/N 60746, and aluminum driven impeller, P/N LW13775. Textron Lycoming SB No. 524 includes information regarding engines which may incorporate aluminum impellers.

(d) Engines that are subject to AD 75-08-09 must have incorporated AD 75-08-09 before this AD can be accomplished.

(e) Sintered iron and aluminum impellers approved under FAA Parts Manufacturer Approval (PMA) are replacements for affected part numbers of Lycoming impellers and must also be replaced in accordance with paragraphs (a), (b), or (c), as applicable, of this AD.

(f) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, New York Aircraft Certification Office. The request should be forwarded through an appropriate FAA Maintenance Inspector, who may add comments and then send it to the Manager, New York Aircraft Certification Office.

NOTE: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the New York Aircraft Certification Office.

(g) Special flight permits may be issued in accordance with sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the aircraft to a location where the requirements of this AD can be accomplished.

(h) The actions required by this AD shall be done in accordance with the following service bulletins:

| Document No. | Pages | Date |
|---|---|---|
| Avco Lycoming Division SB No. 381C | 1-4 | November 7, 1975 |
| Total pages: 4. | | |
| Avco Lycoming Textron SB No. 385C | 1-4 | October 3, 1975 |
| Supplement No. 1 | 1 | March 18, 1977 |
| Total pages: 5. | | |
| Avco Lycoming Textron SB No. 454B | 1-3 | January 2, 1987 |
| Total pages: 3. | | |
| Avco Lycoming Textron SB No. 455D | 1-3 | January 2, 1987 |
| Total pages: 3. | | |
| Textron Lycoming SB No. 456F | 1-3 | February 8, 1993 |
| Total pages: 3. | | |

| Document No. | Pages | Date |
|---|---|---|
| Textron Lycoming SB No. 524 | 1-3 | September 1, 1995 |
| Attachment | 1-4 | |
| Total pages: 9. | | |
| Textron Lycoming SI No. 1009AJ | 1-3 | July 1, 1992 |

May 20, 1996

Dave Baxter

I have enclosed a copy of an article from Sport Aerobatics, Volume 26-Number 4, April 1996. Before I installed a smoke system on my airplane I would have dismissed this article, open cockpit biplane with a carbon monoxide problem, get real!. After reading this article and reflecting back upon many hours of cross country flying I will not dismiss this article and recommend we all read it.

I finished my Starduster too in 1981 and have to date put 2614 hours on it. I have made seven trips to Oshkosh, one continued to Kitty Hawk, 8 trips to southeast Kansas, two to Mulege Mexico, three to Arlington Washington and many other short and long trips. I fly out of Livermore California, San Francisco Bay area. The following symptoms I am mentioning are not new.

The following is a list of things I have noticed and not paid enough attention to until now.

On cross country flights with some one in the front cockpit I seem to get tired easier, feel drained at the end of the day and after long trips, 6 to 8 hours flying in one day, or several days of 4 to 6 hours flying it takes me several days to get back to normal. I get symptoms similar to allergies and or the flu. I thought this was the open cockpit, wind and lots of sun. When I am by myself I always cover the front cockpit and have not noticed the aforementioned symptoms as bad.

In 1994 I added a smoke system. When I am alone with the front cockpit covered there is some smoke getting in, however it was not too bad. It changes with different attitudes. With the front cockpit open, with or without a person filling the seat, the smoke is very noticeable.

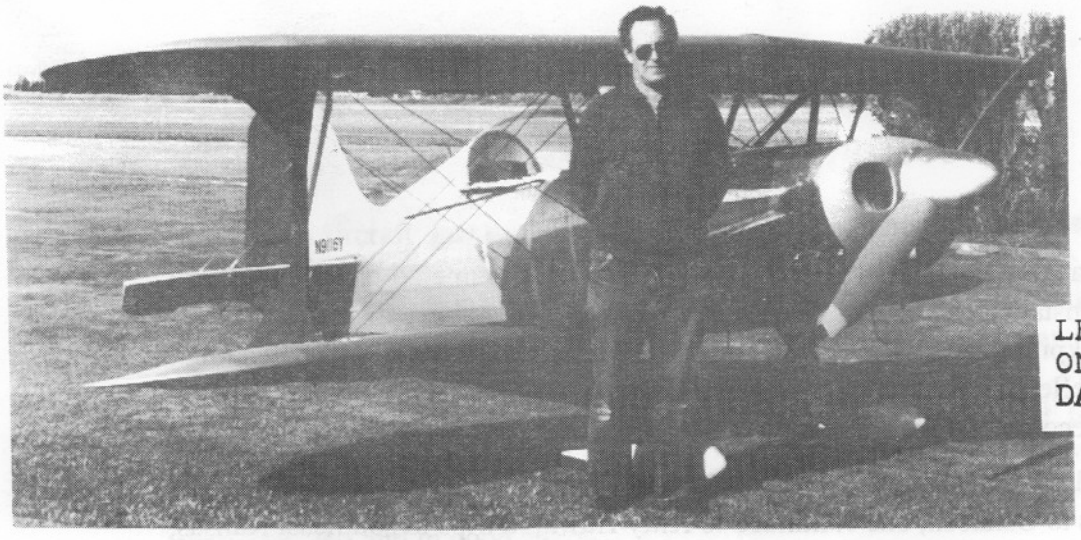
In case you are wondering how big the openings are in the bottom of my plane you need to know I have the bungee type Starduster landing gear. I have installed spring loaded doors on my landing gear, fairings at each opening and gap seals. It is not perfect, but I have seen lots of spring aluminum type landing gear planes with larger total landing gear related open area.

I believe this problem will vary for each airplane and occupancy. The location of exhaust systems, openings in fuselage and windshield design have to be a significant part of this problem

Hope this article will be of interest.

Starduster 4226Y & 9116Y

Les Homan,



LESs SUPER STARDUSTER ONE AT WILLOWs FOR DAWN PATROL 96

LES HOMANs N9116Y AT WILLOWs AIRPORT WITH N96576

N9116Y AT MERCED CALIF NOW PAINTED GREEN&YELLOW

# CARBON MONOXIDE: THE QUIET KILLER

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*By Joann Osterud, Osterud Aviation Airshows*

You've just landed after a long cross-country flight to a contest or airshow. It's been hot and bumpy. You got an early start. So, you attribute your extreme fatigue to the rigors of the flight and the noise of the airplane.

- You've been practicing hard for several days and feel like you might have a touch of the flu. You take a day off and feel better. But after the second flight on your next practice day, you feel the symptoms return.
- When you perform your airshow routine, unless you open the air vents you get smoke in the cockpit. During practice without smoke on a cold day, however, you keep the vents closed and are happy just to be warmer.
- You're on your way home in your open-cockpit airplane. It's early afternoon. The air is calm, the sun is warm and even the sound of the engine is soothing. Suddenly, you are startled awake to find the airplane in a steep diving turn. You slap your face and put your head around the windscreen to get some fresh air and clear the groggy sleepiness away.
- You finally arrive home after fighting weather for several days. You attribute your crankiness to the fact that you missed an important engagement and that you had to slow-fly most of the way because of reduced visibility.

Sound familiar? How about this?

- He'd flown all day towing gliders. On short final after one of the last tows, his approach was going well . . . His next awareness was of the hospital bed. He was lucky to survive.
- The helicopter pilot was on a rescue mission in Utah during the forest fires that plagued the summer of 1994. He crashed short of his destination, never reaching his target. The autopsy showed he died prior to impact.
- He flew to a family gathering. Upon return, he thought his pounding headaches and apparent fainting were symptoms of a dread disease. They were, but they were preventable and reversible.

All these scenarios were preventable. All are true stories. And all have one thing in common: carbon monoxide (CO). The dangers of carbon monoxide poisoning are elevated in airplanes: you can't just step outside if you feel bad. Sudden incapacitation usually has tragic results, and impaired judgment or lack of physical well being can have serious consequences, especially in an airshow or aerobatic contest environment.

Carbon monoxide poisoning is insidious. It's especially treacherous because you're not aware of its presence. Only a CO detector can alert you to its presence before you experience serious symptoms or death.

CO is the leading cause of accidental poisoning in the world. It causes at least 50 percent of all poisoning deaths. Each year, between 1500 and 2500 people in the U.S. alone die from CO poisoning. Another 10,000 suffer serious injuries. Nearly 20,000 have injuries from CO that require medical attention. And, countless thousands suffer long-term health problems and shortened life spans from CO exposure. Of those who die in fires, many are killed by CO, sometimes even before the smoke alarm goes off.

The similarity of symptoms of CO poisoning to many common illnesses often makes diagnosis difficult, especially as many are unaware of their exposure to this toxic gas.

***What is Carbon Monoxide?***

Carbon monoxide is an invisible, colorless, odorless, tasteless gas, slightly lighter than air. You can't see it, smell it or taste it. Your senses cannot detect it.

***Where Does CO Come From?***

Carbon monoxide is generally a product of incomplete combustion of organic fuels. When controlled combustion occurs, proper ventilation and exhaust control are required.

Some common sources of CO are automobiles, space heaters, gas and kerosene lanterns, furnaces, water heaters, kitchen and wood stoves, fireplaces, lawn mowers, grills, vapors from solvents, cigarette smoke and aircraft engines.

***Effects of Exposure***

Carbon monoxide enters the body via inhalation and has both direct and indirect toxic effects. It is a cumulative poison.

***How Toxic Is It?***

Carbon monoxide prevents the blood from carrying sufficient oxygen to the heart, brain and other vital organs. As a result, if produces hypoxia.

In the lungs. CO binds reversibly to the oxygen-carrying sites on hemoglobin molecules of the blood, forming carboxyhemoglobin (Cob), a relatively

## Clinical Manifestations of Carbon Monoxide

Death
Myocardial ischemia
(deficiency of blood to the heart)
Aggravation of angina pectoris
(heart pain)
Injury to the inner layers of the heart
Heart attack
Coma
Transient loss of consciousness
Convulsions
Stroke
Swelling of the brain
Damage to the cerebral cortex
Visual disturbances
Blindness
Cyanosis (blueness or lividity
of the skin from
inadequately-oxygenated blood)
Fluid in the lungs
Metabolic acidosis
Headache
Dizziness
Nausea
Vomiting
Confusion
Fatigue and tiredness
Behavioral changes, including
impaired time discrimination,
visual vigilance, visual discrimination and choice response
Short-term memory loss
Depression
Deterioration of personality
Syndromes related to lesions of the
basal ganglia
Delayed neurologic deterioration
Nerve damage

stable compound. CO has an affinity for hemoglobin 200-240 times greater than oxygen. The molecule thus formed is unavailable to carry oxygen.

Partial CO combination with hemoglobin causes tighter binding of oxygen to the molecule, further reducing the oxygen available for delivery to the body.

When oxygen availability is low, CO has a direct toxic effect by binding to myoglobin (the hemoglobin of muscles as opposed to the hemoglobin of blood) and to some respiratory enzymes, inhibiting their functions.

***What Are The Effects of Exposure?***

A syndrome of symptoms caused by chronic exposure — headaches, fatigue, chest pain, itching, palpitations, personality changes and visual disturbances — may be misdiagnosed as a virus or depression.

Other clinical effects of exposure to excess levels of CO may include increased risk of heart disease and damage to the fetus of an expectant mother. Low-level exposure can produce slow damage to the heart and brain without obvious symptoms. Toll-booth operators, tunnel workers, fire fighters and mechanics are particularly susceptible.

Carbon monoxide poisoning and the resulting tissue hypoxia causes multiple insults to the body, especially to the central nervous and cardiac systems. Symptoms and damage are usually transient. But with sufficient or chronic exposure, they may be permanent. High concentrations result in rapid death.

***Exposure Versus Time***

Symptoms and reactions to a given blood level of carboxyhemoglobin vary widely. Death may occur at between 33 and 60%. Anything over that is usually fatal.

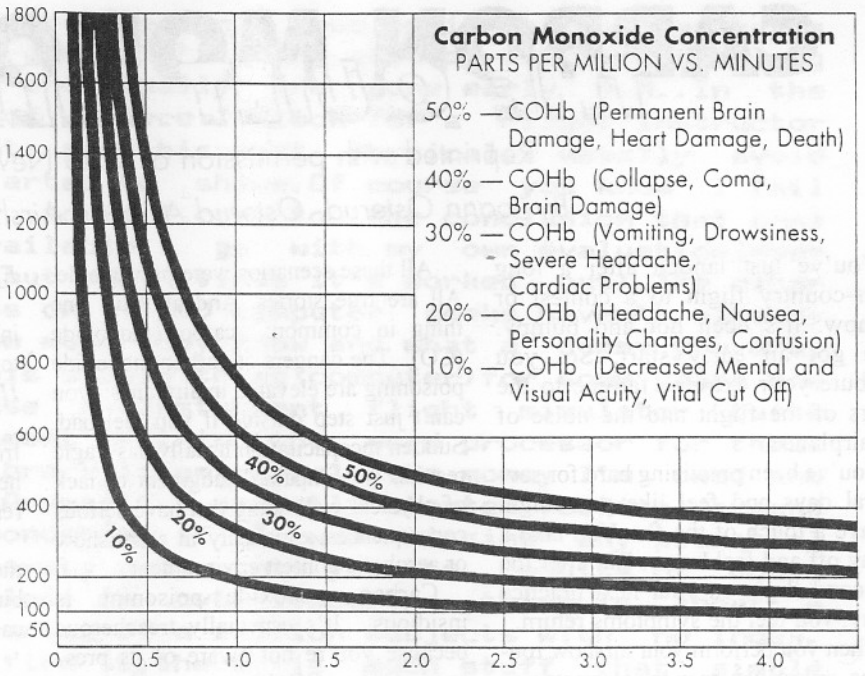
As shown in the graph to the right, 40% causes collapse and coma: over 25%, cardiac problems: smokers' blood usually contains between two and ten percent; non smokers, one to three percent, depending on their environment.

Clinical effects of exposure are aggravated by exertion, altitudes over 2000 feet, high temperature and alcohol consumption. Pre-existing heart disease and body size precipitate earlier symptoms: the smaller person, the less CO is required for adverse effects. Ten percent is considered the vital cutoff.

***What Is The Treatment for Exposure?***

Get fresh air! If you suspect you are being exposed to CO, get fresh air immediately.

The primary clinical treatment for CO poisoning is 100-percent oxygen or administration of pure oxygen in a decompression chamber.




*This graph demonstrates the relationship between atmospheric carbon monoxide concentration and exposure time leading to a carboxyhemoglobin (COHb)*

The half-life of CO, by breathing normal air, is approximately 5 1/2 hours. In other words, if you have a blood level of 20 percent CO, it will fall to 10 percent in 5 1/2 hours.

Besides fresh air, keep warm and eat or drink nothing. Mouth-to-mouth resuscitation may be necessary. Get medical attention even if recovery appears complete.

## Sources of CO in Aircraft

CO is produced by all aircraft engines and is properly vented out through the exhaust. Many factors can cause entry of CO into the cabin and cockpit, however resulting in extreme danger. A broken exhaust stack inside the heat muffler is a primary cause as is a malfunctioning gas heater.

There are many other ways CO can enter the cockpit of the specialized and experimental airplanes aerobatic pilots and air show performers fly.

The air flow around the aircraft can direct the exhaust along the skin and a low-pressure area can suck it inside. Entry through the tail and movement forward through the fuselage, with exit around the canopy, is highly possible.

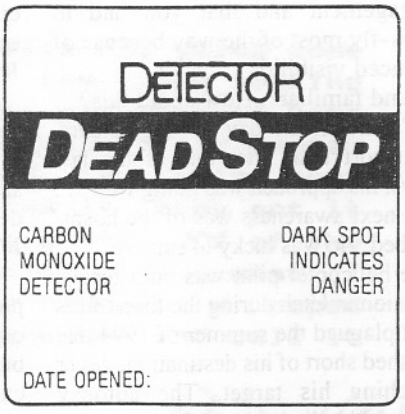
The cockpit is usually a low-pressure area, so even in an open-cockpit airplane, CO can be sucked into the pilot's breathing space. It can come in through a back seat or through holes, even minute ones, in the firewall.

Misplaced vents can also draw in CO. Some vents will work properly in cruise, but will permit entry of exhaust gas — and thus CO — during climbs, descents and slow flight. The amount of CO can be directly affected by changes in power and attitude and especially by the unusual attitudes of aerobatic flight.

Possibly the greatest danger we face as aerobatic pilots is not massive, sudden concentrations of CO, but constant low to medium-level exposure. This can lead to deteriorating performance before other, more pronounced symptoms occur.

***How to Protect Yourself***

There is only one way to determine




*Dead Stop, available in most pilot shops, costs no more than $10 and is a good first line of defense against CO poisoning. For detailed information, contact The Sims Co., 9432 Watson Industrial Park, St. Louis, MO 63126. Or call Bob Thomas at 800-548-2117.*

*This model CO - 50 C Detector (or other models) costs more, but it signals when the CO is gone. For more information, contact Industrial Test Equipment Co., Inc. at 21 Yennicock Avenue, Port Washington, NY 11050. Or call Jay Monroe or Loy Leung at 516-883-1700.*

whether you are being exposed to CO — a carbon monoxide detector.

There are several useful units out on the market. The purchase of one or several may be the wisest investment you could ever make.

Most pilots are familiar with the "Dead Stop," manufactured by the Sims Company. It's available in most pilot shops and FBO's.

Any change in color of the chemical disk means that you are being exposed to CO. It should be installed in your aircraft in several locations, preferably close to your face. Any change in color, especially rapid darkening, means immediate danger. This could be your first line of defense.

Industrial Test Equipment Company manufacturers a small electronic device, weighing only ounces, that beeps with a tone loud enough to hear even through the best headset, and flashes a red light to warn of the presence of 100 to 200 parts per million (ppm) of CO. Two-hundred ppm is a good level, as one can usually stay at that level for up to an hour before befuddlement sets in.

The advantage of this unit is that you can not only tell when you are being poisoned, you can determine when the presence of CO has left the cockpit. The Dead-Stop, on the other hand, takes up to 40 minutes in a CO-free atmosphere to return to its light color.

A Dead-Stop can be purchased for between $5 and $10 retail. The detector from Industrial runs about $250 and includes variable detection range, shipping and the wiring of your choice — hard-wire option or cigarette-lighter plug. I consider this to be the best investment I ever made in my aircraft. Mine is wired directly through a switch and fuse to the aircraft battery, and is velcroed along the canopy rail.

Industrial Test Equipment also has a small microprocessor unit available. It is more sophisticated and it's slightly more expensive. But it's not as prone to false alarms from other substances such as gasoline and some solvents. (Personally, I wouldn't mind such a false alarm).

You owe it to yourself, your passengers, your family, your show sponsors, and fellow competitors to protect yourself from CO — a silent, aggressive killer.

**Acknowledgments**

*I want to thank the Sims Company and Industrial Test Equipment Company representatives who helped with research for this article. Thanks, too, to Lee Nickols of Osterud Aviation, who holds a degree in environmental hazardous materials technology and provided special assistance. For a bibliography, data references, a list of additional sources and reading material or with questions, contact me at Osterud Aviation Airshows, 805-984-3933. I also like to hear any personal stories readers may have regarding exposure to add to my ongoing research into this quiet killer.*

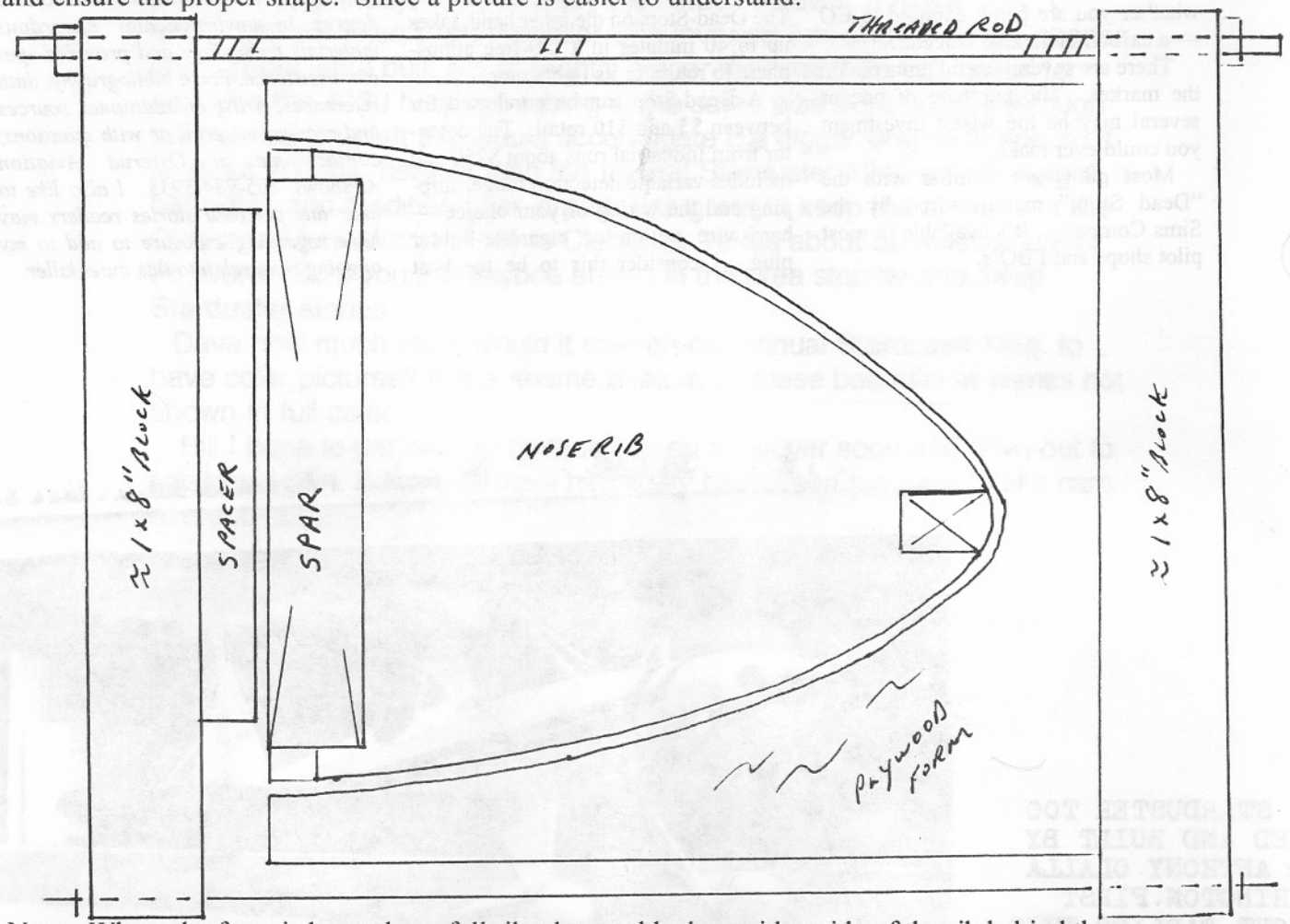
NEW STARDUSTER TOO OWNED AND BUILT BY BOB ANTHONY OLALLA WASHINGTON. FIRST FLIGHT EARLIER THIS YEAR N91184 IS YELLOW & BLACK GREAT JOB

Dave,

I'm finishing up applying leading edges to the wings so thought I would share my method. I have received so much useful information from back issues of the Starduster magazine I would like to give a little back. Please add comments as you see fit that would improve my procedure.

1. WHY WOOD ? I initially decided to use plywood leading edge because Bill recommended it. That should be enough, but I have been delighted with the resulting smoothness, consistency of shape and added strength.

2. JIGS/FORMS Trace the shape of your leading edge from backside of the spar on cardboard and cut that template out. Transfer to pieces of plywood (I used 1/2") and bandsaw out. You want to cut on a line that will allow for the actual shape of your nose ribs plus thickness of plywood and glue line. Glue the form to a 1" X 8" block. 1/4" threaded rod, washers and nuts will give you the clamping pressure you need to secure the plywood leading edge during gluing and ensure the proper shape. Since a picture is easier to understand:




Note: Where the form is located at a full rib, clamp a block on either side of the rib behind the spar for the threaded rod to pass through.

3. LEADING EDGE I use 1/16" birch plywood. Approx 48"X48" will yield about 8' of leading edge coverage. It will be apparent in which direction you want to bend it. Measure around the nose ribs from backside to backside of spar. For reference, mine came out at about 20 1/4" wide. You can cut to length now, or wait until formed on the wing and mark more accurately. More on this later. You will be using butt joints where the plywood meets over a nose rib. If you're very precise, you can make this joint work exactly on centerline of the nose rib or as I did, scab on a piece of scrap plywood the same shape which yields a wider rib.

4. INITIAL FORMING I found the plywood to be flexible enough that the only area that required encouragement to bend sharply was in the middle at the leading edge point. Laid a couple of wet towels on either side of the plywood, covering a width of approx 5". Two hours is more than enough. Line up one plywood edge with the backside of the spar and slowly bend around the nose ribs. Extra hands help a lot. Install the forms loosely. After most are installed in the middle and ends, go back and tighten the nuts, applying pressure to final shape. Hand tight is fine so you don't crush the plywood. Next time I'll use wingnuts also. Let this dry overnight. While drying, mark the location of cutouts and ribs. If you didn't cut to exact length, mark this now also.

5. PREP FOR INSTALL After removing the dry plywood from the forms, it will "relax" a bit. The result will not be the exact shape of the leading edge, but sufficient enough. Make your cutouts, cut to proper length and mark on the inside where the ribs will lie. You are going to varnish the inside of the plywood but not where the glue lines will be for the ribs, nail blocks between ribs and leading edge nose block. Masking tape works good to mask these areas off but a word of caution; too thin or too much varnish will "wick" under the tape and intrude into your areas to be glued.

6. INSTALL Spread glue (T-88 in my case) on the ribs, nail blocks and nose block. I also spread it on the inside of the plywood at the glue lines. Install the forms as in Step 4, but this time after the forms are all hand tight, I go back and tap on the forms to "seat" them and ensure the plywood is up against the rib. You will find you can get another turn or two from the nuts on the threaded rods. The plywood edges on the nail blocks can be tacked down with small nails (to be removed later) or C-clamps. The process is the same for lower and upper wings, except a paper template works best to get a good fit on the uppers due to the sweepback angle. In both cases, letting the plywood stick over the edge of the butt ribs is ok since it makes install easier and can be rasped/sanded flush later.

7. When you get to the last couple of rib bays at the wingtip, you are faced with compound curves. I had laminated the tip bows out of wood, so it worked well to break up the leading edge into 2 or 3 pieces at the end. I'm sure someone may have a neater way to do this and should share with the crowd.

8. Where the plywood ends and the rib shows itself on the backside of the spar, there will be a 1/16" step, the thickness of the plywood. I was told it was ok to sand these down to taper. I chose to install small triangular pieces of plywood at that juncture and taper those into the rib. Read an article in Starduster once about routing the nose ribs for that 1/16" difference.

9. Sand the joints smooth and however many coats of varnish you desire. I finish with a coat of Stits epoxy varnish since will be applying Stits covering. If anyone wants a better explanation of the above, call at ~~703 644 0434~~ 972 223 8834.



John Huie
~~Springfield VA~~

Thurs 6/20

Hi Dave.

Neil called me to say you wanted a picture of our N77AN. We'd be real pleased to have the picture in the Stardusters mag. It's amazing to me to see how few good photos we have of it other than the construction pictures. Hopefully we'll get a few of the EAA aerial photos (they promised us seven plus the negs).

We knew we had a pretty good airplane (Bill liked it), but it was really a thrill to see it on the cover of S.A. Also it was surprising to see how many long distance calls we got offering congratulations and requesting information. It's been lots of fun.

We're looking forward to seeing you and the rest of the gang at Wautoma, but unfortunately we don't think that N77AN will be there. It's an awful long trip for a couple of "chicken" pilots. We've made the trip a number of times in a 172 but we were a lot younger then. This will be our 26th consecutive year (since 1971) but we fly the big birds now.

Only 6 weeks till Wautoma/Oshkosh. How time flies.

(~~FLIES~~ OR FLYS?? OH WELL)

Al Jamieson
Reyngould / Jamieson N77AN
1406 LEE COURT
LAKE WORTH FL 33461
407-582-3143
407-683-6221

# 1995 Sun 'n Fun Awards

**HOMEBUILTS**

GRAND CHAMPION KIT BUILT
Bruce Chesnut, Ray Brown, London, KY
Glasair III, N51BC

GRAND CHAMPION PLANS BUILT
Al Tomlinson, Lake Worth, FL and Neil Reyngoudt, W. Palm Beach, FL
Starduster Too, N77AN

RESERVE GRAND CHAMPION
William Dunbar, Rineyville, KY
Glasair II, N465

BEST LOW WING
Craig Bair, McCool Junction, NE
RV-6, N150W

BEST METAL
Chris May, Owensboro, KY
RV-4, N595CM

BEST BIPLANE
Dan McCann, Mooresville, NC
Christen Eagle, N175DM

BEST COMPOSITE
Bob and Chris Young, Torrance, CA
Glasair III, N2388C

BEST WORKMANSHIP
Bill Johns, Osawatomie, KS
SX300, N350G

OUTSTANDING AIRCRAFT
Don Jones Knoxville, TN
VariEze, N300DS

George Linkis, Hickory Hills, IL
Mustang II, N13GL

Nat Mathieson, Daytona Beach, FL
Auriga, N100NM

BEST REPLICA
Jim Jenkins, Goshen, CT
Gee Bee E, NC8564

**LIGHTPLANES**

GRAND CHAMPION
John E. King, Jr., Warrenton, VA
Kitfox, N193JK

OUTSTANDING LIGHTPLANE
Joe B. McCawley, Orlando, FL
Challenger II CWS, N535PT

Larry Israel, Morrison, TN
Eros, N431TA

**ULTRALIGHT**

GRAND CHAMPION
Roger Chase, Poway, CA
Hornet

RESERVE GRAND CHAMPION
Ben Dawson, Zephyrhills, FL
Challenger II CWS

BEST OF TYPE, ASSEMBLY KIT
D. G. Williams, La Mirada, CA
Hurricane

BEST OF TYPE, MATERIAL KIT
Tom Tschantz, Navarre, OH
Ultrastar

BEST OF TYPE, PARA-WING
Chris Howard, Plymouth, IN
Buckeye Falcon 582

BEST OF TYPE, ANTIQUE
A. C. Cross, Groves, TX
Kolb Flyer

TECHNICAL INNOVATION
Jim Gordon, Noblesville, IN
Mitchell B-10J

CRAFTSMANSHIP
John Tritle, Greencastle, PA
Firestar

BEST COMMERCIAL
Robb McIntosh, Walton, ONT
Skywatch SS-11

**ROTORCRAFT**

BEST HELICOPTER
Ed DeRossi, Johnstown, NY
RotorWay Exec, N753ED

KENNY & JANE WARE
10181 HALAWA DR.
HUNTINGTON BEACH, CA.,92646
714-546-9758

DAVE BAXTER
5725 S. W. McEWAN RD.
LAKE OSWEGO, OR.,97035

DEAR DAVE,

ENCLOSED ARE A COUPLE OF PHOTOS OF OUR STARDUSTER TOO 311JK. FIRST FLIGHT WAS MARCH 29 WITH NONE OTHER THAN OUR PREZ BILL CLOUSE AT THE CONTROLS. HE LANDED ALMOST AN HOUR LATER WITH THE BIGGEST GRIN I HAVE EVER SEEN. HIS FIRST COMMENT WAS " YOU ARE GOING TO LOVE THIS AIRPLANE." HOW RIGHT HE WAS.

POWER IS A LYCOMING O360 A1G6 WITH A HARTZELL CS PROP. IT HAS A FULL CANOPY WHICH IS EASILY REMOVED FOR OPEN COCKPIT FLYING IF SO DESIRED. CANOPYS , INSTALLATION DRAWINGS AND INSTRUCTIONS ARE AVAILABLE FROM STARDUSTRER.

IT WAS GREAT VISITING WITH EVERYONE AT OROVILLE AND WE ARE LOOKING FORWARD TO WAUTOMA.

OUR BEST TO DONNA AND FAMILY. HOPE TO SEE YOU SOON.

KINDEST REGARDS,

Kenny & Jane

KENNY & JANE WARE

## LETTERS

Richard Fleming
874 Farley Road
Bensalem, PA 19020

5-29-96

Dave,

I am writing to request a copy of Starduster History. I had sent a check to Bill Clouse and he returned it to be forwarded to you.

I hope to be started by the time Oshkosh rolls around. If you are still going to be at Wautoma, I'll try and get over.

**********

David,

Thanks for the photos, I appreciate the ID's on the back. It must taken a while to write all the notes. I'm drowning in Stardusters. I got the Sport Aviation today with N77AN on the front cover from Sun & Fun. A nice job - clean, neat and pretty. I have all my aux fuel lines, nav wiring & pitot lines buried in the cabanes (it wasn't easy) as an aside - you need 12" N numbers to go to the Carribean and INTA & OUTA ADIZ's - I notice I'm in your book N11DM - Thanks.

We have a flying SD300 near Aurora NY, owned by Wolfgang Buergel. It was built by Earl Leverante of N.Tonawanda. He didn't fly it much, and looped it and did some minor rear fuselage damage. He retired and went to Tennesse. He removed the engine and gave it to Wolf. Wolf put a 150 Tri-pacer engine in it and flys regularly. Wolf, Earl and I all started SD300's in 1969-70. Wolf's origianl remains unfinished.

We also have Max Bennett's Starduster II (ex-California) and Bob Hammond's Acroduster II iin the area, plus lots of RV-6's under construction. One's been flying for three years. I'm at the Akron Airport - nice quiet paved 3,400 ft strip, stop in.

DAVE MILLIKAN N11DM
94 GOLDEN POND ESTATES
AKRON NY 14001

DEAR DAVID,

THANKS FOR SENDING OUT A COPY OF S/D HISTORY TO ME IN SUCH A TIMELY MANNER. IT WAS INDEED A SURPRISE!, SEEING AS HOW MANY FOLKS WON'T SEND YOU THEIR CATOLOGUES OR FLYERS WITHOUT SEEING THEIR 3 BUCKS FIRST!

I WOULD LIKE TO CONTRIBUTE TO THE MAGAZINE, BUT AS I'M BUILDING FROM PLANS ONLY, I DON'T HAVE MUCH TO SHOW FOR ALL MY EFFORT. UNLESS YOU WANT A PHOTO OF HALF A STACK OF RIBS! I WILL KEEP YOU POSTED OF MY PROGRESS IN THE FUTURE. THE PHOTOS YOU SENT WERE GREAT. YOU HAVE A BEATIFUL PLANE AND I HOPE TO MEET YOU AND SEE IT UP CLOSE SOMETIME. I'VE ONLY SEEN ONE OTHER S/D, AND IMEDIATELY FELL IN LOVE WITH IT.

P.S. IF I'M IN THE AREA, I'LL STOP IN AND SAY HI! LIKE MAYBE AROUND FATHERS DAY!

PLEASE FIND ENCLOSED $29.95

THANKS AGAIN

ROY A. WHITE
44 CHERRY ST.
NILES, OHIO 44446

9 Laurel Lane
Princeton,Ma.01541
508-464-2957
Airport,Gardner,Ma.
(GDM)

Dear Bill,

Just a note and picture of our 6 yr.StarDuster II restoration project.When I purchased the project it was recovered through 8 coates of silver with a fresh chrome major on a HIO-360-BlA engine upgrade.

My son and I bought the project in Jan.of 1990 and planned to fly it to Oshkosh "that summer".Oh well live and learn.I did however enjoy the many design challenges and rewards of the project, I am well pleased with the effort expended and it's out come.

We test flew N8172 this past June, but the debug process eventually took most of the summer.We experienced two very unexpected fuel starvation incidents. The first one was on down wind during my first 30 minute solo flight. The engine lost power after power reduction to 1500 rpm. on down wind, I remenbered that I had switched to the wing tank for taxi on the previous landing,so I switched to the main tank and regained power.

The next incident came two flights,and three days later under much the same condition's,power reduction on down wind. This time I was on the main tank ( not sure about boost pump,on or off) I checked the mixture and gave it full throttle with no response. I looked at my position,10% down wind runway and thought to myself, how am I going to get down there ???? ( we only have a 3000 Ft.N-S runway )I keyed the mike,told them I had lost power and was coming in. I continued down wind hoping the engine might regain power as it had the first time but it didn't. I knew that I would not be able to complete the downwind leg.(5.8 hrs. of dule and 1.4 hrs of solo convinced me of this inpossibility,so I turned toward the field noting in the turn that my air speed was down to slow approach.(my previous approaches had been fast and I was working at trying to feel comfortable at slower approach speeds) I tried to turn as much as possible to align with the runway but I finally had to stop as I was so low I knew I would catch a wing,so I just landed 45 degrees cross to the runway and kicked it up the runway.It rolled about 200ft. to mid runway.

The guys at the hanger were watching as they had heard my radio call."Best Landing" they had seen me make to date was their comment.

The thing that impressed me about the experience was the way the aircraft flew, it came down fast as I knew it would,but it responded to my every touch.All I did was fly it."NEVER NEVER forget to fly the airplane".

Well, by now you are all wondering what my fuel problem was.I called the fuel injector rebuilder and performed a battery of test he recommended.I found the fuel system to be within limits, however the boost pump was on the weak side and I had used only 3/16 vs.1/4 vent lines. He also suggested a bleed return from the injector to the main tank using a .040 orfice to provide cooling to the fuel system.

I was still not comfortable that I understood the problem untill I read the article on Fuel System Vapor Lock in the OCT.1995 issue of Sport Aviation.This article explained my problem to a "T". Vapor lock at the inlet to the mech.fuel pump when reducing power.

I called Bill Clouse to confirm a purposed fuel system redesign (schematic inclosed ) made the changes and have not been able to reproduce the vapor lock problem.

I have purchased two snow mobile suits which are very comfortable for flying in our cold New England climate. I am looking forward to giving our StarDuster II it's next flying lesson as soon as the ice and snow clears from the runway.

Hope to see you and the StarDuster folks at OSHKOSH 96. It's been a long time getting the StarDuster ready for OSHKOSH, but worth it.

Seasons greetings and God Bless.

George Beckner and son Russ Beckner

P.S. Subsuquence flights have proven that the wing tank should ONLY BE USED DURING LEVEL STABLE FLIGHT.Descent of 10-15 degrees with 5 -7 gal. of fuel in the wing tank will produce fuel starvation. This most likely accounts for my first engine failure.


N11GY OWNED BY ALAN YOUNG
OF GODLEY TEXAS

N8172 REBUILT BY GEORGE AND RUSS
BECKNER OF PRINCETON MAINE

2/16/96

Dear Mr. Bill Clouse and Mr Dave Baxter:

Well, I am finally writing you after a year or so of procrastinating. Sorry to hear that you are selling The Starduster Corp. I wish I could find a way to buy it and move it to Texas, I think it would be great. I also hope who ever purchases the Corp. promotes and supports the Starduster like you have all these years! Nice Job!!

While in Rockford in 1968 and 1969 my Dad fell in love with the Starduster Too. So began the process of buying the plans and building Serial Number 366 N11GY which he finished in March 1972 and it has been flying ever since. It was also the first airplane I soloed in Nov. 1977 on my 16th birthday. We still enjoy it as much as ever. It has a Cont. O-470J 225 HP fixed pitch propeller with inverted fuel and oil. The Cabanes and I struts were built out of slightly bigger material than Lou called for and also the 4130 fusalage tubing is the same size from firewall through the tail. My Dad felt this would accomodate the bigger engine better, so it is about 200 lbs. heavier than the normal Starduster 1240 empty weight. It has lights and modified gear, it performs great!! I keep the airplane at the Cleburne Muni Airport (F18) in Cleburne, Texas about 30 miles south of Ft. Worth. So if you are anyone else is in the area stop by and swap Starduster stories.

Dave how much more would it cost on our annual Starduster Mag. to have color pictures? It is a shame to have all these beautiful airplanes not shown in full color.

Bill I hope to get back to Ontario Ca. on a layover soon and drive out to see you again, the ones I have had lately have been too short. Take care see you soon.

Good Luck and Happy Flying!!

Alan Young
P.O.Box 316
Godley, Tx. 76044
817-389-2055

Bill Kolb
RD 2, Box 48D
Canaan NH 03741

May 10, 1996

Dave Baxter
5725 S.W. McEwan Rd.
Lake Oswego, OR 97035

My dearest David,

I've been meaning to write you for almost a year now and for one reason or another just haven't been able to get to it. Well today's a lousy miserable one and I haven't got the ambition to do much of anything, so! This is going to be pretty rambling because I'm writing while thinking and I'm not much good at either.

Thanks to you and Dan for the Mike cover,and the latest photo those I can use more of.Forgot to send money for renewal check enclosed,didn't get first one this year or later if there was one. Saw Phil's which is what reminded me.Re that issue,I now have the O-360 nose weight you referred too,how soever its for a wide flange case so I couldn't even try it without more work than I wanted. I'd sell it for what I paid for it $100, if the guy really wants to try it,weight is about 75# and should bolt right to a wide flg case.I saw and looked at quite closely the super Duster of ?(had to go find my notes) Dick Heath in Phoenix (more on that later)It's a real nice looking ac not a show piece but a well built well maintained one. Dick was flying it quite a lot in competition and I understand usually did well. It looks like it might be a hand full but I cant remember if I asked him about that(memory is the second thing to go when you get a bit older than you are now).Lots of Dusters in the Phoenix valley I guess I saw about 8 or 10 and heard about more that I didn't see. I did a annual for Titus ? N8232R nice airplane, he takes good care of it.

OK I took a break and now I'm back at this ?. I did want to comment ages ago on a complimentary note of yours re our advantura back from Oshkosh. While it's quite true that I don't spend much time consulting with locals theirs more than ego involved. I've spent quite a few years at my local aerodromes where I know the scoop ??, listening (off in a corner), to a student pilot presenting himself as the ACE of the base to some unwitting transit and being quite convincing. Consequently when in Indian country I don't place much stock in what I hear unless I know the credentials of the talker.Usually I search out a UPS or FEDEX driver who fly in and out whatever place every day good weather and bad and more often than not are the source of some

pretty accurate local dope.The only problem is that these guy's do this for a living and don't hang around the airport long after they off load and usually are gone early A.M..In the absence of that kind of source I look for a Flight Instructor who looks like he wont pass his next physical.I usually avoid the one who just started to shave.Of course you know I fail miserably at diplomacy so if I come to the conclusion that none of the above are available I go with my own evaluation(many times terribly wrong but many times it's worked out).The other thing I wanted to pass on if 100 computer geeks haven't already astounded you as to how much they know and what a dummy you are, is I've been using this stupid thing(computer)for some years now in my business?.I use a Instrument flight simulator quite extensively for instrument training,the word processor for these ramblings,as my AD library,inventory,all the money I'm owed and hope to collect etc.. Anyway's I recently started fooling around with the internet wondering if I was missing any potential revenue sources and hereby pass onto you the results of hours and hours of being lost in cyberspace.The thing is about a zillion humongous libraries of a zillion subjects with no index. HOWEVER if you can find it,there is much stuff that simple people like us can find quite useful. E Mail has already saved me a bundle in phone calls.There is all kinds of aviation "stuff" from the idiot who will tell you all you need to know on how to make a brick fly to people like Eric Shilling whose flown them. In fact how I ran across Eric (who I thought had long since gone to the great ATC controller above[he must be well into his eighty's] was looking for any Starduster stuff and found him responding to somebody looking for steel tubing and referring him to Bill Klaus(boy does he hate it if you use that pronunciation).I've enclosed a summary sheet of S.D. mentions from one source in about a years time. I've also included some of the detail postings(that's what there called)You'll see YOU got mentioned twice.In the for sale places I've seen 3 or 4 Dusters for sale and that's about it.(or what I've found).If you could get one of our S.D. avicados with lots of time(not me!)to start a home page for S.D. I think it could be quite worthwhile from the continuation of the line standpoint and might be beneficial to AUGMENT the mag.So much for that.

I worked in Arizona this winter for a medium size FBO doing some IA work and test flying.On weekends I toured the state looking for S.D.'s and general aviation interests. Lots and lots of home built activity,but these guys know how to live,half their hangar is for their airplane and the other half is their home away,refrigerators,tv's,air conditioners you name it they got it including LIVE nose art.The Phoenix valley is where 90% of the activity is.But I couldn't take the pollution and from what I found I wouldn't be caught dead there in the summer.I'm puped and going to run this book thru the spelling checker and call it a night.

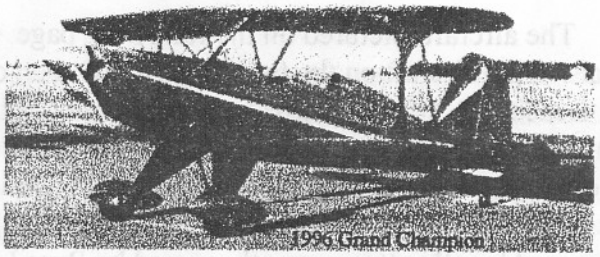
Keep the shiny side up!

Bully Bob

PS DO YOU OR DAN HAVE A E-MAIL ADDRESS? MINE IS WICOBILL@ENDOR.COM

# E A A Chapter 1112
## City Of Gold

Dix Mackey Pres.
Howard Fairbanks V.P.
227 Chuck Yeager Way
Oroville Ca. 95966
(916) 532-0919




May 12, 1996

Bill Clouse
Stolp Starduster Corp.
4301 Twining
Riverside, CA 92509

Dear Bill,

We were pleased to host the Starduster Open House May 3-5, 1996, at the Oroville Airport and to meet you personally. Your generosity in providing plane rides and allowing our chapter to profit by the sale of some golf and tee shirts was greatly appreciated.

It was a great weekend sharing with all the pilots and friends and we invite you to return to Oroville for your open house next year!

Sincerely,

Howard T. Fairbanks
Event Chairman

# Starduster History
# Out of the Past 1974-1975

The aircraft pictured on the following page are historical aircraft in many respects. The aircraft on the far left is N5464 then owned and built by Chuck Tyler of Long Beach, CA. Chuck was a tower controller at Long Beach and admired Morgan (Bud) Schracks Starduster Too N5461 so much that he built almost an identical twin to it. Morgan did however help him during the construction of N5464. The airplane was sold several times over the years and was owned by Bill Young, E. B. Marble, and also by Maynard Ingalls. It is currently owned by Russ Lawson of Fox Point, WI. I had the pleasure of flying with Russ at Astoria , OR and later at Wautoma, WI. The airplane is alive and well and in good hands.

The middle airplane is N5462 the first prototype Acroduster Too built, it was originality conceived by Morgan (Bud) Schrack and was called a super Starduster Too Bud had been after Lou Stolp to design an aerobatic version of the Starduster Too for several years. Lou did some preliminary construction drawings and when he sold the company to Jim Osburne he turned the project over to him. Jim is the one credited with the finished drawings and the performance design goal for the Acroduster Too. He was also a great promoter of the airplane. The problem with the Acroduster Too is most are homebuilt and are heavy, and most are not flown by competition aerobatic pilots, it is my feeling that if one was built for competition (I.E) very light and flown by and aggressive IAC pilot it could be Competitive through the advanced category in IAC competition. As for N5462 it is currently owned by Leland B. Vanoss of Nashua NH. I have not heard about this airplane for many years. It was however owned and flown at several airshows during the late 1970's by Allen Campbell of Stockbridge GA., and as far as I know it is still alive and well.

The aircraft on the far right is N1181J the prototype Acroduster One designed, owned and built by Jim Osborne President of Starduster Corp. At the time it was featured in Sport Aviation during the early 1970's and Ralph Rina was the test pilot for that featured article. It also was going to compete in IAC at the time , but Mike Heuer had a forced landing damaging the aircraft so it was unable to compete at Fond Du Lac, WI. Later at Corona, CA. In early 1976 Manx Kelly lost his life in this airplane during an airshow performance. He apparently pulled the tail off during a dive and hard pull, the aircraft was estimated to be going at least 100 MPH over the design VNE at the time of the accident. Manx made the mistake of over confidence in that he thought the airplane was indestructible. This airplane was never rebuilt., But the Acroduster One still lives on and plans are still available. The airplane had one distinction in being one of the first homebuilt airplanes to be offered in a complete kit form this was prior to the Christian Eagle. It is also my belief that this airplane in capable hands would be every bit as capable as any Pitts.

The pilots appearing in this picture are from left to right Chuck Tyler N5464, Morgan (Bud) Schrack N5462 and Jim Osborne N181J

DCB Starduster History

EXPERIMENTAL

# STARDUSTER OPEN HOUSE
# OROVILLE 1996

My wife Donna and I left around 6:00 p.m., Friday the 26th of April. The weather was good, but very cold between Eugene and Medford. Altitudes from 3,500' to 5,500' with some scattered layers broken to overcast, this certainly helped to keep the temperature down. Again we had an overnighter with our good friends Jim & Jean Patterson. The next morning flight service had sigmets for moderate to severe turbulence with high winds. This forecast was good down into southern California, so we left with this in mind. It was still very cold at 7,500', around 30 degrees. But it didn't feel as cold as it had been Friday evening due to clear skies and sun.

Our trip to Oroville was quicker than usual, due to a 25 knot tail wind that we picked up just south of Mt. Shasta. Our landing at Oroville was uneventful, even with a good 20 knot wind on the surface, it was however right down the runway.

We were of course a week early, but I had called Howard Fairbanks to advise him that we would be there Saturday. We taxied up and tied down at Dix Mackey's Aero Specialty hanger. The usual conversation regarding the flight down and the preparation for the Open House by Howard and Karolyn Fairbanks as well as the effort of their EAA Chapter 1112 were the topic of conversation when Howard picked us up. We were treated to pizza and refreshments at John & Sue Fenrich's house overlooking the lake. John is the publisher of the local newspaper. Both he and his wife were gracious hosts. Howard and I discussed some details regarding the fly-in, and as near as I could tell, everything seem well taken care of.

The next morning, after an enjoyable breakfast, we were on our way to the Bay area to visit our eldest daughter and her family. There were no flight precautions, off midmorning, around the buttes, some skydiving at Yolo County, a quick squawk with Travis approach just north of Nut Tree, turned loose just north of Mt. Diablo. It was here that I decided to take a little side trip to overlook Byron, a place I had never landed at, but had planned to later in the week.

My good friend Les Homan is now based here. He is the owner of the first plans built Super Starduster One. So with the airport layout in my head and after dodging more skydivers, we were on our way to San Carlos. This airport is always interesting to land at. You normally enter between Oakland and San Jose Class C Airspace and end up at or below 1,500 feet mid Bay, which is the floor of San Francisco's Class B airspace. This puts you on a modified right base for SQL's, runway 30, it is normally a busy place with a short runway and three of the windsocks pointing in different directions. But, once again our landing was uneventful.

We spent several enjoyable days at daughter Debbie's house, and on a Monday morning I was able to fly down to Gilroy, California to visit with, and inspect Richard Heredia's Acroduster Too project, and later was able to fly over and visit with George Haggerman, who had just moved his almost finished Starduster Too out to the Livermore Airport. It is always wonderful to visit and inspect these airplanes. Both of these airplanes are exceptional in craftmanship and detail.

Tuesday, we were able to take our Grandson Matt's preschool class to the airport for a sack lunch and field trip. Each of Matt's little classmates got to stand in grandpa's airplane and wear the helmet and headphones while they got their picture taken.

Wednesday evening, I received a phone call from Mike Mattei, he informed me that both he and Wayne Ensey had arrived in Oroville earlier in the day, at first I thought he was joking, but due to uncertain weather they decided to leave early for fear of not getting out all together. I then called Les Homan where I had planned on staying Thursday night, to let him know that Mike and Wayne were in Oroville. Les and I then decided to leave Thursday afternoon and join them. Our flight from San Carlos to Byron was uneventful. I got to check Les's new Super Starduster One out and take some pictures, we then left as a flight of two. But soon split up, as his airplane is so much faster than mine. The weather was clear and good. When we landed that Thursday evening and taxied up to park, we became the fourth airplane of the early arrivals to the Oroville Starduster Open House.

Friday morning, May 3rd, found us at the airport for the usual wait for arriving airplanes parking and registration. John Fenrich wanted some pictures for the local paper, so Les Homan, Wayne Ensey and Mike Mattei agreed to fly some formation out over the lake, and I was able to fly the photographer. As you are probably well aware, this can get pretty interesting. However, we were able to get some decent shots, one of which made the cover of Saturday mornings Mercury-Register. These pictures were taken by David Neilsen photographer for the paper. Unfortunately, when they printed them, Mike's airplane was not in the picture they published.

During our absence more airplanes and people arrived. Glen & Loretta Olsen from Salt Lake, Larry Rydberg from Albq.NM, Bill Clouse, Brenda Beck and Kenny & Jane Ware from Fla-Bob. Later that evening, the early arrivals were treated to a spaghetti dinner that was hosted by the EAA chapter 1112, most of us wanted to get to bed early so that we would be able to depart the next morning for the dawn patrol breakfast flight to Willows Airport Restaurant.


**Grand Champion**

Sam Davis is the builder, pilot and owner of this beautiful aircraft. The power plant is an IO-360 and the airfoil section is a 300X which is almost symmetrical for good inverted flight performance. Sam built the plane over a 17 year span in Southern California and bases it at Chino. This was the second public showing of this aircraft. Sam flew it to El Toro the previous week.

There were some good natured complaints about getting up in the middle of the night, but those who said they would go did so. The flight over was just after dawn. Mike Mattei got stuck upside down while doing a slow roll for Glen Olsen's camera. Before you knew it we were in the pattern at Willows Boy it was the fastest 45 miles I can remember traveling in a long time. It was very beautiful that morning in Northern California. After breakfast, most of us fueled up. Then we got everyone who attended the Dawn Patrol to gather in front of Les's little Super Starduster for a group picture. However, his airplane is so small that hardly any of it showed up in the picture. We had 12 airplanes go on the Dawn Patrol excursion. On the flight back most flew over the lake. Those who did not attend the Dawn Patrol trip were able to have breakfast at the airport, this was also hosted by EAA chapter 1112. Jim Causey, the air boss, had been asking pilots to give rides to the Civil Air patrol personnel as they provided security and parking for our Open House. Larry Rydberg, a non-military type, would not give any of the young people rides in his Starduster if they kept calling him sir. He was also teaching them how to do the manual of arms by the Bill Murray Stripes movie method. This was a serious breech of military discipline. But it was also very entertaining watching a group of them do the Do Wa Ditty Ditty Dum Ditty Do, much to the chagrin of their commanders. Many of the Starduster pilots gave rides, not only to the cadets, but to many other enthusiasts. I myself gave 19 rides during my stay there.

The house boat tour became the surprise sleeper event. It was originally intended for wives who did not want to stay around the airport all day. It was suppose to be something of interest for them to do, but quickly escalated into a very popular event. The tour of the lake and the refreshments were very enjoyable.

Those that didn't go really missed a wonderful opportunity. We were entertained by Larry Rydberg, Mike Mattei and Lee McGee playing a banjo, guitars and singing. I really had no idea how big and beautiful Lake Oroville was with over 126 miles of shoreline. I certainly hope we will be able to do this again next year.

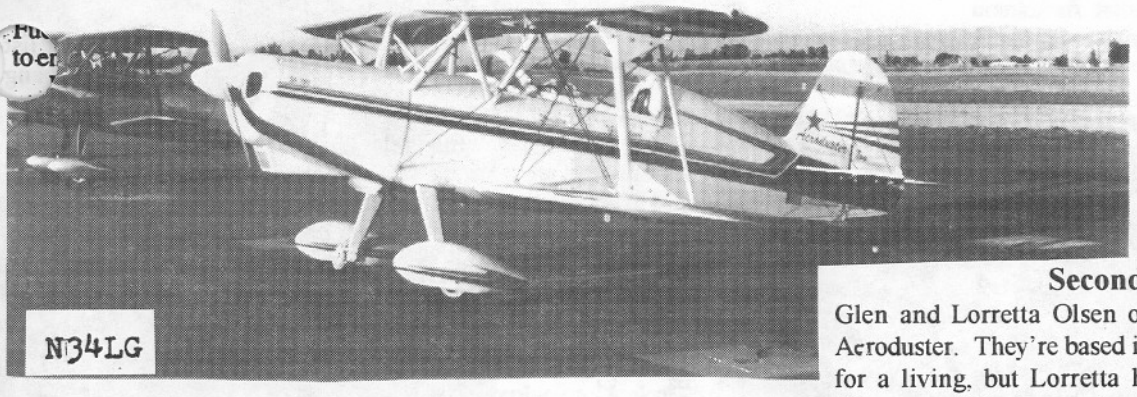
Later that evening we had dinner and the awards banquet at the Table Top Tavern. The visiting and camaraderie at these events is the most rewarding and enjoyable experience a Starduster enthusiast can imagine. There were a number of people attending from EAA chapter 1112. The awards ceremony was hosted by Bill Clouse.

The following is a list of the awards given.

| | | | | |
|---|---|---|---|---|
| Grand Champion | N476BC | Sam Davis | Chino, CA | SDII |
| First Place | N5317Q | Harv Newman | Walnut, CA | SDII |
| Second Place | N34LG | Glen Olsen | Sandy, UT | ACROII |
| Third Place | N80NM | Jeff Chambliss | Byron,CA | SDII |
| True Grit | N311JK | Kenny Ware | Huntington Beach, CA | SDII |
| Longest Distance | N530LR | Larry Rydberg | Albuquerque, NM | SDII |


### First Place

Harv Newman is pilot and proud owner of this fine machine. Harv has it based at Bracket Field in LaVerne, California. In flying to and from Oroville, he was accompanied by a C-182 with Bob Phillips, builder of N5317Q, and Hank Schmel, featured speaker at the Awards Banquet, on board. Congratulations to all three of these gentleman for helping to make the gathering of Stardusters such a success.

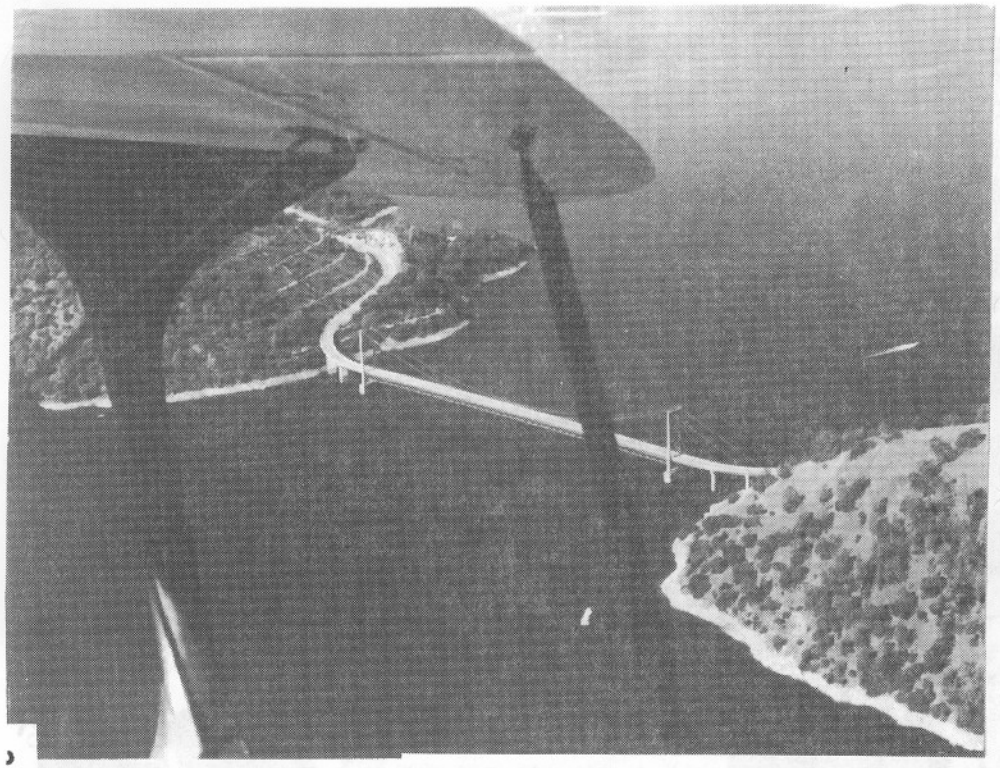



### Second Place

Glen and Lorretta Olsen own this outstanding white Acroduster. They're based in Salt Lake City. Glen flies for a living, but Lorretta has some problem with air sickness. Yet she was brave enough to come all this way. Hope there was smooth air all the way home. They especially enjoyed the houseboat cruise on Lake Oroville. Glen said as they were leaving, "You Californians really know how to entertain". We're glad you enjoyed - come back next year!


### Third Place

J[illegible]hambliss comes out of Livermore, California w[illegible] he keeps his beautiful Starduster - a goin' machine - and where he has a business nearby called *California Gyros & Instruments.* His aircraft has 300 horses and one of the prettiest 3-blade props this reporter has ever seen. Congratulations Jeff.



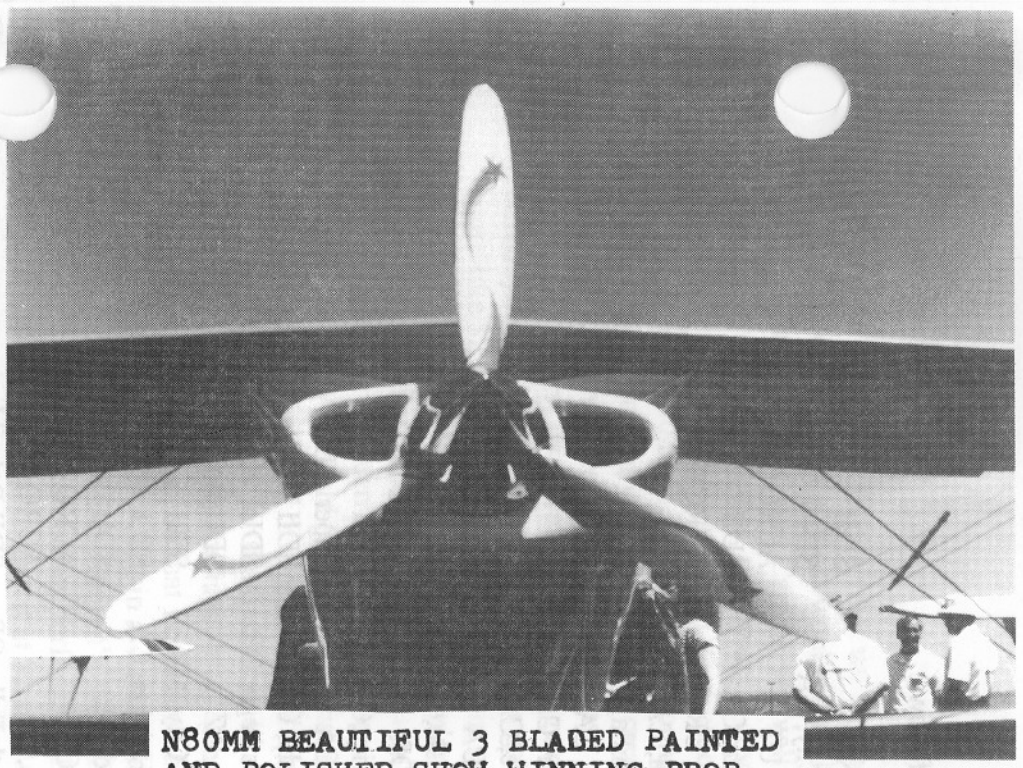
LAKE OROVILLE BRIDGE FROM N96576


JIM CAUSEYs FOLLOW ME TO PARKING SIGN

AIR TO AIR PHOTOs OVER THE LAKE L TO R
N8021B MIKE MATTEIs ACRO II,N9116Y
LES HOMANS SUPER S/D I AND N94WE
WAYNE ENSEY

DAWN PATROL PILOTS IN FRONT OF N9116Y

EARLY ARRIVALS N94WE, N8021B, N9116Y N AND N96576



N80MM BEAUTIFUL 3 BLADED PAINTED AND POLISHED SHOW WINNING PROP

MUSIC BY LARRY RYDBERG, MIKE MATTEI, AND LEE MC GEE ALA HOUSE BOAT TOUR

HOUSE BOAT TOUR ATTENDEES

Other people and aircraft in attendance are as follows:

| | | | |
|---|---|---|---|
| N23JV | Kelly Scott | Reno, NV | SDII |
| N26EB | Bill Hartmon | Yuba City, CA | SDI |
| N34LG | Glen & Loretta Olsen | Sandy, UT | ACROII |
| N94TM | Tom & Debbie Morris | Martinez, CA | SDII |
| N94WE | Wayne & Craig Ensey | Albany, OR | ACROII |
| N102E | Bill & Jan Ewertz | Sonoma, CA | SDII |
| N102MB | Doug Teal | Chowchilla, CA | SDII |
| N192RK | Bob Kaveney | Novato, CA | SDII |
| N292EP | Dave Heal | Windsor, CA | SDII |
| N357C | Dana Andrews | Roxville, CA | SDII |
| N787JC | Jim Causey | Suisun,CA | ACROII |
| N3145M | Russ Allen | Bethel Isle, CA | SDII |
| N8021B | Mike Mattei | Bend, OR | ACRO II |
| N9038Y | Art Clark | Yuba City,CA | SDII |
| N9116Y | Les Homan | Byran, CA | Super SD I |
| N70798 | Bill Clouse & Brenda Beck | Riverside, CA | SDII |
| N96576 | Dave & Donna Baxter | Lake Oswego, OR | SDII |
| N28LJ | Bob & Laura Dwyer | Tuscon, AZ | SDII Builder |
| N53T | Scott & Sue Simpson | Carson City, NV | SDII |
| N22PF | Patric & Jean Fitzpatric | Citrus Heights, CA | SD I |
| N71RW | Bob Wampler | Portland, OR | SDII Builder |
| N000 | Richard Heredia | Gilroy,CA | ACRO II Builder |
| N93FF | Lee Holcomb | Folsom,CA | ACRO I |
| N377JB | Dave & Carol Mercer | Kalamath Falls, OR | SDII Rebuild |
| N96558 | Dan Baxter | Lake Oswego, OR | SDII Builder |
| N248DW | Dick Waltermire | Alameda, CA | SDII |
| N26AH | Hap Schnase | Scappoose, OR | SDII |
| N000 | Lee McGee | Fremont, CA | ACRO II Builder |
| N253 | Jon Petty | Ronhert, CA | Stearman |
| N84135 | Bud Phillips | Walnut, CA | C-182 |
| N1140 | Rick & Janis Loomis | Riverside, CA | D-18-S |
| N000 | Hank Schmel | Riverside, CA | SDIII ? |
| N49223 | Jim Causey | Oroville, CA | PT-22 |
| N000 | Joe Laccitia | Hacienda Hts, CA | C-170 |
| N000 | Ben Scott | Reno, NV | T-28 |

After the awards, our guest speaker became Hank Schmel. He was asked to speak on very short notice, so was not as prepared as he would have like to have been. I did not know that Hank has lived such an interesting and colorful life. He started out with a tearful comical rendition of how an older fella who had just recently lost his beautiful young bride. This was done with the help of Harv Newman. The joke was that he had left this beautiful young thing in the bridal suite to go out and get something, and because he was so old and forgetful, forgot what hotel he left her in. Most of the audience at first thought he wasn't kidding, as the portrayals were very convincing, especially with Harv's help. But soon everyone realized it was a big put on. By the way, Hank does have a wonderful wife and they have been married many years. Hank then talked about all the things he had been involved in, from aerial photography in the military, to building WWI replica airplanes with Jim Appleby and working for Starduster and most recently working for Universal Studios. At any rate the food, conversation and time spent ended the evening on a very pleasant note.

The next morning we were out at the airport for EAA 1112's breakfast. I gave some more rides, and when Mike Mattei and Wayne Ensey left for home that afternoon, I could hear them talking to each other as far north as Mt. Shasta. As all the airplanes left that afternoon it was very rewarding to know that we had such a wonderful time. But also kind of sad that it was over. Howard Fairbanks asked me what I thought could have been better, and the only answer I could give was make it two more days!

We stayed with Howard & Karolyn till the end of the week so that I could help Dix Mackey catch up on his welding for his business, as lately he has been pretty sick. I was also able to clean up and work on my airplane. I even gave a few more rides, one of which I gave to Howard's mom. She is my most senior passenger at 91 years young.

We said our good byes to Howard, Karolyn, Elizabeth and Dix, and left Friday just before noon. We stopped at Red Bluff for a late breakfast and fuel. Out next stop was Klamath Falls to visit with the Mercers, Dave & Carol. Dave had purchased N377JB a very tired Starduster Too, late last year and is in the process of a total rebuild and re-power. I was very surprised as to the amount of work and the quality he has done in such a short period of time. We were also treated to a tour of his Oregon Air National Guard fighter training unit at Kingsley Field. They fly F-16's. I also gave his son a ride the next morning prior to our departure.

Our next stop was Grants Pass to visit with Bob Cavaras, he is so close to finishing his Starduster Too. This airplane is one of the most perfect examples of what a factory finished Starduster Too would look like, and if he would take it to the Sun N Fun next year, I think he would have another Grand Champion airplane. It may have already flown by the time you read this. The rest of our trip was uneventful. We landed at Hillsboro Airport in light rain showers, and my airplane N96576 had exactly 25 more hours, and I certainly look forward to doing it again!

D.C.B. Editor


**TRUE GRIT AWARD**

Ken Ware just flew off 40 hours at Flabob and the flight to Oroville was his first cross country in the blue and white bird. It's a fine piece of work that you've done.

# OSHKOSH/WAUTOMA

**WHEN:** From Thursday, August 1st to Wednesday, August 7th 1996

**WHERE:** Wautoma Municipal Airport, Wautoma, Wisconsin

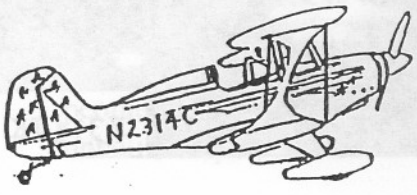
**WHY:** Eat, Drink and Share Stories!

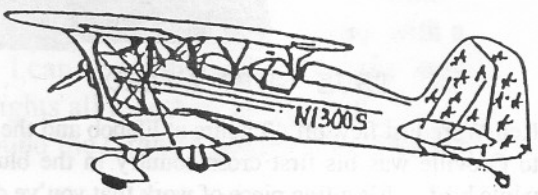
We would like to fill Wautoma with biplanes, Stardusters, Acrodusters, V-Stars, Starlets or any other homebuilt enthusiast. We would love to see you here with your airplane. Come help us celebrate our 4th anniversary. Please join us for a week of fun. Trophies will be rewarded in various categories.

If you haven't made reservations for Oshkosh or Wautoma by now there probably aren't any, as rooms there are tight; however there are good camping sites available at the airport.

| | |
|---|---|
| **Super 8 Motel** | (414)787-4811<br>Talk to Barb Diekfuss for alternate rooms. She guarantees assistance. |
| **Peck's Plantation Hotel** | (414)787-3301 |
| **Birdsong Bed & Breakfast** | (414) 622-3770 |
| **Berlin (15 miles)** | (414) 361-4411 Travelers |
| **Berlin (15 miles)** | (414) 361-2383 Riverside |
| **MT Morris** | (414) 787-2919 |

Please Let Us Know If You Plan On Attending.
Bill Clouse 1-800-833-9102
Starduster Corporation



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STOLP STARLET - Welded fusleage and tail feathers. Good workmanship. $3,300. (513)382-5231, SW Ohio.

Looking for reasonably priced ACRODUSTER TOO with a 200 HP engine, prefer Lycoming. Willing to trade for antiques. Call Kevin at (703)754-9788.

STARDUSTER TOO - O-540 490 SMOH & AF. 3 BI. CSP Hartzel OSMOH. Rear sliding canopy. 2 tanks. F/R complete instrument. Escort 110 intercom ELT. $29,000. (517)835-5597.

STARDUSTER TOO PROJECT - Fuselage on spring gear. Tail feathers. O-320 with prop, both 68 TT, eng. MT and misc. parts and instruments. $14,500. (517)835-5597.

1970 STARDUSTER TOO - TTSN 453, 220 HP 350 TTSN, Nav/Com w/transponder, encoder, hangared, good built in intercom. Take Champ in trade. $27,500. (208)467-6924.

STARDUSTER ONE - O-320. Or Piper Pacer 135, $13,000 each. (209)532-2006.

ACRODUSTER TOO - 600TT, Lyc.IO-360-A1B, 200 HP, C/S/ prop, inverted fuel/oil, smoke, chutes, Bendix Com, 2 Morrow Loran. Outstanding performer, open pit(s). $32,000. (603)883-4674.

1978 STARDUSTER TOO - 180 HP Lyc., 550 hrs. TT, 250 SMOH, Com radio w/ transponder, encoder., Loran, intercom. (209) 665-7319. $27,500.

STARDUSTER ONE - 100 TTAE, Lyc., 135 HP, electrical system, $12,900. (573)756-4502.

STARDUSTER TOO - 180 HP Lycoming, 703 hrs. SMOH, inverted fuel/oil, pressure carb., KX145 transponder, encoder, intercom, PTT switch, Stits, new paint. $32,500. (417)926-4221.

STARDUSTER TOO - TTAF&E 1004, 52 STOH, Lycoming O-435-C 190 HP, CS prop, inverted systems, Com radio w/transponder, encoder. PTT intercom, asking $27,000. (707)429-4559.

SUPER ACRODUSTER ONE - Factory plane, highly modified, excellent acro, 325 hrs., 200+ HP. See this one before you buy a Pitts. $27,500/offer or trade. (602)870-1627, evenings.

1991 ACRODUSTER TOO - Only the best. Open cockpit, IO-360, 200 HP 435 TTSN, inverted A/F & Acro C/S prop 135 TTSN, extras. $50,000. (713) 835-9443.

1990 STARDUSTER TOO - 150 TTAF, 75 SMOH on Lycoming O-540, fixed prop, 720 Com, intercom, new paint and fresh annual. $28,900. (615)851-2926.

1975 STARDUSTER TOO - 400 TT, 90 SMOH, O-360-A1A, 180 HP, electric, Nav/Com, I-Com, $28,900. Will deliver. (704)526-9163 of FAX (704)526-3284.

STARDUSTER TOO - Beautiful blue on white Imron paint. 70 hrs TT. Chrome Lycoming 160 HP with Christen inverted fuel and oil. Fuselage and wing tanks. $30,000, trades considered. (707)938-1465.

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1987 STARDUSTER TOO - 200 HP, CS Prop, 344 TTAF/SMOH, new MX-11R flip/flop, transponder, encoder, intercom, ELT, w/backup Com-11A, red, canopy, heat, gyros, Nav lights, $39,900. (317)293-2383, call mornings. Can be delivered in Midwest for expenses.

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