



VARIOMETER

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In Memory - Dennis Brown

Notes from the President

The last few months for KSA have had several high points and one real low. We're going to really miss **Dennis Brown** at the field. For this issue, I've included several articles that he wrote for past *Variometer's* and in *Soaring*, as well as a few pictures I had and some remembrances of him that were posted on the Soar-Kansas group.

I'll miss the way **Dennis** laughed the most I think. When **Leah** and I landed over at Mills Field in the Grob he was happy to drive over and run my wing to get out of there, and I'll always remember that he only took one tow a day, because that was all he ever needed. **Dennis** had his name on quite a few KSA trophies for speed, served as KSA President for several years, and was a competitive soap box derby racer. We'll miss you, friend.

Paul Sodamann has some really good points in this issue about emergency response at Sunflower. The Board will be working this winter to develop an emergency contact list and an emergency response plan. I know that my phone did not have an ICE contact saved. It does now!

Leah and I had a great trip to Lithuania for the World Championships and you can look forward to a report about that in the next *Variometer*. I'll also put together a talk about it for our October meeting. Speaking of, October is election month and KSA has two Director positions up this year. If you are interested in running, please let me know. Also, we'll be looking to fill our winter meetings with topics of discussion. If you have a topic you would like to learn more about, let me know!

August was a slow month for instruction but last week we made up for that a little. The season is far from over and I hope to see several more students solo and a few through their checkride before winter. There are still a few soaring days to be had too.

The Vintage Rally is right around the corner, at the end of September. Between then and now, we can all look forward to seeing *Cloudstreet* on KPTS on September 9th. **Steve** would like to get some groups of us out in public to see it instead of just watching from the comfort of our living rooms. I like that idea of taking our sport out to the public. Let's coordinate on the Soar-Kansas Yahoo! Group.\

September 12th is our monthly cookout at Sunflower. We're going to be celebrating **Don Jones'** recent retirement as well, so we hope you all can make it!

Andrew Peters and **Bob Hinson** will be taking the Grob to Newton on October 3rd for the EAA fly-in. I'm sure they could use a hand with it so get ahold of them if you're available.

October 11th will be another ride event, this time at Sunflower. **Bob Hinson** has arranged a group from the Adventurous Babes Society to visit Sunflower and enjoy glider flights. **Rafael Soldan** will be bringing the Grob from the Wichita Gliderport to help support this, as we expect 30 flights throughout the day. They are scheduled 4 an hour, so we should be able to work them in between club operations in the afternoon.

Our December meeting will be a showing of *Cloudstreet* on the IMAX screen at the Cosmosphere. KSA will be renting the theater for the night. We'll be selling tickets for the showing, expect to be able to buy them at upcoming KSA meetings. Be sure to get a few for your friends and family too!

As always, keep the submissions coming, especially Sunflower Seeds, and happy soaring!

Tony

KSA CALENDAR

September 9th - Cloudstreet airs on KPTS, 7 PM

September 12th - KSA Meeting - Cookout at Sunflower and **Don Jones'** retirement party!

September 24th-27th - Great Plains Vintage Rally - Wichita Gliderport

September 29th-October 2nd - 2015 Fly Kansas Air Tour

October 3rd - EAA Fly-In - Newton

October 10th - KSA Meeting - Elections & World Gliding Championship review

October 11th - Adventurous Babes Society - Sunflower

October 22nd - 25th - Talihina Ridge Camp

November 14th - KSA Meeting

December 12th - KSA Meeting - *Cloudstreet* at the Cosmosphere

2016

January 9th - 2015 KSA Awards Banquet - Kansas Aviation Museum

February 13th - KSA Meeting

March 12th - KSA Meeting

April 9th - KSA Meeting - Spring Safety Meeting

July 23rd - Kansas Kowbell Klassic



Tony Condon dedicated Day 5 of the 13.5 Meter World's to **Dennis Brown**

Memories of Dennis

Bob Holliday -

Dennis spent a lot of time mentoring and answering my many questions and never made me feel as if they were dumb or lame. He never made fun of my flights no matter how many times I landed out at contests. Sometimes I would see him get amused by my lack of ability and he would smile and laugh and offer a suggestion if I asked for it. It's hard to put into words all of the things he did for me but I will give just one example. I really wanted a one man rigger and he came to the bike store after he got off work at Boeing. We made the fiberglass form for the wing on my desk. He then welded the rest of the parts so that I could put my mosquito together without help in 30min. Best one man rig I ever owned. He then brought his torch out to sunflower and helped me modify and build a tow out bar. That help really launched my contest participation. Dennis will be missed and his contributions to soaring will be remembered by me. Thanks for the tow, Dennis.

Jerry Boone -

I have had a hole in my heart from the first news of trouble. Dennis and I spent a lot of time talking about all sorts of things. We shared many of the same passions from electronics (circuitry), flying, to fabrication. I found his little inventions and discoveries inspirational, and even a little humorous at times, particularly when he was convinced and sure he was right. Such subjects will not be forgot any time soon.

His warm personality, passion towards his discoveries, cool attitude, and history of helping anyone out (including driving out to tow on weekdays knowing he would be left on the ground) were just a few ways he made our gliderport a better place. He gave me my first tow in the Zuni, which I'm sure gave him a handful of challenges that day in the towplane, I was all over the place. Early on, I watched him stay up in the air while I often took my 3rd tow. He made it tough to give up... I remember thinking, if he is staying up why the heck can't I?

In fact my introduction to Dennis came from another fantastic person (Frank O'Donnell) during the soaring camp in 2007 when I was learning to catch my first thermal ever. Frank said in his prompt tone, "Hey you (me?), yes you, get in and get ready, Dennis is going to be off tow at 1000 feet in a thermal and the tow plane will be right back". Yes sir! I recall Frank being exactly right as always.

I remember towing Dennis many times, never felt slack line and I was more relaxed knowing his solid pilot skills were keeping him in formation. I shared a lot of thermals with him, mostly looking up at his glider.

I am intrigued that he spent his last active day doing what he enjoyed the most at the gliderport, soaring. In true Dennis Brown form... while it was "edgy" to be flying that day, he left the gliderport Sunday without incident. I am glad that he at least had one last flight in his glider before leaving on his long trip.

God speed pilot Brown! We'll miss you!

Steve Leonard -

I remember what I think was Dennis's first glider flight with us. Would have been 84-85 time frame. It was an auto tow with Bob Park in the Bergefalke. Dennis was hooked. Before he had even gotten soloed (he had a lot of time in powered planes) he bought his first sailplane: an H-201B Libelle. I think he did get his rating before he started flying the Libelle. He got hooked on cross country, earning his silver, gold, and diamond badges. He got the Diamond Altitude at Boulder in a Genesis. And decided he didn't need to do any more wave flying. He flew the Libelle in a couple of local contests, then traded up to his Mosquito, N7LY. According to its previous owner, the plane was "Seven-ly". Dennis logged many happy hours in the Mosquito.

What I will remember most about Dennis was his willingness to help anyone else, even if it meant he didn't get to do what you were doing. There were several times he towed me when no one else was around. I kept telling him "Get that CG tow hook back in your Mosquito, and I will tow you." I wanted to return the favor. He

never did. Always said something about it being "drag" and that "the Mosquito doesn't seem to be as good as its handicap says it should be." He crewed for me on some epic flights. My first landout in the 604, all of 6 miles from Sunflower. The flight to Pecos, Texas, where he left his house on Saturday morning, and we finally got back home on Monday morning.

I did get to do a few things to help repay all the effort he put in for me. I got him to try a Go South flight, starting from Ulysses. The goal was to get Diamond Distance, with a planned two turnpoints, then land at Sunflower. To minimize the retrieve. The clouds started late, but were good. The wind was howling from the WNW. He made good time to Sunflower (the first turnpoint), and got stuck by some overdevelopment. But we had a great day, with a drive to Ulysses, flight back to Sunflower, and return home, all in the same day.

Dennis, I will miss your laugh, your smile, and your willingness to stay and help out, no matter how tired you were. As others have said, 'Mark a thermal out there for me, Dennis!'

Keith Smith -

I would not be flying gliders if it were not for Dennis Brown. I will miss teasing him, since he gave me such crap about the PW. Immediately after he first saw it, he also helped me in many ways to learn to put it together and get it back into the crazy trailer. He and Brian came to get me on my first landout at McPherson after a hot, tired Sunday of flying. Dennis wasn't just an excellent pilot we all looked up to. Dennis Brown was my Friend.

Mike Logback -

My Condolences to the family , Rest In Peace Dennis, I only knew Dennis for a few years , but I looked forward to his smiling face at Sunflower , Dennis became somewhat of an icon of soaring to me, He found soaring mysterious every time he flew, Dennis will be missed



Something to Consider

By **Paul Sodamann**

When I called 911 to get an ambulance for Dennis a few things became evident that I think all of us need to address. First of all I was unsure of how to provide directions to the glider port. Does Sunflower have an actual address to provide emergency responders? If not how should directions be given? Also, do all of us have I.C.E. phone numbers in our phones? I.C.E. is "in case of emergency" if you were not sure. It is the first listing under the contacts on my phone and I have my wife and two brothers listed in that order. I hope we never have a situation which requires emergency responders again, however, a little preparation might go a long way towards making the situation easier to deal with.

PRESIDENT'S MESSAGE

Hutchinson - the ridge/wave soaring center of Reno county, Kansas. HUH? We all know that Hutchinson has some long, tall elevators but they aren't that long and tall.

On June 13, 1993, there was some atmospheric magic going on and Mosquito N7LY was able to reach 10,440 MSL. The tallest cloud tops were about 10,200 MSL. Let me tell you, being in a glider above all cloud tops within a 10 to 20 mile radius of Hutchinson, Kansas, is a fascinating experience, especially after having climbed in smooth, clear air.

The day started as a typical June, wet ground, windy, miserable soaring day. The wind was around 20 knots out of the South. I was installed in the cockpit and ready to go when I remembered I hadn't started the SDS electronic barograph. Curt McNay tried to punch the right buttons for me but the accessibility was limited and we managed to disable the ship's battery. I elected to pull out of the launch line, replace the battery fuse and start the barograph. This was a very fortuitous move because I really enjoyed this baro trace later. I launched at 2:13 PM. John Wells had already launched in his ASW 20 and was staying aloft but the training aircraft were having difficulty managing the weak lift/wind combination.

After the tow I joined John in various miserable thermals and we struggled around more or less together for nearly an hour, never getting above 3000 AGL and several times getting below 2000 AGL. The lift was broken up, the drift was strong, the clouds were out of reach, etc., etc. About that time David Woody radioed that he was returning to Sunflower (from downwind). I was north of Dave a couple of miles and John was west of Dave about the same distance. John told Dave that he'd found a decent thermal. Dave couldn't reach that location but I certainly could. I'm easily swayed by other gliders going up while I'm struggling so I flew over to where John was so nicely marking the lift. Indeed, John had found an honest 4 knotter. The clues to the day were starting to count up, unfortunately I remained clueless.

The thermal took us to cloud base at about 7200 MSL. I left the thermal heading South. John proceeded in the same general direction. After about 10 minutes of no or meager lift, I decided to go back downwind so I headed Northwest. I contacted more consistent, but weak lift in this direction.

The clues had changed. The clouds were forming in a Northeast - Southwest pattern. The wind appeared to be from the Northwest at altitude (a 135 degree shift). I contacted relatively easy to work lift under a "decent" looking cloud about 3 miles Southwest of Hutchinson. There was another "decent" cloud further Northwest so I elected to run to it. About halfway between these clouds (about 1 mile) I contacted smooth, gentle lift in the blue. This got my attention so I proceeded to circle in this lift. I was expecting a cloud to form overhead as I continued to climb in the blue. After a few minutes it became apparent that I was going to get above the cloud base that I had just left. Now I was getting really interested. After a few more minutes it became apparent that I was going to get above the cloud base of the clouds to the West. About this time I

radioed my discovery to John and he said I was probably in wave lift and to stick with it. Since it was definitely an oddity I wasn't about to leave it. I watched for evidence of cloud forming over me - there was absolutely none. No condensation anywhere close to my location. A few more minutes and it became a real possibility that I might be able to get above the clouds. I started exploring a little more and found that the lift was indeed "streeted" or formed into ridges or waves. The wave existed some distance upwind from the clouds, which were developing the appearance of a ridge. I proceeded to fly in a Northeast - Southwest path in front of this pseudo ridge. The lift continued and I topped out about 200 feet higher than all the clouds in the area.

So far I'd been flying this wave lift 20 minutes. By now the clouds forming my "ridge" were becoming "flatter" with less prominent vertical development and broader bases. The lift was nearly 0 so I decided to fly to the next ridge upwind (Northwest). I so informed John and he advised me that on a previous experience he had been unable to find further wave after such a move. I'd already started the transition so I kept going. After all - this was a learning experience.

The flight over to the next ridge was as uncanny as everything else so far. There was very little sink and in fact, the air could best be termed as buoyant. I flew over the ridge of clouds and contacted even better wave type lift than on the previous cloud ridge. I got to 10440 MSL along these clouds. So far I'd been flying the waves for 35 minutes. Since the first transition had been successful I decided to do it again - this time further upwind. I flew about 10 minutes upwind between the prominent clouds and contacted nearly 3 knot lift upwind of this "ridge".

About 8 minutes into this lift John called saying something about a bag coming loose in the cockpit. He seemed a little perturbed. A short time later he made a more serious call, having experienced some negative G's and that he might need assistance. I started South toward Sunflower. I deployed the speed brakes, pushed over about 30 degrees nose down, accelerated to 65 or 70 knots and 60 seconds later was 2000 feet lower (below cloud bases). I looked for John south of HUT but couldn't see him. His radio conversations gave me confidence that he was OK. Eventually we all got together over Sunflower and landed about 30 minutes after leaving the wave conditions.

When I got home that evening I was watching the TV weather. The radar replay showed an anomalous line right through Hutchinson. In talking to various people and making some guesses of my own I feel like the condition was a shear line where cold air was wedging under warmer air. We had found a thermal that had broken through the lower level stability and had taken us into an entirely different air mass. I don't know what the cause/effect relationships really are, but the next time we have a strong wind on the surface, the winds aloft are 135 degrees different, and the clouds start organizing, I'm going to look for lift in the blue.

Oil flow testing on Mosquito N7LY.
July, 1995

I've been curious about turbulator strips on my Mosquito ever since Bob Barber, from Colorado, told me that a turbulator just ahead of the ailerons helped on his Mosquito. Dick Johnson has used dirty motor oil to visualize laminar separation bubbles so I decided to look at the airfoil with that technique. Especially since Johnson's performance measurements of the Mosquito showed plenty of room for improvement.

I found a sprayer and loaded it up with very dirty 10W30 motor oil. It sprayed in a solid stream no matter where the nozzle was set. So I called Dick and asked him about it. He said to spread the oil around with a brush.

I made a set of turbulator strips by taking a piece of .010" X 6" X 1" drafting mylar, pasted a 1/2" wide piece of thin adhesive transfer tape (Bear product 950) on it, trimmed the mylar to the same width as the transfer tape, then split the width with a pinking shear. I cut the strips into about 3" lengths to use as test pieces. When I was ready to apply these, all that was needed was to degrease the wing surface, remove the backing paper from the transfer adhesive/mylar combination and apply the strip to the wing. Turbulator #1 was placed on top of the leading edge of the mylar that covered the flap hinge gap. Turbulator #2 was in front of the mylar gap cover to simulate pinking the leading edge of the gap cover. Turbulator #3 was at .75c, strip #4 was at .705c and strip #5 (added after flight 2) at .644c. The turbulators were placed at slightly different spanwise locations so they wouldn't interfere with each other's flow pattern. The forward edge of the flap hinge line gap is at .821c. The wing chord averaged 28" in the area of the turbulators.

On the bottom surface I spread oil from about .2c to about .6c, ahead of the turbulators. I also spread oil over the top surface in two areas ahead of the aileron. One area had a wave discontinuity over the spar that you could feel if you have a sensitive touch. The adjacent area was smoother. Neil Pfeiffer (Dr. Pfeiffer to the aerodynamics community) helped me. He said that spanwise brushing was better than chordwise. Reference photos 1 and 2.

The first flight was 30 minutes with the entire flight, including the tow and the approach to landing, done between 55 and 60 KCAS with 0 flaps.

The top surface pattern developed nicely. It showed laminar characteristics back to about .63c then a small transition area followed by attached turbulent flow. Neil was of great help in showing me how to interpret the pattern. Reference photo 3.

The bottom surface was different. The oil didn't seem to behave like the top surface had. It was unclear where the transition occurred. The oil looked like it had stayed with my last brush stroke. The turbulator strips were dry. The only pattern was 2 turbulent wedges from debris in the oil. This turbulent pattern took the oil right on back to the trailing edge, just like it should. We were somewhat confused by the laminar/transition pattern since the top surface had developed a classic pattern. I decided to repeat the point. Reference photo 4.

For the second flight I cleaned off all of the old oil and painted a lighter coat of less dirty oil on the bottom surface from .2c back to the flap hinge line. I flew the same profile as the first flight, but about 5 minutes longer.

This time things were different. There was a large, obvious, separation bubble on the bottom surface at .65c extending back to the hinge line at .82c. That's the reason the first flight had no pattern in that area. The turbulator strips were far inside of the separation bubble and were of insufficient height to have an effect. Reference photo 5.

For the third flight I added a 5th turbulator at about .644c and decided to try one negative notch (-4.5°) of flaps and 73 KCAS. I also brought a new quart of oil to the sailplane. It's a bit strange to bring oil to a sailplane, but I guess I've been seen doing strange things before. Anyway, a little clean oil was colored with a bit of the dirty oil and painted on. The tow was made at 70 knots with -1 notch of flaps to 3000' AGL. The glide back was at 70 to 75. The light lift was entirely unworkable at this speed.

The results of this flight were very interesting. The separation bubble had moved aft to about .76c. The turbulators at locations forward of .76c worked as advertised even though a piece of debris wiped out part of strip 5 and strip 5 blocked most of strip 3. One small segment of strip 3 looked like it was effective in reducing the separation bubble. The separation bubble was now about .05c wide instead of .17c wide. Reference photo 6.

Upon review of Johnson's flight test article on the Mosquito, I would be inclined to think that I should start to use the -1 notch flap setting at about 60 knots instead of 70. Pinking the leading edge of the lower surface mylars installed over the hinge gap will probably not be effective. No turbulator location will be optimum for all conditions no matter where it is located. A different entry point for the airfoil might also be indicated. Dick Johnson made the comment to me that the airfoil section should be "like god and Wortmann intended" and it looks like he's right.

The experiment has been interesting, worthwhile, and CHEAP. Before I decide on a location for the turbulators I want to evaluate more conditions, especially the higher speeds. I'll use a wake rake for this since I can get several data points on one flight. I could go on and try other locations and conditions with oil but I'm sufficiently greased for awhile. Besides, everybody knows that Mosquitoes don't like oil.

Dennis Brown

L. Wing Top, Outboard



PHOTO 1

L. Wing Bottom, Outboard

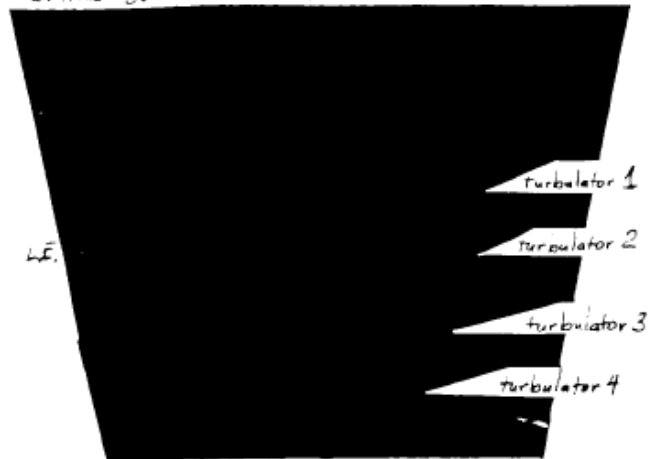


PHOTO 2

FLIGHT 1

L. Wing, Top, Inboard

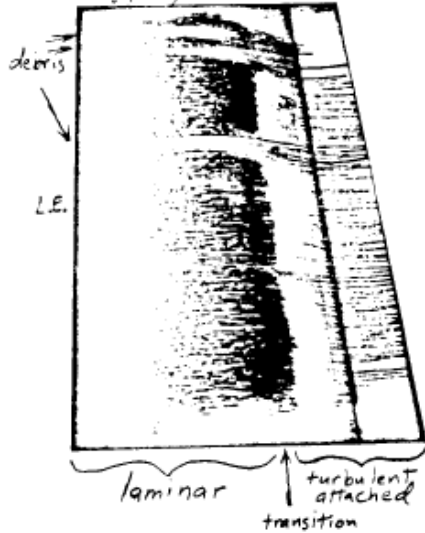


PHOTO 3

FLIGHT 1

L. Wing, Bottom, Outboard

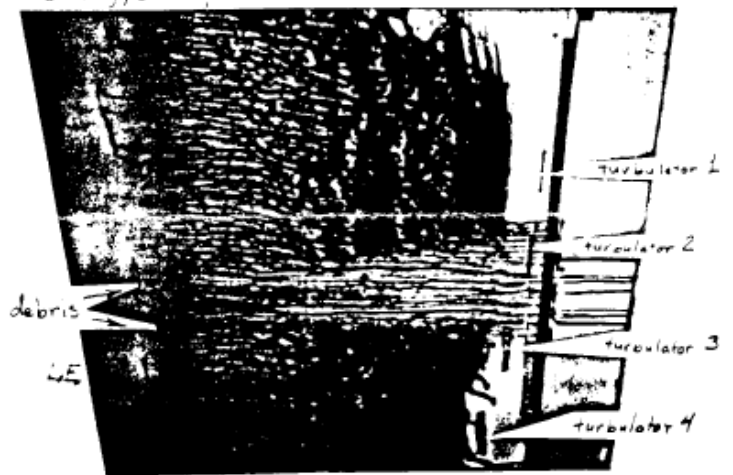


PHOTO 4

L. Wing, Bottom

FLIGHT 2

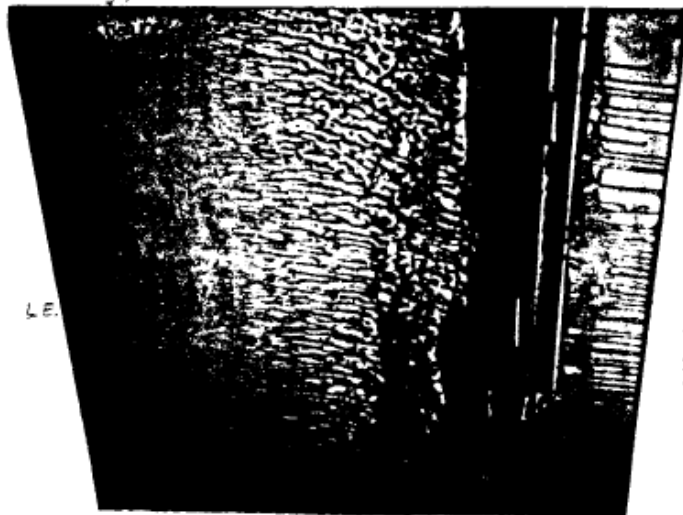


PHOTO 5

L. Wing, Bottom

FLIGHT 2

separation area



PHOTO 6

Wake Rake

Testing of mosquito N7LY



by Dennis Brown

PURPOSE:

There were four reasons that I wanted to install a wake rake (Drag Meter) system on the Mosquito. They were:

1. To see if a turbulator might suggest a drag improvement, especially at cruise speeds.
2. To determine the speeds for flap position changes, and the differences between the +1 and +2 thermaling flap settings.
3. To compare the data with other tests done by Dick Johnson.
4. To develop a reliable and repeatable installation for future testing of airfoil modifications.

CONFIGURATION and INSTRUMENTATION:

The sailplane is a Glasflugel model 303, S/N 47, Mosquito built in 1977, and refinished in 1991. No airfoil contouring has been done. Paint defects and gelcoat nicks were filled with lacquer putty and smoothed. Extensive sealing has been done including mylar gap seals on both upper and lower wing surfaces. All flights were accomplished at an unballasted weight of 808 pounds, giving a wing loading of 7.56 lbs/ft². The Mosquito has 5 notches for flap settings - +2 (+12 deg), +1 (+6 deg), 0 (0 deg), -1 (-4.5 deg) and -2 (-7.5 deg). For this report, flap settings are given in notches. The airfoil is a modified Wortmann FX67 series. The leading edge radius is roughly that of the Wortmann 17% section, but the airfoil is 16% thick. The difference would require about 1/8" of fill at the nose.

The basic instrumentation configuration, with a few differences, was taken from Reference A. An

improved drag probe was built, using the description in Reference B. Deep drilling #72 holes was a challenge. The rake was located 55" outboard of the root rib. At this location, the wing chord is 30.38." The forward edge of the flap gap is at .825c.

A Replogle (Dwyer), 0 to 1" water column delta pressure instrument was used, instead of a helicopter airspeed. A 3-point calibration at 0, .5", and 1" of water was done. The instrument was as accurate as my eyesight, so no calibration table would be necessary. Dick Johnson told me that the instrument would need a hanging mount because the Dwyer gauge is sensitive to mounting angle. A mount was made that would allow the instrument to swing freely, fore and aft, with minimal influence from the attached pressure lines. It was sized to fit in place of a normal 3 3/8" instrument. For this report, all delta pressures are given in inches of water column. If you wish to convert from inches to knots, the formula is: knots=39.206(sqrt(inches))

To check out the effect of aircraft attitude on the instrument indication, a flight was made with no pressure lines attached to the instrument. One point at 70+ knots, full positive flaps (most nose down condition) was compared to a point at low speed, full negative flaps (most nose up condition). With the instrument fixed (not free to swivel), the zero would shift at least .1" of water. With the instrument free to swivel, there was no shift. A delta pressure of .1" is more than 5 times the resolution that would be necessary, so it is very important that the instrument is free

to swivel. After all this, the zero point was carefully set.

Unbalanced line effects were also checked. On the first attempt, the low pressure port had 13 ft of 1/16" id tubing, and the other port had about 6", with both ports referencing total pressure. This would tell if tubing length could be ignored. A rapid pull up or push over showed .1" to .2" of movement on the instrument. The test was repeated, referencing cabin static, and the result was the same. This was not an acceptable error. The next test was with equal 13' lengths of tubing on both sides of the system, with the high pressure side connected to a Kiel tube, and the low pressure side connected to the wake rake. All of the tubing, Kiel tube and the rake were placed behind the panel, referencing cabin static. A rapid pull up showed about half the indication that it had before. This was still unacceptable. On the next flight, the tubes were arranged so they could be accessed during the flight. When about 6' of tube was removed from the high pressure side, the instrument showed very little motion with pull ups and push overs.

Lag in the system would be taken care of by waiting for stabilized readings before recording data. No lag was noticed during actual testing.

The airspeed system had been calibrated, so no additional work was needed in that department. The total system error is presented on a plot inside Figure 1. It should be noted that the difference between this calibration and that shown in Reference D is due to relocation of the static ports to the aft tailcone and remarking the dial of the indicator. The pitot

and static systems were checked for leaks, and there were none. All airspeed references in this report are calibrated airspeed in knots.

Several .0125" high turbulators were constructed by pasting a .5" wide piece of adhesive transfer tape to a strip of .0075" mylar, then using pinking shears to cut the mylar down the middle, making two turbulator strips. The thickness of the adhesive (.005") was determined by

sandwiching the adhesive between two pieces of mylar and using a micrometer. The adhesive tape was 3M's 468MP picked up from Boeing surplus for \$1. It is not a structural adhesive. The turbulators seem to stay in place quite nicely, yet they are easy to peel off, without leaving residue on the wing.

And lastly, an instrument shaker was built and installed on the front of the panel.

DATA and ANALYSIS:

Prior to data gathering, the instrument readings were observed during thermaling flights. During this "informal" testing it was found that +2 was inferior to +1 flaps at all speeds. This was all that I really wanted to know for these two flap settings, and no formal data are presented here. That took care of item 2 on my "want" list. Item 4 was answered favorably during the early

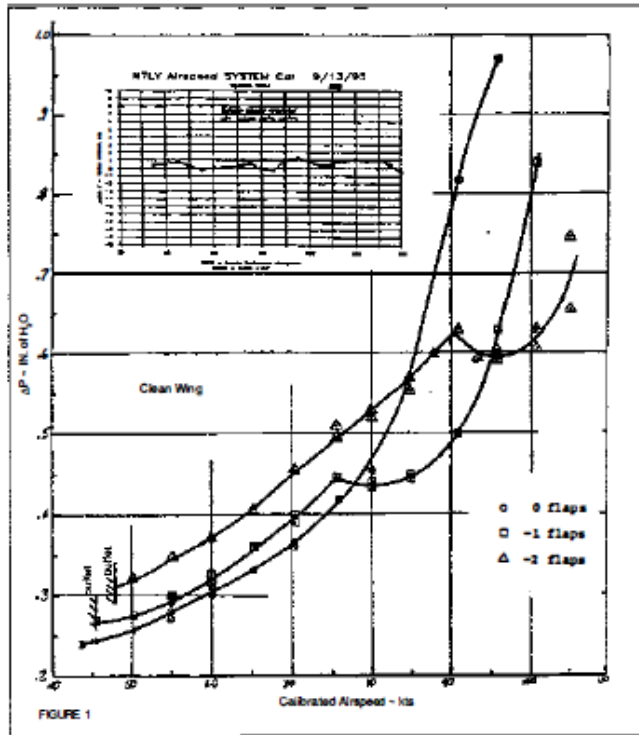


FIGURE 1

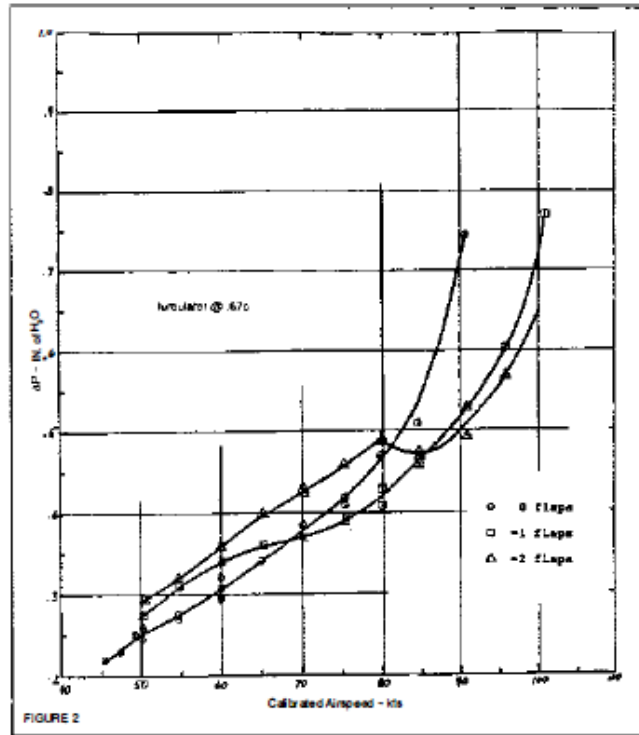


FIGURE 2

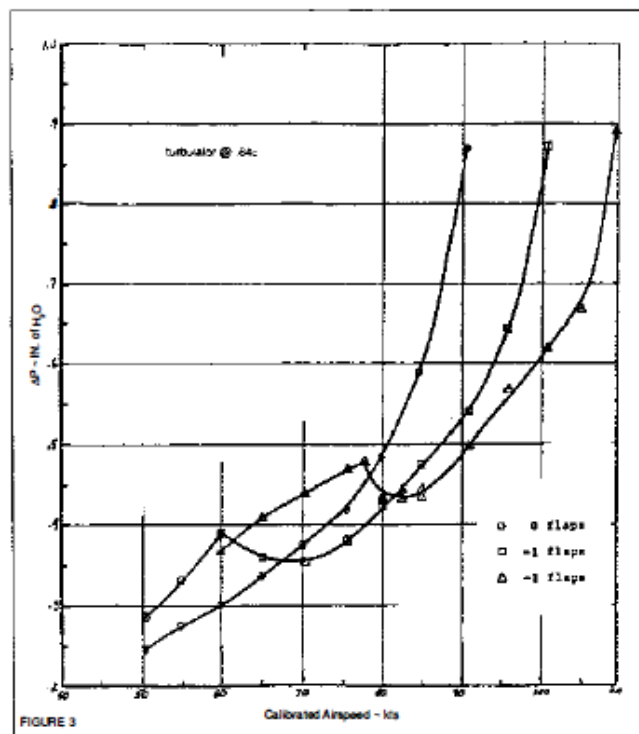


FIGURE 3

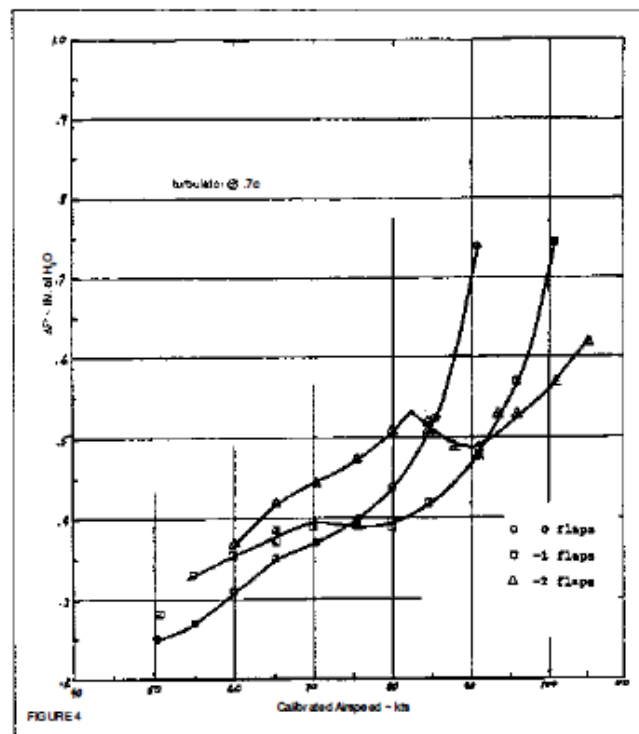


FIGURE 4

testing by noting that a given airspeed/drag value was quite repeatable from day to day. It was found that only smooth air, stable points were easily repeatable. Bumpy air was inconsistent and turbulent air even worse.

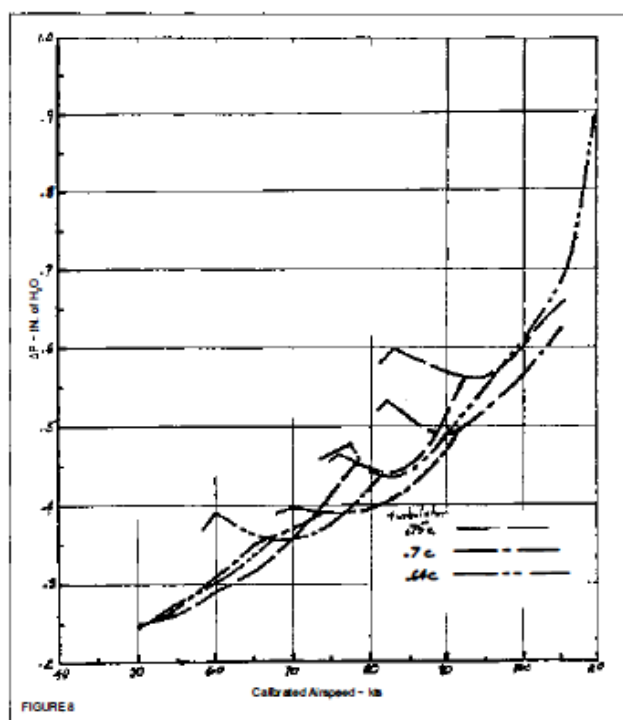
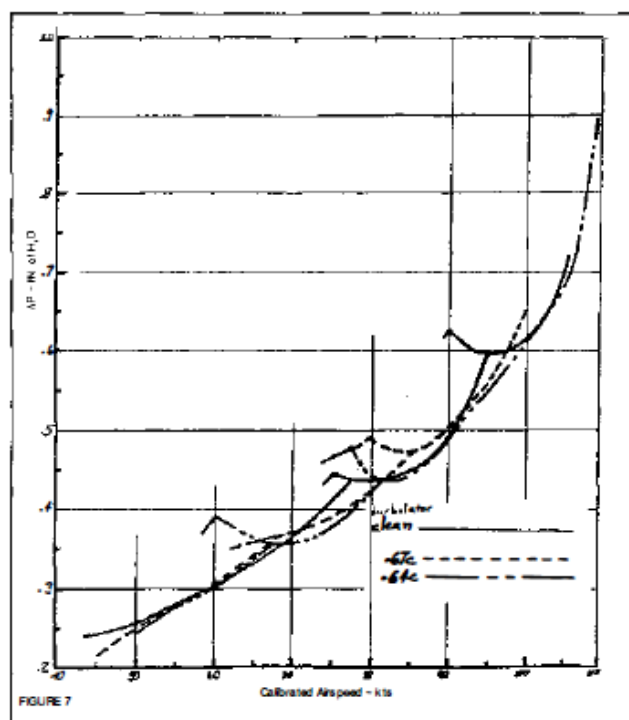
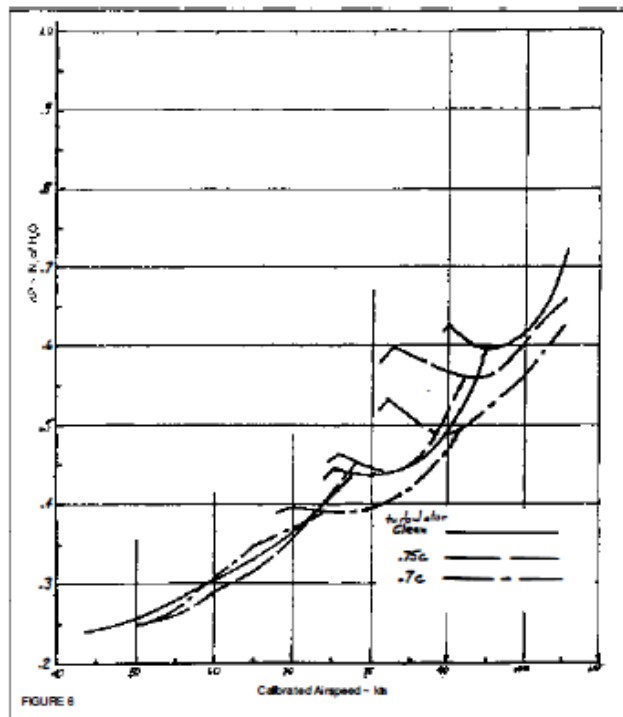
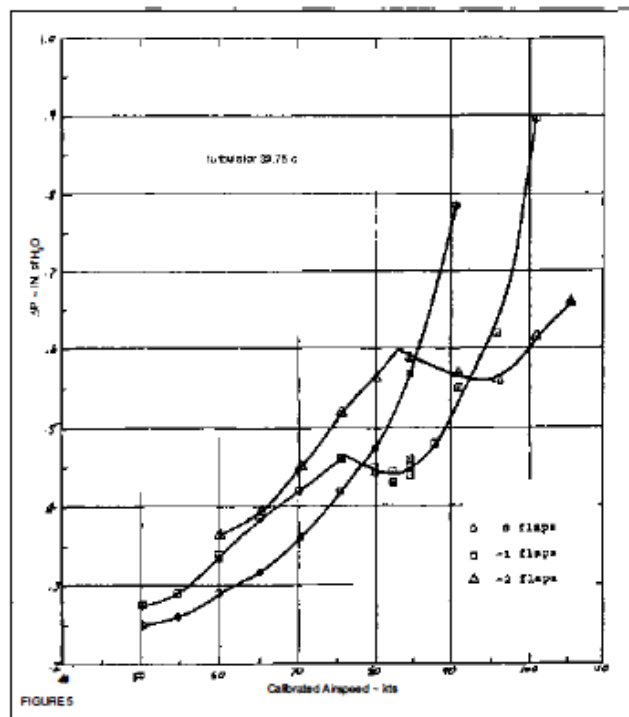
A continuous audio tape was made during each data flight. After the flight, the data were transcribed to a notebook, along with comments as to flight conditions. A relative

small amount of data were used from the early flights due to marginal conditions.

All data were graphed, one line per plot, with points included. Each plot was then copied onto overhead projector transparencies so that any combination of curves could be compared by laying the transparencies on top of each other.

As an aside, I do not advocate feeding raw data into an algorithm

in a computer and taking the answer as gospel. The algorithm wasn't there when the data were taken, and didn't feel the bumps or notice that the indicator needed thumping. Given enough money, one can buy enough equipment and fly enough times that the engineering judgment argument is minimized. I haven't been offered a winning lottery ticket yet. My personal engineering judgment applies to all graphs.



Clean wing (no turbulator) data were established on flights 1, 2, 3, 4, 5, and 13. Flight 13 had the smoothest conditions and the line favors those values when there were questions of where the line should go. The data for 0 flaps have little scatter with few wiggles to the curve. The data for -1 and -2 flaps have curious and obvious dips. When the three plots are superimposed, shown as Figure 1, flap change speeds become immediately obvious. Notice that the flap change speeds were quite high. The change from 0 to -1 occurred at 77 knots and from -1 to -2 occurred at 95 knots.

Flights 6, 7 and 12 had a turbulator installed at .67c. The plots are shown in Figure 2. The character of the curves is similar to the clean wing curves, except for the very obvious downscale shift of the flap change speeds.

For flight 8, the turbulator was moved forward to .64c. The plots are shown in Figure 3. The flap change speeds moved further downscale.

For flights 10 and 11, the turbulator was moved aft to .7c. The plots are shown in Figure 4. The flap change speeds moved upscale.

For flight 14, the turbulator was moved aft to .75c. The plots are shown in Figure 5. The flap change speeds moved upscale and are close to the clean wing values.

It should be mentioned that oil flow testing had been done on the Mosquito prior to the wake rake tests. Oil patterns with the flaps at 0 and 60 to 65 knots showed a lower surface laminar separation bubble from .65c to .82c and an upper surface laminar to turbulent transition between .62c and .65c. With the flaps at -1 and 70 to 75 knots, a lower surface separation bubble exists from .75c to .80c. No oil had been applied to the upper surface for that test condition. A description and pictures of these data have been published in the Kansas Soaring Association and the TSA newsletters (Reference C).

The points and parts of the lines were removed from Figures 1 through 5 and another set of transparencies were made for further comparisons. The clean wing, .7c and .75c locations were plotted together to make Figure 6. The clean wing, .67c and .64c locations were

plotted together to make Figure 7. Keeping it down to 3 lines per plot makes comparison much easier.

From Figures 6 and 7, it was easy to see that a major player in the overall drag polar is the downscale shift of flap change points with increasingly forward turbulator locations. It would seem that the laminar separation bubble is more quickly (i.e. at lower airspeeds) destroyed by further forward turbulator locations. This could be explained if the bubble is moving aft with increasing speed (decreasing alpha), and becomes destroyed as the bubble moves past the turbulator. This does not fit with my preconceived notion of the nature of laminar bubbles. I could use some help here.

The "knees" in each of the curves (where flap changes occur) produce significant shifts of the overall curve to the right (higher airspeeds for a given delta P). When these shifts are moved downscale, the shifts become even more effective. Using the clean

.75c is better by about 3 knots at delta P's from .25 to .36
 .75c is equal at delta P's from .36 to .57
 .75c is worse by about 3 knots at delta P's from .58 to .60
 .7c is worse by about 2 knots at delta P's from .33 to .36
 .7c is equal at delta P's from .36 to .39
 .7c is better by about 8 knots at delta P's from .40 to .44
 .7c is better by about 3 knots at delta P's from .44 to .56
 .7c is better by about 6 knots at delta P's from .56 to .61
 .64c is equal up to a delta P of .36
 .64c is better by about 3 knots at delta P's from .36 to .44

wing as the baseline, the "most significant" locations fare this way:

The .75c, .7c and .64c transparencies are plotted together in Figure 8

.75c was best up to 70 knots but worst from 73 to 98
 .64c was best from 70 to 76 knots but worst above 98
 .7c was best above 76 knots but worst from 60 to 73

for final comparison. Each have a "best of the best" range:

Based on Figure 8, I eliminated the .75c location from consideration because it was inferior above 70 knots. Also, the oil flow test results would disagree with the wake rake data for this turbulator location at 0 flaps. The turbulator should have been inside the laminar bubble which leads to some doubt about the 0 flap range of data.

I've selected the .7c over the .64c location due to the effects above 76 knots. It looks like .7c has about a 3 to 5 knot advantage on average. When compared to the clean wing the advantage is more than 3 to 5 knots. The .7c location has the disad-

vantage of being 3 to 4 knots worse than the .64c location from 67 to 76 knots, a very important speed range.

Like any other investigation, many questions remain. Things show up that you don't expect, the data are never perfect and you can rationalize great quantities of additional time and money. Have you ever seen a report that didn't claim "further investigation is needed?"

CONCLUSIONS:

All the objectives of the project have been addressed. Note that not all were completed with positive results.

A turbulator at .7c should result in improved performance over the clean wing at flap settings of -1 and -2.

Flap change points with a turbulator at .7c are 74 knots for -1 flaps and 92 knots for -2 flaps. As turbulator location moves forward, flap change points move to lower speeds. The +1 flap setting is superior to the +2 flap setting at all speeds.

Direct comparisons with other wake rake data done by Johnson are inconclusive. It would seem that variation in rake construction, instrumentation set up and other factors make rake data most useful for improving a given aircraft.

The wake rake, as installed, is a reliable and repeatable qualitative method for measuring airfoil modifications.

FUTURE TESTING:

Prior to next soaring season I hope to document a polar for the Mosquito with a turbulator installed. For that project we'll have data logging of all flight parameters, using a new final glide computer. That will be interesting.

If a turbulator does not result in a definitive improvement over Johnson's evaluation of the Mosquito (Reference D), airfoil profiling will be on the menu.

References:

- A. Johnson, R. H. "At Last, An Instrument That Reads Drag," *Soaring*, October, 1983
- B. Johnson, R. H. "A Flight Test Evaluation of the Grob 103C Twin III," *Soaring*, March, 1990
- C. Brown, D. H. "Oil Flow Testing on Mosquito N7LY," KSA Newsletter, November, 1995 and TSA Newsletter, October, 1995
- D. Johnson, R. H. "A Flight Test Evaluation of the Mosquito," *The Johnson Flight Tests*, *Soaring*, August, 1979.

Sunflower Seeds

July 3rd: **Michael Groszek** flew the Ka-6

July 4th: Kowbell. **Tony Condon** in Kate the Std. Cirrus K, **Bob Holliday** in ASH-31 3D, and **Steve Leonard** in the FJ-1 PN all competed. **Bob Hinson** in Duster KD and **Keith Smith** in Tinkerbelle the PW-5 LW, flew locally but didn't venture out. **Mike Orindgreff** had a short flight in the ASH-26E F8. **Dave Stanko** towed.

July 13th: **Mike Orindgreff** (F8) flew

July 14th: **Mike Orindgreff** (F8) flew

July 16th: **Mike Orindgreff** (F8) flew

July 18th: I think there was some CAP ride activity in the morning with **Jerry Boone** and **Bob Holliday** flying the 2-22 and 2-33 and **Bob Hinson** towing.

July 19th: **Dave Wilkus** in Diamant SR and **Michael Groszek** in the 2-33 logged flights. **Michael** landed out a few miles west of the field. With help from **Steve Leonard**, **Mark Ross**, and **Steve Seibel** the glider was returned without any trouble. **Dennis Brown**, **Bob Hinson**, **Lyn Juby**, **Paul Sodamann**

July 20th: **Mike Orindgreff** (F8) and **Bob Holliday** (3D) flew. **Mike** made about 150 km and **Bob** 330 km.

July 31st: **Mike Orindgreff** (F8) flew

August 1st: **Dave Wilkus** (SR), **Mike Orindgreff** (F8), **Steve Leonard** (PN), and **Bob Holliday** (3D) all flew.

August 2nd: **Dave Wilkus** (SR), **Don Jones** in the Russia MB, **Bob Holliday** (3D) and **Steve Leonard** (PN) all logged flights

August 8th: **Dave Wilkus** (SR) and **Steve Leonard** (PN) both logged short flights

August 10th: **Mike Oringreff** (F8) made a 100 km flight .

August 12th: **Mike Orindgreff** (F8) was up for a short flight.

August 14th: **Mike Orindgreff** (F8) and **Bob Holliday** (3D) flew 80 and 200 km, respectively.

August 16th: **Mike Orindgreff** (F8) was back for a 60 km flight.

August 19th: **Bob Holliday** (3D) flew 215 km.

August 28th: **Tony Condon** towed. **Don Jones** (MB), **Steve Leonard** in the RHJ-9, and **Mike Orindgreff** (F8) all took tows. **Bob Holliday** (3D) self launched later.

August 29th: **Bob Hinson** towed. **Tony Condon** instructed with students **Alex Hunt** and **Brian Silcott**. Guest rides were given to guests of **Tim Double**. **Harry Clayton** and **Sue Erlenwein** were present, as well as **Steve Leonard**. **Brian Bird** gave a few rides in the Grob for Roy Wenzl and Travis Heying from the Wichita Eagle. **Keith Smith** flew Tinkerbelle and **Paul Sodamann** had a flight in Betty Boop. **Becky Cole** was seen at the end of the day.

August 30th: **Tony Condon**, **Alex Hunt**, **Leah Condon**, **Tim Double**, and **William Calderwood** started the day off with Auto Tows. **Bob Holliday** towed in the afternoon. **Steve Leonard** and **Brian Silcott** ran the line. **Harry Clayton** and **Sue Erlenwein** were present again, with **Sue** helping on the line and **Harry** getting a flight in the 2-22. **David Kennedy** got re-solo in the 2-33, **Dave Pauly** solo in the 2-22, and **Alex**, **Tim**, **William**, and **Mike Davis** all flew with Tony in either the 2-33 or 2-22. **Jerry Boone** flew a few guest rides in the Grob. **John Wells** in ASW-20 KJ, **Dave Wilkus** (SR) and **Bob Hinson** (KD) all flew, with **Bob** not landing from his second flight until after 6:00 PM. **Becky Cole** and **Bob Park** were also seen.

Betty Boop Flies!

Paul Sodamann had his first flight in his 1-35C "Betty Boop" on July 13th.
Everything went well. You can watch the flight [here](#)



Member Accomplishments

Don Jones earned Silver Distance for his June 27th flight .

Tony Condon placed 9th at the 13.5 Meter World Gliding Championships

Alex Hunt soloed on August 30th. Congratulations!



Cloudstreet will air on KPTS on
September 9th at 7:00 PM. Tell
your friends!

N2776H “Betty Boop”

By Paul Sodamann

I first laid eyes on Betty in 1980. She was unassembled with her wings stretched out on sawhorses and the rest of her on tables or the floor in the “office” at Mesa Verde. Mesa Verde was a private airport northwest of Topeka owned and operated by Max Collier. Max had a small skydiving operation along with his gliders and power plane instruction. He was also an A&P/IE or whatever the letters are that go with a “fix it” guy and Betty needed a little attention. Max purchased her as project plane after she was put through a fence by an inexperienced pilot who was not use to a flaps only glider. Betty is a Schweizer 1-35C built in 1978 which means she has a fixed landing gear, no water ballast in the wings and flaps not dive breaks/spoilers. A club version of the 1-35. When the 1-35’s were going into production the intent was for them to be a competitive fifteen meter ships. They are all metal construction with the rivets skimmed over to make a smooth surface which almost looks like a composite ship. Unfortunately the rules allowing the new glass/composite materials were coming about around the same time the 1-35’s were rolling off the assembly line. This rule change made the 1-35’s not able to compete efficiently with these new ships.



Betty as I first saw her.

For many years I either was skydiving or flying gliders at Mesa Verde and Max and I became very good friends. Over the years I purchased a Taylorcraft BC 12 D and an Aeronca Chief both of which were projects which I finished under Max’s watchful eye and flew off of his grass strip. But Betty just sat there in pieces collecting dust and not receiving the love she deserved. Of course Max would sort of work on her from time to time but you had to know Max to understand his way of doing things. Unless there was an urgent need the projects proceeded at his own special pace.

Many years passed and the airport fell in to more and more disrepair and Max got older and older. I kept coming out several times a week to help him with what ever project he had going on or to do something on my own plane. Then one day I saw Betty's canopy setting out on a table in the main hanger all cleaned up and looking pretty. I asked Max what was up with that since nothing had been done to her for years. He said there was a guy interested in buying the canopy as a replacement for one he broke. I jokingly said, "You are not parting out my glider are you?" Well, that led to a conversation about what was needed to get her in the air again, how much she was worth (which is always an ephemeral figure) and so on. I hate seeing beautiful old planes of any kind just collect dust and die a slow death on the ground. If I could win the lottery I would spend it all on buying and rebuilding as many old planes as I could. Betty was one of those "beautiful old ships" that needed someone to love her - - so I bought her! By this time all she really needed were three small parts and some "makeup". Max said the three parts were around someplace. The parts had been "someplace" for thirty years, he had just not troubled himself looking for them. However, after we shook hands and closed the deal those parts magically showed up the next day. Money always made Max work more efficiently.



Some of my early body work

This was around 2009 and I was not currently flying anything or even skydiving so I took my own sweet time going through my new project and learning her inside and out. Lots of emails back and forth to K&L Soaring for advice and drawings as well as lots of trips to the paint store for "makeup" and eventually she was ready to face the world and get an annual inspection. However, I had no way to move her. Damn I needed a trailer! A used trailer and fitting a glider into it is another story all in itself so suffice it to say I got it done.



Prime prior to paint



Ready for inspection

After passing inspection, a trip to Sunflower, assembly and being placed in a hangar it was time for me to figure out how to transition from a 2-33 with dive breaks to a 1-35 with flaps only. For some reason or another this transition to flaps had me concerned. I expected them to be much more challenging than dive breaks. I am also a kayaker with lots of white water experience under my spray skirt and we have a saying in kayaking: "The rapids you run in your mind is always worse than the rapids you actually end up running" The same apparently goes for transitioning to flaps. Thinking about how to use them and what they would do was a heck of a lot more stressful than actually using flaps for the first time. In fact by the time I worked up to my first flight in Betty and an extra high tow so I could have time to figure the flaps out it became a non-event. In fact I now love the flaps only set up Betty has.

Since that first flight I have a dozen more flights with Betty. She is still teaching me a thing or two every flight and I am learning how to make her listen to me from time to time. I think eventually we will grow to become best of friends and work as a team. Even though the makeup I applied did not turn out as I had hoped it is good enough to live with for awhile. In a few years I will sand her down and do it again, hopefully it will turn out better the next time. She is a heck of a fun girl to be with, not the prettiest girl on the block, but she is mine!

Boop-boop-e-doop!

2015 Kowbell Results

Tony Condon - Std. Cirrus - Burwell, NE - 273.7 Miles

Bob Holliday - ASH-31Mi - Goodland, KS - 228.0 Miles

Steve Leonard - FJ-1 - 10 North of Hill City, KS - 152.2 Miles

Big Q Aviation will be conducting a Talihina ridge camp Thursday, October 22 thru Sunday, October 25. Mark your calendars! For the ridge newbie, the Grob 103 2-seater will be available along with an instructor. There will also be a ridge/Talihina ground school at Midway airport shortly before the actual camp. For the ridge veteran, the Grob 102 single seater will be available for rent or bring and soar in your own ship. More details will follow shortly. For any questions, please contact Omri Kalinsky at omri@omrikalinsky.com or [972-499-0360](tel:972-499-0360).

Kansas Kowbell Klassic Krew Report– July 4, 2015

By Leah Condon

The Kansas Kowbell Klassic has a reputation for creating stories and lasting memories. This year was no different for me. I have been acting as chase crew for **Tony Condon** in the Kowbell since I moved to Kansas in 2009. This year, 2015, was a special year for me not just because of it being Tony's second Kowbell win, but because it happened to fall on the 4th of July. Besides knowing that I would be missing out on Wichita's firework display I did not give much thought to what impact the holiday would have on the Kowbell experience.

One special thing about Kowbell 2015 was the chase car. This was the first Kowbell with our Subaru Outback as Tony missed last year due to a contest conflict. This was a big deal for me as I had a love hate relationship with the chase crew reliability of "Old Blue" our 1994 GMC Sierra Pickup with 300,000+ miles. **Tony** was also flying "Kate" the Standard Cirrus he owns, which has a nice towing Komet trailer. These two factors had me joking to others that I was looking forward to a relatively boring Kowbell experience. Dangerous words, I know.

I am a bad crew as I do not remember what time my pilot took off. I do remember that after he did I pulled the car and trailer up in front of the tower building to park until I was given the go ahead. Before taking off, **Tony** had discussed his intentions of heading toward McCook, NE. Our typical strategy is that once he takes off he reassess the soaring conditions and once he decides he is high enough to head out he will confirm or change our original plan.

Once I headed on course I took K-96 west which lead me through Sterling, KS around 2:00pm. As I pulled into Sterling I noticed that K-96 takes you down the main street of town. I also started to notice that there were squad cars on both sides of the road with officers directing traffic. As I was about to figure out a detour, thinking the road closed ahead, I was waved through by the officer to go ahead. The next thing I noticed was people lined up on curbs on both sides of the road with little kids waving American flags and people in general waving. It hit me that they thought I was part of their 4th of July parade which must have had a 2pm start time. With Kate's trailer covered in "Let's Go Gliding" stickers, I am sure that I could have passed as a float. So in case we have had a sudden increase in rides from Sterling, you are welcome J I also started to worry that I might have detours due to other parades ahead on our planed route, a first for me on a glider chasing mission.

The Subaru has a pretty good sized antenna mounted onto it so that the chase car can stay in communication with the glider for as long as possible. Every 30-minutes or so I would call in to verify the path that Tony was taking. I gave a quick cheer when we crossed over the Splat (Platte) River which is known for landing gliders out. About this time I also discovered a short in the radio cable to the cigarette lighter. I could hear Tony just fine but every time I brought the radio up to my mouth it would pinch and loose power.

Tony and Kate ended up making it to the Burwell, Nebraska airport. For those of you familiar with Tony's flying you will know that he isn't afraid to land in a field, so I was excited to be looking for an airport rather than trying to find the right field. It turned out that our adventure really was to begin after **Tony's** landing. He says that when he landed he ran into the sheriff's deputy who was visiting the line guy at the airport. He was kind enough to tell **Tony** about the firemen's feed in town and gave **Tony** a ride there. **Tony** then got lucky enough to score the very last hotel room in town, thanks to a cancellation. The sheriff's deputy reckoned that there were about 1200 people in town, but that due to the holiday and the lake North of town the population had escalated to 5,000 people. Only **Tony** was able to get a ride from the owner of the hotel to the hotel and then a ride back to the airport from the line guy after a brief walk. I was able to find him at the airport and we were able to quickly derig before sunset. About this time a city police officer came to visit with the airport line

guy (slow crime day I guess). When we asked if they had a fireworks show, he lit up and said “Oh yes do we have a fireworks show.” Tony and I were able to get settled into the hotel and then walk to the city park for an amazing 20 minute firework display that kept on going! The fireworks were set off by the local firemen and every time I thought that it must be the finale for such a small town I was kept guessing as the fireworks kept coming.

The next adventure, and my favorite part of the trip, was that we decided to stop into a local watering hole on our way back to the hotel. We chose Burwell’s only bar and rodeo museum as the concept was interesting. I felt like we had gone back in time. The walls of the bar were covered with pictures from the last 50-years of the Big Nebraska Rodeo (held in Burwell). The bartender was also a gem. I am used to getting carded at bars (must be the braces) and had my ID ready. The older gentleman working the bar gave me a look, asked me how old I was then turned and asked **Tony** for his age. He shook his head when I tried to verify my statement with my driver’s license. Tony then tried to pay for our drinks with his credit card. The bartender asked him if **Tony** wanted him to run it for more and **Tony** told him to just keep the tab open. We really knew that we were in a small town when he handed Tony back the credit card and told him to just pay up when we were done. Such trust! The people watching was pretty great too. We were pretty much the only ones in there without a cowboy hat, cowboy boots or high waisted jeans. A few pairs of suspenders were also spotted. I did not realize that central Nebraska was a part of the old western tradition. Going to school in Iowa I thought of Nebraska as just being more of the same kind of corn famers. After looking at all the pictures on the wall I was ready to attend my first rodeo. Unfortunately for us, the big event of 2015 was being held while we were in Europe.

The drive home the next morning was low key and boring, exactly the way you would want it to be. **Tony** is already looking forward to the 2016 Kowbell. I however know that the fun time in Burwell of Kowbell 2015 will be a hard one to beat.



Kate in Burwell



Leah and Tony before Takeoff

**The 10th Great Plains
Vintage/Classic Sailplane Regatta
September 24-27, 2015**

With cooperation from

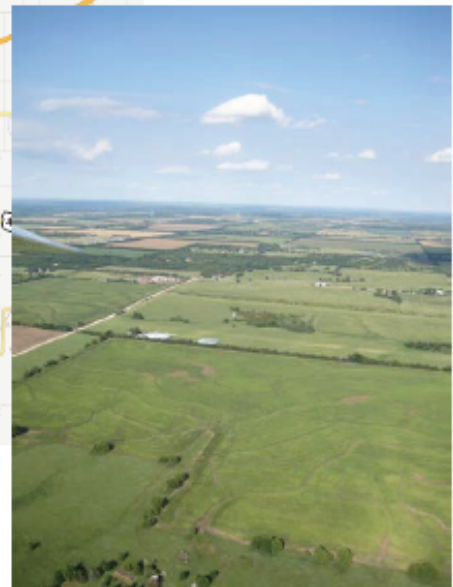
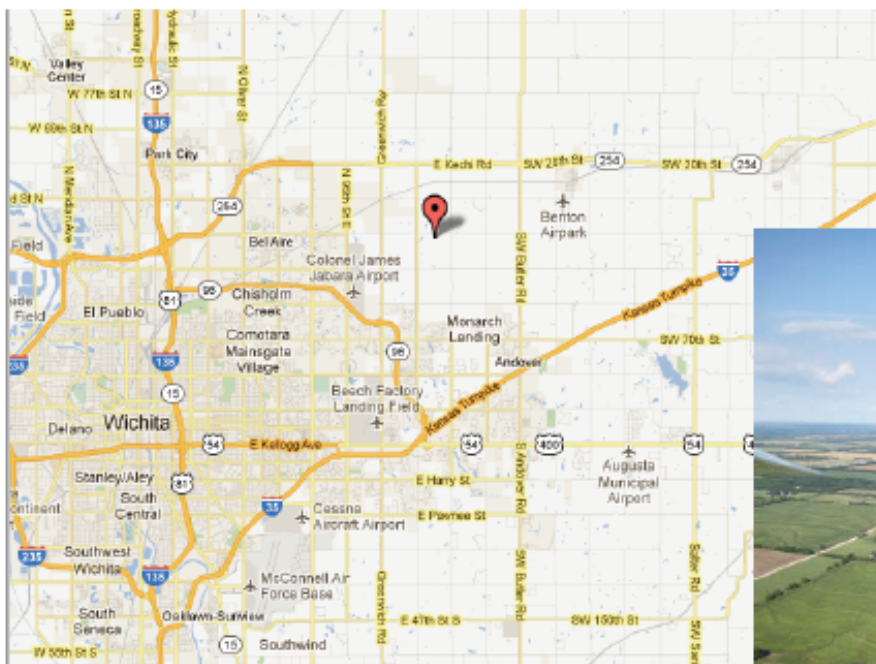
**The Vintage Sailplane Association &
The Kansas Soaring Association**

at

**Wichita Gliderport (37.765 N, 97.180 W)
Just NE of Wichita, Kansas**

*Come join the fun, show off & fly your vintage/
Classic glider.*

Limited hangar space available, call!



**Contact: Neal Pfeiffer (316) 641-9928 nealpfeiffer@sbcglobal.net
or Tony Condon (515) 291-0089 abcondon@gmail.com
or Harry Clayton (316) 644-9117 hclayton@pixius.net**

**Wichita Gliderport - 37.765 N, 97.180 W
13501 E 45th St N, 1-1/2 miles east of Greenwich on 45th St N**

Wichita Gliderport

- 2600' & 4000' grass
- 2000' tows are \$20
- Limited hangar space
- Some camping at field
- Close to motels
- Close to restaurants
- Rides can be arranged
- Schweizer 2-33 two-place glider for rent



*Lunch options available at airport
Cookouts or local restaurants for dinner*

*Informal Soaring Seminar on Saturday Morning
Starting at 10:00 AM*

*Tell us you're coming & let us know
if you're bringing a glider!!!
If you can't bring a ship,
just come and have fun.*

*Motels: Search maps.google.com for 'Motels East Wichita, KS'
start along North Greenwich Road or Webb Road down to US 54*

*Wichita Gliderport - 37.765 N, 97.180 W
13501 E 45th St N, 1-1/2 miles east of Greenwich on 45th St N*

RULES FOR KSA FLYING AWARDS, 2015

Unless otherwise noted, the following applies to all awards:

Awards are to be made for flights with departure points in Kansas.

All distance and speed flights must start at an altitude of 1000 meters (3281 feet) or less AGL, except the Kowbell Classic.

No altitude gate is required.

Handicaps, when they are used to evaluate competing pilot accomplishments while flying different sailplanes, will be the current handicaps used by SSA. For sailplanes without a SSA handicap, a handicap will be established by the KSA Board of Directors. For the 2014 season, the SSA 2014 Handicap list, as amended/added to below, will be used (the 2014 list is available on the SSA web page, www.ssa.org):

Schreder HP-18 - 1.02

When handicaps are used, an additional factor will be applied to any flight if the aircraft is carrying inflight disposable ballast (water) at takeoff. The additional factor will be multiplying the original handicap by .92

Turnpoints will be photographed

The camera does not need to be mounted. Handheld is OK.

No specific film type or processing is required.

Only photographs pertinent to the flight need be submitted. An uncut film strip is not required.

Contest style turnpoint photos can be used for any turnpoint in the KSA turnpoint book.

FAI style photos can be used for any turnpoint.

GPS ground tracks may be submitted in lieu of photographs for any task. The track must have the date and pertinent times displayed on it. It is preferred that the track be submitted in the IGC format. On declared tasks, the ground track must show that the flight path went around the outside of the turnpoint. On pilot selected tasks, the ground track must show that the glider passed within ¼ mile of the turnpoint, in the location for a proper turnpoint photo.

Speed tasks- Allowed methods for time recording:

Start/Finish gate (ground timed)

Data back photos of start/finish

Pilot timed task

Wooden Wings Award

Awarded for the longest flight in a wooden winged sailplane. The task may be free distance, or if turnpoints are to be used, they must be declared in advance of the flight and in the sequence to be used. The task declaration may be written or verbal. The turnpoints need not form a closed course. A remote finish point can be used.

If the course is abandoned before all turnpoints are made, the flight will be scored as the distance for the achieved turnpoints, plus the distance to the next declared turnpoint, minus the distance from the landing point to the next attempted turnpoint, but not less than the distance to the last achieved turnpoint.

Mamie Cup

Awarded for the greatest distance flown from a Kansas departure. The task may be free distance, or if turnpoint are to be used, they must be declared in advance of the flight and in the sequence to be used. The task declaration may be written or verbal. The turnpoints need not form a closed course. A remote finish point can be used.

If the course is abandoned before all turnpoints are made, the flight will be scored as the distance for the achieved turnpoints, plus the distance to the next declared turnpoint, minus the distance from the landing point to the next attempted turnpoint, but not less than the distance to the last achieved turnpoint.

KSA Flying Horse (Silver)

Awarded for the best speed achieved around a 100 KM pre-declared closed course with a maximum of two turnpoints.

KSA 200 KM

Awarded for the best speed achieved around a 200 KM pre-declared closed course with a maximum of two turnpoints.

KSA Flying Horse (Gold)

Awarded for the best speed achieved around a 300 KM pre-declared closed course with a maximum of two turnpoints.

KSA Handicap Score Trophy (Pilot of the Year)

Awarded for the best combined score in four tasks - Duration (not handicapped, but 6 hours max scored), Altitude Gain (not handicapped), Distance, and Speed. Distance and speed are handicapped per SSA Handicaps or the KSA amended/added handicap. Departure point for all flights must be in Kansas. Data must be taken from four flights (i.e., one flight per task).

The distance task may be free distance, or if turnpoint are to be used, they must be declared in advance of the flight and in the sequence to be used. The task declaration may be written or verbal. The turnpoints need not form a closed course. A remote finish point can be used.

If the course is abandoned before all turnpoints are made, the flight will be scored as the distance for the achieved turnpoints, plus the distance to the next declared turnpoint, minus the distance from the landing point to the next attempted turnpoint, but not less than the distance to the last achieved turnpoint.

The speed task must be a closed course of at least 100 KM. However, a predeclared 200 KM (minimum) non-closed course may be used if you are flying a sailplane with a handicap factor of 1.36 or greater (Examples: 2-22, 1-26, 2-33, Swallow, etc.) In this case, a wind correction factor of 15 MPH will be subtracted from the achieved speed prior to scoring.

A score of 1000 points will be awarded the best performance in each task. Each contestant's performance will be ratioed according to the best performance in the task being evaluated. The sum of each contestant's scores will be compared, the highest being the winner.

Cumulative Speed Trophy (Charles Henning Award)

The intent of this trophy is to encourage more people to fly cross country. All a person needs to compete is a sailplane, a databack camera or a recording GPS, a KSA turnpoint book, and a tow.

- 1) The cross country task will be a Pilot Selected Task, or PST with a minimum time of 2 Hours.
- 2) Speed will be determined by the time on course as indicated by the databack camera or recording GPS, or 2 Hours, whichever is greater.
- 3) Scoring for the trophy will use the SSA handicap or the KSA amended/added handicap.
- 4) There is no limit on start or finish altitude.
- 5) The task can consist of any turnpoints in the KSA turnpoint book. Contest style photographs will be used. Turnpoints can be flown in any order. However, if a turnpoint is used more than once, two other turnpoints must be photographed in between. If a GPS Flight log is used for documentation, the flight log must show the glider passed within ¼ mile of the turnpoint, in the location for a proper turnpoint photo.
- 6) The first picture for the task must include the date. Note: More than one task can be on the same roll of film. Only one task per flight.
- 7) The second picture for the task will be the start point. This picture determines the Start Time.
- 8) To finish a task, the pilot must take a picture of the finish point, or take a picture when the glider comes to a stop after landing. If a landing photo is used, the next photo on the film must show the glider and an easily recognizable landmark. No more than 30 minutes should elapse between the landing photo and the glider ID photo. Note: The Start Point and the Finish Point Must be the same point.
- 9) The winner will be determined by averaging the two best tasks of the year for each pilot. The averaging will be accomplished by adding the two speeds and dividing by 2.

Lead C

Awarded to the pilot or soaring supporter who makes the most noteworthy non-achievement during the calendar year.

Praying Mantis

Awarded to the pilot who makes the most significant advance in his or her soaring ability during the calendar year. To be eligible for this award, the pilot must not yet have his or her Silver Badge at the beginning of the calendar year.

KSA Duty Schedule

Sat, Sep 5, 15 Holiday	Mike Logback 620-241-8486	Kevin Ganoung 785-536-4540 Matt Gonitzke 815-980-6944	Mike Westemeir 316-729-2551
Sun, Sep 6, 15 Holiday	KC Alexander 316-308-8498	Matt Gonitzke 815-980-6944 Bob Blanton 316-683-9759	
Mon, Sep 7, 15 Holiday	Bob Hinson 316-841-5561		
Sat, Sep 12, 15 Cookout	Bob Hinson 316-841-5561	Don Jones 620-960-6444 Leah Condon 785-643-6817	Tony Condon 515-291-0089
Sun, Sep 13, 15	Jerry Boone 620-662-5330	Matt Boone 620-662-3849 David Pauly 316-250-2045	Tony Condon 515-291-0089
Sat, Sep 19, 15	KC Alexander 316-308-8498	David Wilkus 316-788-0932	Andrew Peters 316-393-2261
Sun, Sep 20, 15	KC Alexander 316-308-8498	Jerry Martin 620-960-5418 David Pauly 316-250-2045	
Sat, Sep 26, 15	Bob Holliday 316-641-6178	Jerry Martin 620-960-5418 Neale Eyer 316-729-0659	
Sun, Sep 27, 15	Jack Seltman 316-636-4218	John Peters 620-755-3161 Brian Silcott 620-204-0051	Brian Bird 620-728-1341
Sat, Oct 3, 15	Bob Hinson 316-841-5561	Jerry Martin 620-960-5418 John Peters 620-755-3161	
Sun, Oct 4, 15	Mike Logback 620-241-8486	Keith Smith 785-643-6817 Scott Dimick 316-461-8196	Brian Bird 620-728-1341
Sat, Oct 10, 15	KC Alexander 316-308-8498	Bob Blanton 316-683-9759 Michael Groszek 206-412-2985	
Sun, Oct 11, 15	KC Alexander 316-308-8498	Mike Orindgreff 316-773-7154 Mark Ross 316-214-1464	
Sat, Oct 17, 15	Bob Holliday 316-641-6178	Don Jones 620-960-6444 David Wilkus 316-788-0932	Andrew Peters 316-393-2261
Sun, Oct 18, 15	Mike Logback 620-241-8486	Keith Smith 785-643-6817 Mike Orindgreff 316-773-7154	
Sat, Oct 24, 15	Jerry Boone 620-662-5330	Matt Boone 620-662-3849 Brian Silcott 620-204-0051	Mike Westemeir 316-729-2551
Sun, Oct 25, 15	Bob Hinson 316-841-5561	Matt Gonitzke 815-980-6944 Steve Leonard 316-729-0356	
Sat, Oct 31, 15	Jerry Boone 620-662-5330	Matt Boone 620-662-3849 Kevin Ganoung 785-536-4540	Brian Bird 620-728-1341

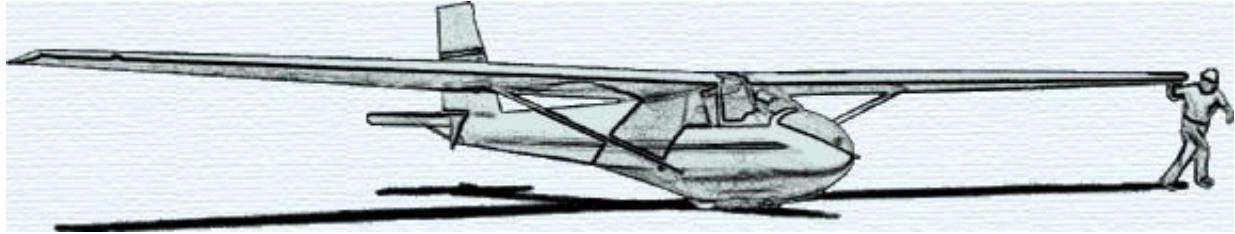
<p style="text-align: center;">KSA TOWCARD</p> <p>TOW NUMBER START TACH TIME</p> <p>_____</p> <p>TOW PILOT _____</p>	<p style="text-align: center;">KSA TOWCARD</p> <p>TOW NUMBER START TACH TIME</p> <p>_____</p> <p>TOW PILOT _____</p>
<p>PILOT _____</p> <p>ADDRESS _____</p> <p>_____</p> <p>SAILPLANE _____</p> <p>TOW HEIGHT _____</p> <p>TOW SPEED (MPH) _____</p> <p>DATE _____</p>	<p>PILOT _____</p> <p>ADDRESS _____</p> <p>_____</p> <p>SAILPLANE _____</p> <p>TOW HEIGHT _____</p> <p>TOW SPEED (MPH) _____</p> <p>DATE _____</p>
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KSA VARIOMETER

911 N Gilman

Wichita, KS 67203

abcondon@gmail.com



KSA Meeting
September 12th, 2015
Cookout at Sunflower
Don Jones' Retirement Party