



Chapter 569 NEWSLETTER

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APRIL 7, 1992

LOCATION: Cobbler's Inn

TIME: 7:30 pm, Officers 15 min. early

PROGRAM: **Avionics for Homebuilts**
by Steve Green, Duncan Aviation

REFRESHMENTS: Clay Champoux (in charge), Al Cherry, Les Christiansen, Jeff Clausen

PRESIDENT'S LETTER

We're cruising along nicely. We all owe a thank you to Lester David for the bulletin board he made for the chapter. He's a CAN DO & WILL DO person.

If you have any suggestions for meetings, etc. pass them along to an officer.

As president, I get a lot of letters from EAA Headquarters, all of which are filed in a loose-leaf notebook and available to any member. I'm not sure that some of this stuff is worth the time to discuss during our meetings.

Ken Dahl

SHORT TRIPS

Any persons who have not paid their dues for 1992 please bring your money to the next meeting or arrange to get it to Ray Supalla. While you're at it include an extra \$4 for a calendar.

We need a list of homebuilt projects underway for May meeting. A map will be prepared.

Volunteers for the Chapter 80 fly-in on June 7 please contact: Chris Branch, Pres., 11702 Fisher House Rd., Omaha, NE 68123-1113, (402) 291-6423.

Members please feel free to use the bulletin board - that's what it's for.

A skydiving event is being held at Seward on May 22, 23, 24 & 25. We're invited.

EXPERIMENTAL AIRCRAFT ASSOCIATION

WITTMAN AIRFIELD, OSHKOSH, WI 54903-3086 - PHONE 414-426-4800 - FAX 414-426-4828

MINUTES FOR MARCH 2ND MEETING

The meeting was held at Shoemaker's Inn and called to order by president Ken Dahl at 7:30 PM. Guests were introduced and a special thank you was extended to Lester David for designing, constructing and furnishing a club bulletin board. The board will be displayed in our regular meeting room at Shoemaker's, but is portable enough to be taken to fly-ins and other club events.

The major item of business was discussion of an early summer fly-in. Tentative plans are to hold a fly-in and pot luck supper at the Seward airport on Saturday, July 20, 1992. President Dahl will check with the Seward airport personnel and more definite arrangements will be made at our April meeting.

Don Shoemaker reported on progress at the proposed Eagle's Nest airport. The proposal is now for a "single family" airport and the paperwork has been filed for a court date to have the landing and take off injunction lifted. Construction is moving forward and grass seeding is scheduled to begin soon.

The evenings program was a lecture and video presentation by Jim Fix on maintenance and repair of fixed pitch metal props. Jim sprinkled sage advice with a bit of humor and we all came away a good bit wiser.

Meeting adjourned 9:30 PM.

Ray Supalla, Secretary

DUNCAN AVIATION RECOGNIZES EXCELLENCE IN AVIATION ART

Duncan Aviation is again sponsoring the Aviation Art Excellence Award for the outstanding teacher participating in the annual student aviation art project.

The teacher chosen for this important award will be recognized at the May 16 ceremony at the Lincoln Municipal airport recognizing outstanding entries in the aviation art project. The aviation art project is sponsored by several aviation organizations, general aviation pilots and the Nebraska Department of Aeronautics.

The Duncan Aviation Art Excellence Award was initiated to recognize a Nebraska educator who encourages student participation in aviation art.

SEWARD FLOCKING

Ken Dahle talked to Seward's FBO's Silver Hawk Aviation about our June 20 picnic - flocking - fly-in. They are most friendly and cooperative. Picnic dinner will be at 5:00PM. Club furnishes coffee and soft drinks. They will clear out their good hangar so we can eat in style rather than on a taildraggers dirt floor. People can fly in anytime Sunday. We might allow some to fly in with old Chevy trucks, etc..

Any volunteers? We need a Chairman, parking cops, P-A master of ceremonies, help with drinks, etc.. (Junk - Dahle will do)

FUTURE PROGRAMS

May - Tour of local projects.

June- GPS by Jerry Crowley

July - Video, 1991 Oshkosh, Navions

August - Oshkosh EAA Convention

September -

October - some possibilities are Reports on Oshkosh 92, Dick Miller's tape on Alaska Flying, etc.

November -

December - Annual Christmas banquet at Legion Club.

GIVE US SOME HELP WITH IDEAS !

OUR OWN VCR ?

Some members have discussed the possibility of purchasing a club VCR. So far, comment is favorable. We use a VCR most meetings. For example, we just received a tape about VFR arrival procedures at Sun & Fun. People can contact Ken Dahle if they want to use the tape.

We could purchase a VCR with funds on hand. The Omaha Chapter owns their VCR.

If you're going to Sun 'N Fun fly-in, they are in need of some volunteers to help with the headquarters activities. Stop by the EAA Headquarters Building and they will put you to work.

PROPELLERS

Those in attendance at the last meeting received some valuable information about propellers from Jim Fix, who obviously knows what he is talking about. If you missed the meeting then you will appreciate this article prepared by Jim.

Aircraft metal propellers are designed with a high margin of safety. However, blade failures still occur. They cannot be related to any particular aircraft, engine, or propeller combination. In this article, I will be dealing mainly with fixed pitch propellers, but the same information also applies to constant speed and wood propellers.

To better understand your propeller, I would like to familiarize you with its stresses. There are two types of stresses, rotating and vibratory.

Rotating stresses are caused by the forces acting on any rotating propeller. First is centrifugal force, trying to pull the blades outward from the hub like a weight whirled on the end of a string. A fixed pitch propeller will have an outward pull of approximately 7500 times greater than its own weight near the tip. Next is centrifugal twisting moment, the tendency of the blades to flatten or decrease in pitch. In some flight conditions, it is as high as 7500 lbs. per sq. inch on each blade. Another force is thrust or forward pull of the propeller, which tends to bend the blades forward. This is the least critical force because it is counteracted somewhat by centrifugal force tending to hold the blades straight.

The other type, vibratory stresses, are caused by the engine. A piston engine does not produce a smooth or constant torque. Therefore the propeller must act as a tuning fork to dissipate the harmonics or frequency vibrations produced by the engine. These stresses flow up and down the length of the blades like lines of force. Some aircraft are placarded "Avoid continuous operation between ____ and ____ R.P.M." In this range, an undesirable frequency cycle or possible blade flutter, is set up which could cause blade failure. Shortening a propeller, or reducing its width and thickness, changes the frequency cycles. For this reason the manufacturers have established minimum specifications. Installing an incorrect propeller will also produce undesirable stresses. Many propellers have the same bolt pattern, but this does not make them interchangeable. Make sure that you have the proper model for your aircraft. Losing a portion of a propeller could cause the complete loss of the engine by ripping it off the mounts and possibly

even out of the cowling. This results in an uncontrollable aircraft in most cases.

Mechanical damage such as cuts, nicks, dents, and corrosion, greatly increases chances for blade failures. Take for instance the effect of a V nick, it will create a highly concentrated stress point by squeezing together the lines of force.



A cut, caused by vibrating spinners, wire, etc., acts like a dam in a river, stopping a portion of the force flow.



Corrosion pits distort the flow of harmonics from their normal path.



A propeller is one of the most neglected parts of an airplane. Yet it is more important than most parts. A prop should be inspected for safety purposes and also for aircraft performance. On preflight, check blades thoroughly for defects. Consider all defects as stress risers. Removal of small nicks, cuts, etc., should be done by qualified maintenance personnel only. Any serious defect should be done by the blade manufacturer or an approved propeller repair station. Improper nick removal can lead to costly and unnecessary material loss. Removal of metal can also cause an unbalanced condition noticeable at higher R.P.M. Besides constant vibration of the entire aircraft, this condition can also lead to blade failure. Rounded or blunt leading edges reduces aircraft efficiency and performance by pushing, rather than cutting through the air. Performance can also be affected by an out of track condition. Maximum efficiency of a propeller can be obtained only when a propeller is turning in its designed arc.

It is a good practice to have a fixed pitch propeller reconditioned at least every 1000 hours of normal flying. Sprayers, aerobatic aircraft, etc., should be reconditioned more often because of the higher than normal stresses applied to them. All Sensenich propellers with mid blade decals have an A.D. (66-23-2), which call for decal removal and inspection. Some of these propeller blades have failed due to corrosion pits found under these decals.

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Listed are a few things to remember about propellers:

Avoid engine runup in areas with loose rocks, gravel, or water.

Wax your propeller with a paste wax about once a month. This will seal the pores in the finish and help prevent corrosion.

Do not use power to get an aircraft out of mud and snow. This can cause an out of track condition.

Never try to repair a bend in a propeller, send it to the manufacturer or an approved propeller repair station where they have the proper equipment and methods for such work.

Never use the propeller as a hand hold to move the airplane. When installing a propeller, check for the proper bolt torque in accordance with the manufacturers installation instructions.

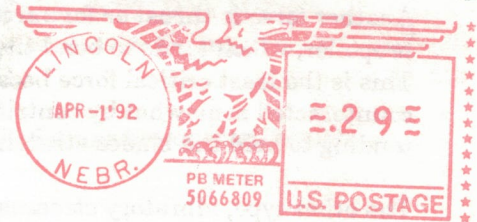
Do not install a propeller on your aircraft unless it is the proper model approved under the Aircraft Type Certificate. This information can be obtained

from a reliable source such as the F.A.A., manufacturer, or approved propeller maintenance facility.

A used propeller with an unknown service history may prove to be no bargain. Have it checked before use, it may have been repaired by unapproved methods. This can be determined by repair stations quite easily.

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