NEWS & NOTES OF EAA CHAPTER 245

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MEETINGS:- 3rd. FRIDAY OF EACH MONTH, NATIONAL WAR MUSEUM, SUSSEX DRIVE, OTTAWA - - - OR AS NOTIFIED.

CHAPTER 245 NEWSLETTER

We didn't get out a newsletter in June as we promised but we will try to make up for it with this issue. We haven't received many items to place in the classified section. So put your thinking caps on and come up with some suggestions. Call the editor at 731-5001 if you want anything added to the Want Ad section or have any news, gossip or information that you want to include in the next newsletter. This newsletter will be distributed at the meetings to those who attend, and mailed to those not in attendance.

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MEETINGS

Just when I was praising our president, George Reid on his donuts, he cut off the supply. It seems that people have been dropping the jam, icing and crumbs on the carpeting which makes it very difficult to clean. Maybe if we promise to be good, George will make some donuts for the meetings. What do you say George?

TECHNICAL NOTES

STAINLESS STEEL - Contrary to popular opinion, stainless steel will corrode. The feature that makes stainless steel not corrode is a very thin layer of air which clings to its surface. If the air is excluded with another type of metal, corrosion will occur on the contacting surfaces. The way to prevent this is to use zinc chromate which acts as an insulator between the aluminum and the steel as well as a supplier of ions.

The four most common types of stainless steel available from commercial sources are:

SAE 30302 (also known as Type 302)
Tensile strength is 85,000 to 125,000 psi.
Compression strength is the same.
Yield Point is 35,000 to 95,000 psi.

SAE 30304 (also known as Type 304)
Similar to SAE 30302 but somewhat superior in corrosion resistance and has superior welding properties.

SAE 30316 (also known as Type 316)
Is recommended for use in places where unusual resistance to chemical or salt water corrosion is necessary. It also has superior creep strength at elevated temperatures.

SAE 30317 (also known as Type 317)
Is similar to 30316 but has the highest corrosion resistance of all alloys.

Stainless steel cannot be heat treated.

A TRIP TO OSHKOSH

This was the year my family and I made the trip to Mecca - er - Oshkosh. I had heard about this place and I wanted to see what it was all about. I also wanted to see the Coot Amphibian and Molt Taylor who designed it. After looking over his drawings I had a lot of questions to ask him.

JULY 27 - We left Ottawa for Oshkosh in our Volkswagon Camper. Prior to this we had camped only two nights and were sure that we had forgotten something important. The journey via Highway 17 through North Bay and Sudbury was very enjoyable, and at the end of the day we stopped at Lakeview Park in Thessalon. We still didn't remember what we had forgotten. We made camp, had dinner and settled in for the night. Lakeview was a good campground.

JULY 28 - Next morning we packed up the camper with Oshkosh our intended stop that evening. At about 5 p.m. we saw the first highway signs directing us to Oshkosh and finally believed there was such a place. We got to Witman Field and registered for a campsite - er - a place to park. The campground was filling up fast but we got a good spot upwind of the toilets and near other facilities. My good wife, Pat, began to prepare dinner while I set up the tent with the help??? f my three young boys. My first impression, which I did not change, was that the

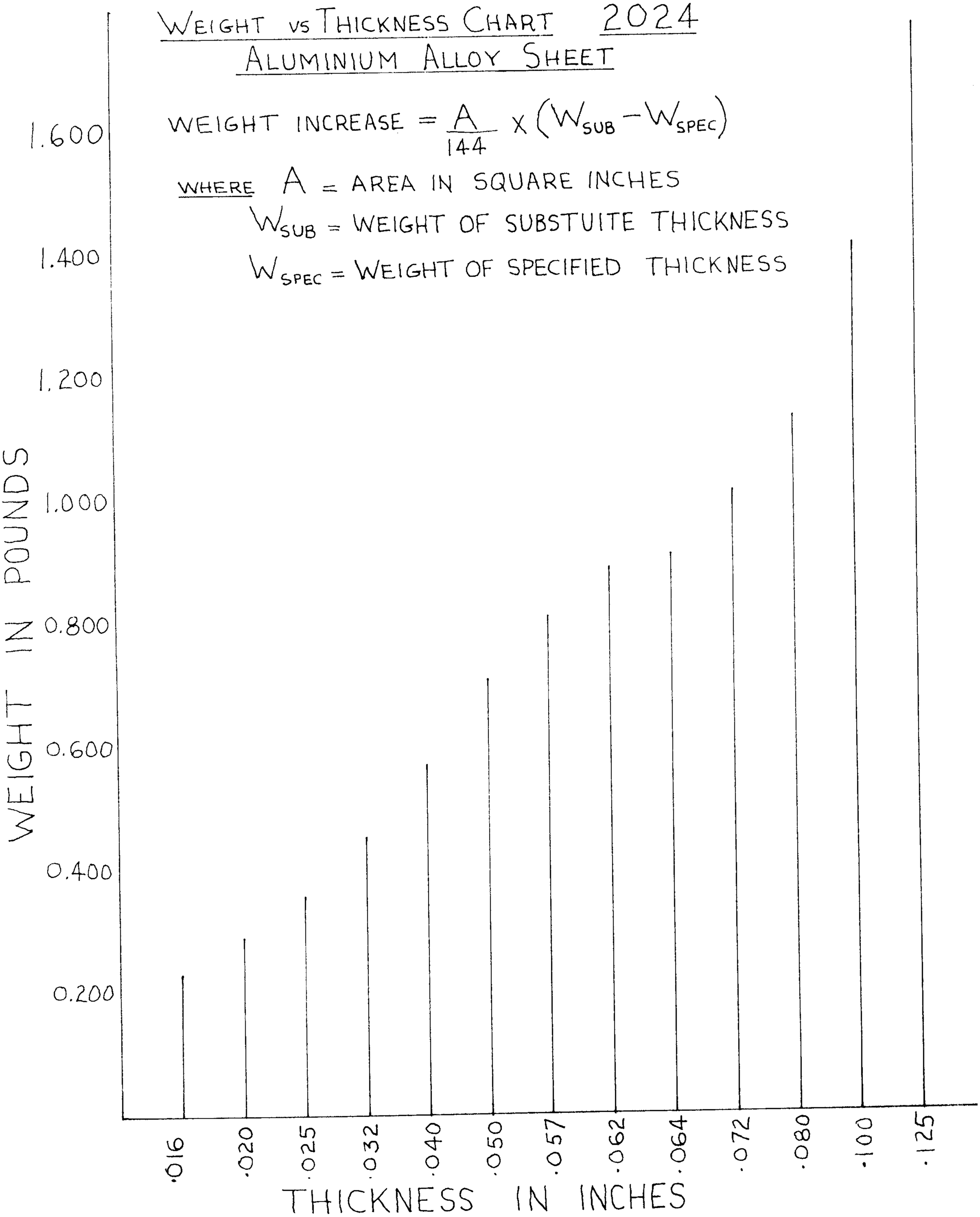
WEIGHT VS THICKNESS CHART 2024
ALUMINIUM ALLOY SHEET

$$\text{WEIGHT INCREASE} = \frac{A}{144} \times (W_{SUB} - W_{SPEC})$$

WHERE A = AREA IN SQUARE INCHES

W_{SUB} = WEIGHT OF SUBSTUITE THICKNESS

W_{SPEC} = WEIGHT OF SPECIFIED THICKNESS



CHAPTER 245 MEETINGS

Now that we are meeting in the War Museum, attendance at meetings is quite high. The reasons for this increase in attendance is probably attributed to the improved surroundings, interesting guest speakers, and the free donuts which our president makes the week before the meeting. Another thing has come out of the increased attendance, and that is the many people to talk to and the varied projects to talk about. It seems that there isn't enough time to see all of the people you want to see before the commissionaires tell us it is time to go. If you haven't attended any of these meetings lately, you should and meet the gang and sample one of George's donuts.

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MATERIAL SUBSTITUTION - EFFECT ON AIRCRAFT GROSS WEIGHT

As everyone in Canada should know, the maximum allowable gross weight for a homebuilt aircraft is 1500 pounds for an aircraft with a tame airfoil and a certified engine. The gross weight is only 1300 pounds-or less if a non-certified engine is installed or wing area is below a specified area.

On most homebuilt aircraft these weight limitation figures are of no consequence, but for amphibian aircraft they can be a problem. Even though most lightweight homebuilt aircraft do not approach 1300 or 1500 pounds, it is still a good idea to keep the weight down as low as possible and reap the rewards of increased performance from the machine.

A frequent cause of aircraft obesity is due to the substitution of materials. Take for example aluminum alloy 2024. The plans called for the use of 0.016 sheet and because none was readily available you used 0.020 alloy. It doesn't look like much of a weight increase you say -- only .004 -- yet that 0.020 alloy is almost 26% heavier than 0.016. Or take $1\frac{1}{2}$ inch 6061 tubing with a wall thickness of 0.049. Use of 0.065 wall thickness as a substitute results in a weight increase in excess of 30% over the design specifications. With the increased weight of steel the situation is more critical. It can be seen that indiscriminate substitution of materials can lead to a poor performing aircraft due to overweight.

The attached graph and equation is provided as a convenient method of estimating the weight increase to be expected when substitutions are made.

Here is how to use the graph and equation.

EXAMPLE: Let us suppose that .020 - 2024 aluminum alloy was used instead of .016 - 2024 alloy to cover the tail surfaces. Assume the area of metal concerned is 40 square feet.

Using the graph and equation, the weight increase would be:

$$\text{WEIGHT INCREASE} = \frac{40 \times 144}{144} \times (.282 - .224)$$

$$= 40 \times .058$$

$$= 2.32 \text{ pounds}$$

---not much, but it is 2.32 unnecessary pounds which will reduce performance.

So before you make any substitutions, check the weight increase as the result of the change. You may have second thoughts.