The Cleco

Experimental Aircraft Association • Chapter 393 • Concord, CA

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JULY 1994

YOUR 1994 OFFICERS

PRESIDENT	Fred Egli 935-7551
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EDITORS	Ken & Linda McKenzie 283-3119

JULY PICNIC

Once again it is time for the annual chapter picnic. The picnic will begin at 1100 hours on the lawn next to Navajo Aviation. Come enjoy the good company; please bring your projects—flying or otherwise—over for display. Hamburgers and hotdogs are provided; various members have volunteered to bring chili, salads and deserts. If you would like to bring some food or would like additional information, please call Pete Weibens at 937-7517.

We will be offering some Young Eagles rides after lunch.

MEMBERSHIP MEETING

Regular meetings resume August 24 (the 4th Wednesday of every month) @ 7:30pm; Old Buchanan Terminal Building, Concord Airport. **Please wear your badges to help those of us who don't know you yet.** Also bring chairs since we don't seem to ever have enough.

BOARD MEETING

Board meetings are scheduled for 7:30 p.m. on the Wednesday following the Membership meeting at Fred Egli's house. If you are interested in attending or have a matter you wish to discuss, please call.

Calendar of Events

Jul 15-17 **Portland Rose Festival & Air Show, Portland OR**
Thunderbirds Contact Ken Dyar 503-227-2681

Jul 16 **Chapter 393 Picnic**

Jul 19 **3rd Annual AirFest, Lake Tahoe Airport**
Free Admission. Fly-Ins Welcome 916-541-2110

Jul 22-23 **Susanville, CA Airport Days, Fly-In Friday Night**
EAA 794, Sat Breakfast, Fly-In, Air Show, 916-257-8358

Jul 23 **2nd Annual Moonlight Fly-In, Georgetown, CA**
BBQ & Dance Contact Trish 916-333-0810

Jul 23 **Solano Air Fair (Vacaville Air Fair)**
Nut Tree Airport. Free parking. Free admission.
BBQ & Dance Friday

Jul 28-Aug 3 **EAA Oshkosh '94.**
Tel: 414-426-4800

Aug 20 **Yuba-Sutter Air Expo & Easter Seals Chili Cook-off**
Marysville, CA Airport Kathy 916-743-6571

Aug 27-28 **West-Coast Fairchild Fly-In & Reunion**
Paso Robles, CA Bill/Kathy 619-247-0780

Sep 2-3 **EAA Chapter 376 End of Summer Fly-in.**
Madera, CA - Call Jim Pratt 209-435-4742

OSHKOSH BOUND

The following members are travelling to Oshkosh this year:

Dwain Duis & Phil Jenkins have rooms at Grenhagen Hall, Oshkosh

Geoff & Jennifer Richard are on the waiting list for Grenhagen Hall, Oshkosh

Tom Smith has home in Oshkosh

Pete & Melody Wiebens will be staying in town

Bret Laurie, Mike Parker & Gerry Greth are going

Fred & Vi Egli were trying to find a place to stay

Mark Madden is staying at home near Stevens Point

Toni Tiritilli has friend in Oshkosh

Gordon Bowen is staying in the campgrounds

Don Baldwin is driving his trailer home to Oshkosh

Arden Hixson is taking a motor home

Terry Gong is flying commercial

Chris Kenyon, Scott Achelis & Ray Nilson may also be going

HELP WANTED IN THE COMPOSITE WORKSHOP TENT. Gordon Bowen and Hexcel are sponsoring the composite workshop at Oshkosh. If you have any time available, please drop by and lend a hand.

GLASAIR FLY-IN/PICNIC

held July 8-10 in Arlington, WA

Pete Wiebens tells me that quite a few of our members attended this year's Glasair event. Bob Decker and Phil Jenkins each flew one of the planes they built together. Don Best got an award for the longest build-time (in hrs). Pete claims he would have won that, if the build-time had been measured in years. Also attending were Lyle Powell, Lou Ellis, Ron Robinson, Mark Madden, Toni Tiritilli, and Glenn Werner.

The Slippery Topic of Oil

When the subject in oil, myths and misconceptions abound

Light Plane Maintenance, May 1993

Possibly no other area of aircraft engine ownership, operation and maintenance has produced as much confusion as the question of lubricating oil. Owners and mechanics are confronted with advertising hype flowing at them faster than the Mississippi, and the information is just about as clear as that river. Meanwhile, reams of folklore and tradition have grown up over the decades which just confuse the issue further.

The net result is that some owners walk the earth in fear of picking the wrong oil and winding up with a seized engine or some similar catastrophe. Others wander in blissful apathy, considering oil to be ubiquitous enough that their choice doesn't make any real difference. Still others develop brand loyalties so fierce they'll fly to the next airport with a low sump, rather than pour in Brand X.

But is any of this rooted in reality? Does it really make a difference what oil goes down the filler? The short answer doesn't shed much light on the situation: It depends.

A Little History

Nowadays, outright lubrication-related failures are about as rare as genuine Elvis sightings—they just don't happen. Sure, engines seize and throw rods, spin bearings and do all sorts of other nasty things. But better than 99% (probably 99.9999999%) of all such failures are due to either a lack of oil getting to the part (as in oil pump failure, clogs in the system or simply running out of oil) or some overt mechanical breakdown (like an improperly sized bearing being installed, a metal clip scoring a bearing and starting the chain, etc.). Indeed, through the years we have reviewed probably close to a half-million SDRs, and in all of that we cannot recall a single engine failure due to some failure of the engine's oil to lubricate.

But it wasn't always this way. Early oils were known for being rather poor lubricants, and lubrication-related failures were fairly common. Fortunately or otherwise, nobody much noticed because general engine reliability was such that usually the engine was dead before the oil had a chance to break down and do damage. Consider that before WWII, many aircraft piston engines had TBOs running in the 25- to 50-hour range.

Time and chemistry marched onwards, though, and by the end of the Truman administration the oil companies were developing all sorts of new formulations. This was primarily in response to the enormous surge in automobile ownership, but the companies attempted to transfer the advances in automotive lubricants to aviation oils.

One of the first such attempts was with detergent oil additives. It was a failure. Detergent oils did wonders for cars, which by then had developed the oil filter. However, in aviation use they had a bad habit of loosening all those deposits inside the engine, which would then circulate until they found some place to hole up—usually at a bearing oil port, where they promptly produced oil starvation and bearing failure.

But even when used in new engines that had no internal deposits to flush out, the detergent oils created problems. The detergent additives were metallic compounds. In aircraft engines, with their propensity to allow oil to get into the combustion chamber and their duty cycles that did not provide for frequent and marked power changes to blow out any deposits, the metallic compounds tended to form combustion chamber deposits. These deposits would then become glowing hotspots in the cylinders, leading to pre-ignition and destructive detonation—not a happy circumstance. Given this, aviation oil specs were developed which specifically excluded detergent oils with metallic ash additives.

Still, the oil companies kept up their research and by the end of Eisenhower's White House stint Shell had come out with Ashless Dispersant (AD) oils. Like the earlier detergent oil, this, too, had been originally developed for automotive use. Unlike the detergents, though, AD oils proved to be successful. The principle behind the AD oils was that, rather than a cleansing action the oil would simply suspend all the dirt and residue and prevent it from depositing in the first place. At each oil change, all the nastiness would then be removed from the crankcase.

At this point, aircraft owners were faced with two choices in oils: the same straight mineral oil their grandfathers had used or the newer AD oils. Life really was simpler back then.

It took almost another 20 years before the next great step forward came to aviation oils. While cars had been enjoying multi-viscosity oils since Bill Clinton was in grade school, aircraft engines had to wait until nearly 1980 before multi-vis oils became widely available. At about the same time, synthetic oils started to make their debut for both cars and planes. Since then, aircraft owners have been facing ever-mounting confusion.

Oil's Mission

The first step in clearing up this confusion is to understand just what it is that oil does and how it does it. The short answer of providing lubrication just doesn't cut it.

Oil doesn't just provide lubrication, although this is indeed its most critical function. Your engine's oil also serves to suspend the dirt and gunk that builds up in the engine between oil changes, allowing the oil filter to remove them from circulation. While doing this, it carries a substantial portion of the engine's heat load. It also provides protection for your engine's innards from the atmosphere, preventing corrosion. The oil provides some of the sealing action for the piston rings. And finally, it acts as a cushion between parts where impact loading occurs (like the connecting rod bearings).

Oils provide lubrication in two different ways. The most obvious is their innate slipperiness. This slipperiness is also known as thin-film lubrication (or lubricity) or boundary lubrication. The thin-film lubricity of oils varies depending on type and use. For a simple demonstration of these variations, try taking some smooth piece of metal like a screwdriver tip and dipping it in a few different types of oils. With a thin household lubricant (like 3-in-1 oil), the screwdriver will be fairly easy to hand on to. It's harder to hold with most any motor oil.

Oddly, boundary lubricity is more dependent on the oil's additive package than it is on the qualities of the base oil itself. This is where oils with extreme-pressure (EP) additives essentially improve the oil's ability to cling to metal surfaces and keep it from being squeezed out under pressure. Generally, this is done using highly polar molecules—animal fats in olden days, specially formulated molecules in modern EP additives such as those found in Castrol's Syntec oil today.

In your engine, an area where boundary lubrication comes into play is the cam-tappet interface at low engine speeds. Obviously, an oil with good boundary lubrication qualities is essential to prevent direct metal-to-metal contact between the cam lobes and tappet faces. A breakdown in lubrication here, no matter how small or of what duration, is the beginning of the end for the camshaft. Another engine area that requires exceptional boundary lubrication is the gear train, especially in engines employing hypoid or spur gears (basically, any geared engine—GSO-480, GTSIO-520, etc.) will benefit from an oil with an EP additive package.

Oil's other way of lubricating is called hydrodynamic lubrication. This is where the oil actually separates two moving parts by creating a form of hydroplaning. Journal bearings are the most common place to find this sort of lubrication in action (i.e., crank and rod bearings).

Hydrodynamic lubrication depends on the oil's viscosity to work. The viscosity determines the degree of separation between the journal and bearing, and it also determines the amount of friction produced by the assembly. Thus, an oil with too low a viscosity will not provide enough of a hydrodynamic wave for the bearing to work, resulting in elevated friction and the possibility of two surfaces contacting each other. Conversely, while an oil with too great a viscosity will provide excellent surface separation and load bearing, it will produce too much friction in the assembly. Also, an oil with too high a viscosity will be too hard for the engine to pump, resulting in low system oil pressure and overall poor lubrication.

Viscosity

So what determines an oil's viscosity? And just what is viscosity, really?

In its simplest terms, viscosity is a measurement of resistance to flow. This, in turn, is a result of a fluid's internal friction, which in the case of oils is determined by the degree of attraction between the molecules that make up the oil. The greater the attraction, the higher the internal friction, and the higher the internal friction, the more the oil will resist flowing—it will have a higher viscosity.

Actually measuring viscosity is rather a complex business. The units of measurement for viscosity are called centistokes and refer to the amount of time it takes for a measured amount of oil to pass through a calibrated tube of capillary size. The result, in centistokes, is the oil's kinematic viscosity. Multiplying the oil's density by its kinematic viscosity produces the absolute viscosity in centipoises. For example, consider water (which is the viscosity standard). At a density of 1.0, it has a viscosity of 0.01 centipoise at 0.01 centistoke.

This relates to the modern SAE scale we're all familiar with from the faces of oil bottles—SAE 30, SAE 50 and so forth—in a rather complex and confusing way. (Aviation oils get to add to the confusion a bit by also carrying the old military grade numbers like W100 or W80 [or just 100 or 80], and to make things even more confusing there's the old AN scale where aviation grade numbers get 1000 added to them (thus an aviation grade 80 oil has an SAE viscosity number of 40 and an AN specification number of 1080). The kinematic viscosity of an oil in centistokes is converted into units called Saybolt Universal Seconds (SUS) using either a formula or (more likely nowadays) tables. Just to make things a little more confusing, the Saybolt viscosity varies with the temperature that the original measurement of kinematic viscosity was made at. To try and standardize things a bit, two temperatures were chosen as standards: 0° and 210° F.

Thus, an oil that demonstrates an SUS viscosity of from 6,000 to 11,999 at 0° would be classed under the SAE system as 10-weight oil (10W for winter use, to be exact). At the other end of the scale, an oil with an SUS viscosity between 85 and 110 SUS at 210° would be assigned an SAE value of 50. A simple rule of thumb is that the aviation grade number is roughly equal to the oil's SUS viscosity at 210°.

An oil's intended designation determines what viscosity tests it must undergo. For example a 20-weight oil is generally considered fit only for cold-weather use. A 20W oil would be subjected to the calibrated orifice test only at 0°. Its viscosity testing would also include an engine-cranking test at 14°F, and a pumpability test would be done at 5°. At the other end of the spectrum, a 50-weight oil intended for summer use would be subjected to the calibrated orifice test a 210°.

Viscosity Index

Almost as important as outright viscosity is an oil's viscosity index. Viscosity in "regular" oils is highly dependent on temperature. At lower temperatures, the oil gets thicker and viscosity rises. Conversely, at higher temps it thins out. For example, one study of temperature versus viscosity showed that an SAE 30 oil had a viscosity of 150 centistokes at 86°F, but viscosity fell off to an estimated seven centistokes at 400°. This is what's known as viscosity index. It's an important parameter for engine oils because it determines how the oil performs at various temperatures.

The modern scale for viscosity index goes back to tests done on two natural petroleum oils that were chosen as standards—one a Pennsylvanian oil and the other from Gulf Coast wells. Each oil displayed different responses to temperature changes, with the Pennsylvanian oil showing the least change (and so getting assigned the number 100) and the Gulf Coast oil showing the greatest change (it was assigned the number 0). Interestingly, it turned out that both oils had the same viscosity at 210°F. Using this as the basis, viscosity indexes have been developed.

Viscosity indexing is important, since oils with poor viscosity index (large viscosity change with temperature) either make for hard starting in the cold or poor lubrication under heat. Thus, the search has been ongoing for compounds which would improve an oil's viscosity index. Some rather interesting substances have been tried, too, including soapy water as an oil additive. Surprisingly, it worked. Unfortunately, as soon as the oil got warm, the water was driven off and the remaining soap compounds became ineffective. Modern viscosity index improvers are wonders of chemical engineering, and today's oils show excellent viscosity stability over extremely wide temperature ranges.

Oiliness: How Important?

When it comes to boundary lubrication the situation gets very interesting. Within a limited context, arguments can be made that an oil's actual lubricity (how slippery it is) is really an irrelevant property.

That's kind of a shocking statement, but consider that some rather unlikely fluids have been used as lubricants under severe conditions. For example, the giant turbines in some hydro-electric facilities are "lubricated" by water—the turbine rides on slipper bearings on flat surfaces, with the whole thing immersed in water. The slippers ride up on wedges of water, in effect water skiing, and so the water acts to lubricate the turbine's bearings by holding the slippers out of contact with the bearing surface.

But wait, you say, that's hydrodynamic lubrication. You're right. But then, so is the vast majority of the lubrication in your engine of the hydrodynamic variety. Lab tests with automotive engines have shown that, at operating speeds, almost no actual boundary-type lubrication exists—it's all hydrodynamics. One set of tests involved running a group of car engines continuously for what amounted to about 40,000 miles, then disassembling them to measure for worn parts. The tests could not find any measurable wear on any surfaces, even on parts which would seem destined to show great wear like piston rings. The explanation was that even piston rings are lubricated more by hydrodynamic lubrication than by boundary lubrication.

But boundary lubrication is an important quality for your engine's oil, if for no other reason than that your engine does stop and start from time to time. It is during startup and shutdown that boundary lubrication prevents wear. The oil that remains "stuck" between any two surfaces is all that will separate them at startup. And, as previously discussed, gear trains rely heavily on boundary lubrication.

From all this, we can see that an oil for an aircraft engine must have the right viscosity and a good viscosity index if it is to keep our bearings running on a wave of oil over the entire operating range. It must also provide good boundary lubrication to prevent wear during startup and shutdown and to keep the gear train happy. It must hold dirt and contaminants in suspension between changes.

In addition, the oil cannot foam from agitation during operation. It must not break down too quickly from heat and shearing forces. It must not evaporate from the crankcase in service. And it should not run off the engine's innards too rapidly during inactive periods so as to provide corrosion protection.

Oil Types

With the above as the parameters that our oil must meet, picking the "right" oil is somewhat simplified. But again, it all depends.

Any aircraft oil will provide most of what we're looking for. A plain mineral oil of the proper weight for the season will provide good to excellent hydrodynamic lubrication for running, will be able to maintain boundary lubrication between and during starts, and maintain a good coating of engine parts to prevent corrosion. However, plain mineral oils do not promote suspension of contaminants. Dirt, sludge and general deposit buildup between oil changes can become a problem, and prolonged use of straight mineral oil combined with excessive time between oil changes will lead to high internal wear and possibly component failure. So plain mineral oils are not a good choice for your engine's lifetime lubricating needs.

An AD mineral oil does provide the desired contaminant suspension properties, in addition to all the others. It will provide excellent hydrodynamic as well as boundary lubrication under all but the most severe conditions. (Indeed, some lab tests have shown that the AD additives themselves act like EP compounds.)

However, AD oils work best only within proscribed temperature ranges. Fly an engine full of winter-weight oil down to Key West and the possibility of bearing failure is quite real. The reduction in the oil's viscosity due to the elevated temperatures will reduce its hydrodynamic lubricating abilities, perhaps to the point where the film between the bearing and journal separates. When that happens, the two surfaces will wipe against one another. Even if only momentarily, it sets the stage for future failure.

At the other end of the temperature spectrum, flying a summer-weight oil up to Point Barrow in January could result in oil pump and prop governor failure. The oil's viscosity may rise enough that it can't be pumped through the engine's oil system. (A more common result of such encounters is oil congealing in the prop hub, with a subsequent loss of prop governing.)

So, for operation within a fairly narrow range of temperatures an AD oil will do just fine for most applications. For those who live in the south and tend to stay there during the winter, a sump full of, say, Aeroshell 100 will do the job quite nicely. For those who live in the north, where the temperature varies widely with the seasons, it might be Aeroshell 100 during the summer and an aviation 65 oil during the winter.

Multi-Vis, Synthetic and Semi-Synthetic

So what about these multi-viscosity oils? And how about synthetic and semi-synthetic oils? When and why would you use them?

For those whose flying takes them outside the parameters where single-weight AD oil work, then multi-vis is the answer. Multi-vis oils offer the best of both worlds. When they get hot, their viscosity goes up. When it's cold, the viscosity goes down. This makes for easy starting and proper hydrodynamic lubrication no matter what the temperature.

Multi-viscosity oils can also help reduce oil consumption somewhat. Lower viscosity oils tend to leak past piston rings easier, and since multi-vis oils don't thin out as much at higher temperatures they also don't blow past the rings as easily. However, in all likelihood this effect will be nearly unnoticeable for the average engine.

Another caveat for some multi-vis oils is their reaction to shearing forces. Tests have shown that some formulations tend to suffer viscosity breakdowns under elevated shearing stress. In one test, three different automotive oils, all rated 10W-30, were subjected to standardized shearing stress. Subsequent viscosity testing showed two of the oils had degraded to the point where they turned up as straight 20-weight oil. The implications of this are that mineral-based multi-vis oils may not be the best for some applications—like turbocharged engines or helicopter engines. The synthetic and semi-synthetic oils (like Aeroshell semi-synthetic 15W-50 and Mobil AV-1) show superior capabilities under extreme conditions. One of the big claims for synthetic oils is that they make for much easier engine starting at low temperatures. It's worth noting, though, that most any multi-vis oil allows easier starting in the cold. In order to really see a difference between a synthetic and a mineral-based multi-vis, you'd have to attempt an engine start with an OAT of around 0°F—something most of us would never try without preheating first, which would then negate any possible advantages of the synthetic oil.

Another claim about synthetics is their superior performance under high temperatures. Again, though, in order to actually see the difference you'd have to operate your engine far outside its normal parameters.

Yet another claim that gets made for synthetics (Mobil AV-1 in particular) is that you can go longer between oil changes. This is based on the idea that synthetic oils are much less prone to viscosity breakdown over time, and so will allow less frequent oil changes. As far as it goes, this argument it true. Indeed, mineral oils, both plain and AD, have been shown to suffer significant viscosity breakdown after about 40 hours of use. Synthetics, on the other hand, maintain their viscosity far longer—hundreds of hours in some cases.

But the real limiting factor in aircraft engines is contaminants. Suspended or not, oil with a heavy contaminant load is just not going to be able to do the job as well as clean oil. So even if the oil has all the same lubricating qualities at 100 hours as it did when new, the ever-increasing contaminant load will pose a hazard.

On the plus side, synthetic and semi-synthetic oils due tend to show superior performance in high-shear conditions. For use in turbocharged and helicopter engines, then, these oils would seem to be the best choice.

Picking Rules

So, as we can see from all this, picking an oil for your engine is really a matter of determining just how your engine operates and what its particular lubricating needs are. With some attention to details and proper consideration, you'll be able to save money in both the short term by not paying for more protection than you need and over the long run by not buying less than your engine demands.

Just remember these general rules for picking an oil after break-in:

•1) For most non-turbo'ed , non-geared engines operating in a fairly constant-temperature climate (or where large temperature variations are not expected between oil changes), any name-brand single-weight AD oil will do nicely. Be sure to match the oil's viscosity to the average ambient temperature. Most owner's manuals provide a table for selecting an oil viscosity based on ambient temperature—follow those recommendations.

•2) For non-turbo'ed, non-geared engines which will be operated over a wider range of temperatures, a multi-viscosity oil is probably the only way to go. If you're based in the northern Sierras and plan on flying to Tucson in January, you'd better get a sump full of multi-vis. Phillips X/C will provide a good balance between cost and service for these engines.

•3) For turbocharged and/or geared engines, and engines that see extraordinarily heavy duty (helicopters, ag engines, etc.), the synthetic and semi-synthetic multi-weight oils are the best choice. Their durability under high-pressure conditions will provide the added protection these engines need. However, despite refiners' claims of extended oil change intervals, stick to the engine manufacturer's oil change interval recommendations. Remember that regardless of oil formulation, contaminant build-up will remain constant. Only a change of oil and filter will remove the contaminants from the oil system.

Oils for Break-in

Light Plane Maintenance, May 1993

In your engine's lifetime, no hours are more critical than the initial break-in. Aside from break-in operating technique, the oil you choose for break-in can help set the stage for the engines's long-term health.

In general, both Lycoming and Continental recommend breaking in with a mineral oil. Clearly, a straight mineral oil with no additives whatever has the poorest lubricating qualities available, particularly for boundary lubrication. But oddly enough, when it comes to engine break-in, you actually want an oil with such poor lubricity.

As we all know, the thing we're waiting for during engine break-in is for the rings to seat. The actual mechanism of ring seating is that the rings and cylinder walls wear against each other until both are just smooth enough that no high point penetrate the cylinder wall oil film, yet the walls remain rough enough to retain an oil film. Use an oil with excellent lubricity and the rings will never "cut in." The oil will lubricate too well and prevent the friction needed to do the job.

Thus, for proper engine break-in and good ring seating a straight-weight, no-additive mineral oil is the only game in town. Except...

Except for breaking in some high-output turbocharged engines. For example, Lycoming in Service Instruction 1014K admonishes that the TO-360-C and -F, the TIO-360-C, and the TIO- and TIGO-541 engines must be broken in using AD oil only. Although Lycoming gives no reason for this recommendation, it seems a fair assumption that the suspensive qualities of an AD oil are needed in these engines from first startup.

Consider that the turbocharger in any of these engines spins just as fast during break-in as it does after break-in. Without an AD oil, any contaminants built up in the oil during the initial break-in run are going to be subjected to strong centrifugal forces as the oil passes through the turbocharger center bearing. At least some contaminants would then be deposited on the bearing journal. During shutdown, as the turbo slows down it settles to the journal surface. Any contaminants that deposit out there that measure more than a micron or so in size may punch through the remaining oil film and produce tiny scores on the bearing. Thus the stage is set for later (premature) turbo bearing failure.

Thus the recommendation for using an AD oil in these engines during break-in.

THIS LETTER WAS POSTED ON THE INTERNET

FROM: Experimental Aircraft Association
TO: EAA Chapters

SUBJECT: NOTICE OF PROPOSED RULE MAKING TO RESTRICT OVERFLIGHTS OF NATIONAL PARKS

Dear EAA Chapter Officer:

As service to our EAA members and all of the aviation community, we are taking this opportunity to inform you of a National Park Service proposal to restrict overflights of national parks. We are taking this unusual measure because the National Parks and Conservation Association, with a membership of over 400,000, is asking to restrict general aviation's access to flights over national parks.

Because of the importance to all of aviation of ANY reduction in the airspace, combined with the continued restrictions of FAA ATC flight rules and regulations, it is extremely important that all airspace reductions be studied. **It is recommended that you comment accordingly to the Federal Aviation Administration before the close of the comment period July 15, 1994.**

EAA has joined other aviation organizations in responding to this Department of the Interior proposal to limit and/or prevent sightseeing flights over and near the National Parks. The proposal is aimed at air tour operators, but presents a clear threat to all of aviation. The proposal could result in reduced airspace access over all National Parks.

It appears that the Administration has already determined that aircraft operations over National Parks are a detriment to the parks and their visitors. The proposal states: "Secretary Babbitt and Secretary Pena concur that increased flight operations at the Grand Canyon and other national parks have significantly diminished the national park experience for park visitors, and that measures can and should be taken to preserve a quality park experience for visitors." Apparently if you use an aircraft you are not considered a "visitor."

If restrictions such as the ones in place at Grand Canyon National Park are extended to other National Parks, this would represent a significant loss of airspace especially when added to TCA's (Class B), ARSA's (Class C) and restricted areas.

Several options were suggested in the proposal to reduce the perceived impact of aircraft on the national park system. These include: the current voluntary measures such as no flights below 2,000 feet AGL; the Grand Canyon model with extensive regulation of airspace; prohibition of flights during certain times, e.g. 1 hour per day, 1 day a week, or 2-4 weeks per year; free flight zones to an altitude of 14,500 feet MSL where no flights would be allowed; or a noise budget for limiting total aircraft noise by assigning each air tour operator an individual limit on noise, with transient general aviation exempt.

EAA favors continued sport aviation access to "visit" our national parks by air. The sport pilot is not a major contributor to noise within our national park system. The General Aviation Manufacturers Association (GAMA) working with the General Aviation Action Plan Coalition (GAAPC) is developing reduced noise procedures for all aircraft. Continued education of existing voluntary actions to limit noise are being undertaken, as described in Advisory Circular 91-36C. This is what should and is being done to reduce noise. But there is no need at this time to restrict general aviation operations.

Your comments should be forwarded IN TRIPLICATE to :
Federal Aviation Administration
Office of Chief Counsel
Attn: Rules Docket (AGC 200)
800 Independence Avenue, SW
Washington, DC 20591

Unless the FAA receives comments opposing the restrictions, the agency may not have any choice but to approve yet another reduction in airspace. Your letter is very important, and may be the deference between a favorable outcome and significant restrictions.

General and sport aviation have lost too much already -- please comment.

Sincerely,
EXPERIMENTAL AIRCRAFT ASSOCIATION
Robert T. Warner
Executive Vice President

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