

March 1998

The Newsletter of the *Manned Spacecraft Center Radio Control Club*

President's Corner

Mike Laible

WOW ! Here I am writing the March newsletter. It seems like yesterday that I wrote the December issue talking about the Christmas party. Oh well, time flies when you are having fun. This month's newsletter features two articles from some of our very own members. Please read them and give some feedback to the authors. Noticing the article is one of the best "thank you" you could give to the author.


The year has started off with a bang. The last two meetings were well attended, above the last three to four year average for the particular months. In fact, attendance has been steadily increasing since 1995. Next month I should have some data to illustrate this. It is nice to see so many new faces along with the old.

Last month Joe Parlanti went off and did some investigation of model of the month (MOM) awards. He presented two options. One was to present the model of the month with a personalized certificate with MSC logo and a picture of the MOM. This option would include a model of the Year (MOY) award that would be voted on at the Christmas party. Option two included a desk plaque special engraved. The club voted on the first option. So, the January MOM is Joe Parlanti with

his Crusadr II and the February MOM is Don White with his Buzzard Bombshell. The rules for MOY is that it must be present at the Christmas Party, must have been flown (air borne under its own power) and still airworthy. This should be interesting. The monetary award has been established at a \$100. I will work on a good gift certificate Texas Model Trends or somewhere.

The other item voted on was the fun fly awards for this year. Here again it was voted on to have a minimal gift each fun fly and then present a grand prize at the end of the year. This was fun and really should motivate some people to come on out and enjoy some fun. The committee is working hard to come up with events that rely on showing up instead of flying skills. HINT, HINT, in other words, everyone has a chance for the grand prize. I know that last year It got to the point that I had to show up to keep Jeff off my tail. It's all in showing up.

Other dates to watch for are the rocket club events: April 4: Wacky Wocket Open Contest and on May 22-23: The Texas TOPGUN Regional (2 day event). This should be a very well attended meet as it is one of two meets that will determine the Texas State Champion Member and Section

Well, this is about all for this month. Enjoy the following articles. Till next month, safe landings 

Some Local Events

MARCH 21-22, 1998 (Cr) Pearland, TX Name: Charlie Wilson Memorial Fly-In. Site: Boyington Field, Pearland, TX. Charles E. Stevens CD, 226 Delta Street, Pasadena, TX 77506-2904 Phone: 713-473-4995 (Eve.) Sponsor: Southwind Flyers. Big Birds & IMAA members only. All AMA and IMAA rules in effect. Safety inspection mandatory.

APR 18-19--Crosby, TX (C) Propnuts Flea Market & Fly-In. Site: Club Field. Tas Crowson CD, 606 Pine Circle Seabrook, TX 77586 PH: 281-474-9531. Landing fee \$5, sellers fee \$5. Sponsor: PROP NUTS RC CLUB

APRIL 26--N.E. Huffman, TX (C) Jetero R/C Anniversary Fly-In. Site: Club Field, FM 686 NE Huffman, TX. Horrace Cain CD, 9838 Canterbury, Humble, TX 77338 Phone: 281-446-1077 (both) Sponsor.

MAY 2-3--Deer Park, TX (C) Bayport Aero Spring Fly-In. Site: Club Field. R.C. Hulett CD, 1102 Angela Deer Park, TX 77536 PH: 281-479-2300. All pilots must be AMA members.

MAY 16-17--Hockley, TX (C) NWHRC All Scale Fly-In. Site: Club Field, Katy-Hockley Cut-off Road, Hockley, TX. Bill Stevens CD, 1726 Ashford Hollow, Houston, TX 77077 Phone: 281-497-6511 (eve) Sponsor: Northwest Houston R/C Club. For details, call Bill Stevens at (281)497-6511.

MAY 23-24--Crockett, TX (C) 11th Annual Big Bird Fly-In. Site: Houston Co Airport. Ray Hammond CD, Rt 1 Box 557 Chireno, TX 75937 PH: 409-854-2595. Big bird rules, AMA license required. LUFKIN AREA RC MODELERS

MAY 30-31--The next event is the Texas City Big Bird Fly-In.

Static Thrust

By Brian Morris
bkmorri@swbell.net.

I have developed a spreadsheet calculation that outputs static thrust, horsepower, prop load and max velocity for inputs of barometric pressure (a default value is provided), prop diameter, pitch, and measured RPM. I will provide it to anyone that is interested. My e-mail address is bkmorri@swbell.net. Let me know what type of spreadsheet you use.

In April of 97 I set out to determine thrust and horsepower theoretically. Most RC flyers have been exposed to prop load and velocity calculations but not many have found a practical calculation for horsepower and static thrust. I began by using a thrust equation for full size aircraft propellers from the Mark's Mechanical Engineers Handbook. The handbook thrust equation was:

$$\text{Thrust} = \text{Air Density} \times \text{RPM}^2 \times D^4 \times C_t$$

Where:

Air Density is in lb/ft³

C_t is a constant that was not provided

D is prop diameter in feet

I decided to ignore air density at this point, and though D was given in units of feet I used inches, letting C_t take care of the missing air density and the change of units. I took some thrust measurements with a fish scale and determined a value for C_t. Later, in future engine tests, even though the predicted thrust was close to measure thrust I was uncomfortable that prop pitch wasn't involved in the calculation.

Since HP is in units of ft-lb/min I calculated air velocity in ft/min from the propeller pitch and RPM and multiplied it by the thrust in lbs. I did this and divided the result by 33000 ft-lb/min/HP but didn't like the resulting horsepower data - - too low. The HP equation was:

$$\text{HP} = (\text{Air Velocity}) \times (\text{Thrust}) / 33000 \quad \text{or}$$

$$\text{HP} = (\text{RPM} \times \text{Pitch} / 12) \times (\text{RPM}^2 \times D^4 \times \text{Ct}) / 33000$$

and reduces to

$$\text{HP} = \text{RPM}^3 \times \text{Pitch} / 12 \times D^4 \times \text{Ct} / 33000$$

But it turns out my engine that provided the questionable horsepower data wasn't as powerful as I had thought, thus my original thrust and horsepower calculations were credible. Wayne Armstrong and Bob Adkins (two rec.models.rc.air Newsgroup subscribers) provided me with different HP calc's. Both involved propeller pitch, one used measured thrust and the other didn't have a thrust term (but it had the same terms as my reduced HP equation above). I equated them and solved for thrust and the pitch term dropped out resulting in a hybrid equation that matched the handbook thrust equation. Evidently the RPM change that results naturally when pitch is changed accounts for all that is necessary in determining thrust.

Now, the best part! One of my "good" thrust measurements yielded a Ct of 2.86×10^{-12} . The Ct from the hybrid thrust equation was 2.83×10^{-12} and is what I am currently using in my calculations. I think it is remarkable how closely the constants matched. In my testing I was using a Zinger wood prop and running a diesel (low RPM). I don't know how well the equations would track at higher RPM and with other props. In the spreadsheet calculations I have included a barometric pressure factor (a default value is provided) and a propeller-type factor that you can use (as you acquire data) to adjust the equation to fit your needs.



Next Meeting
March 12th, 1998, 7:00 PM
Clear Lake Park Building

Lighter Than Air



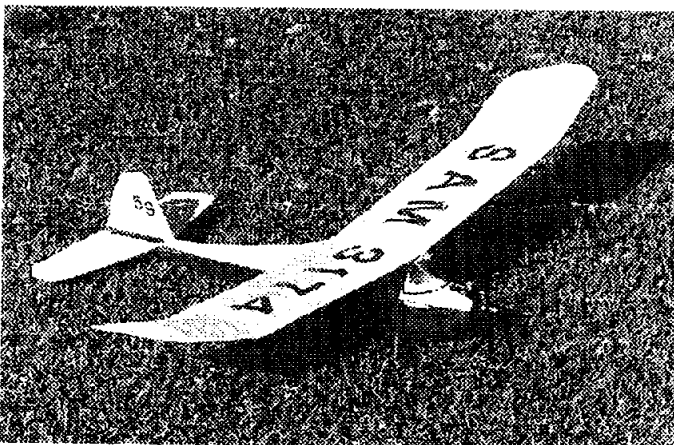
Confusion at the MSC RCC 1st Fun Fly

February Model of the Month

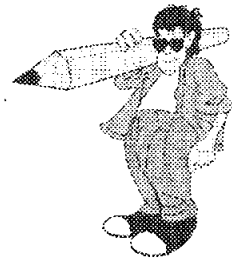
By Don White

As some of you know I was building a giant scale IMAA legal PT19 with a 88 inch wing span, This model is not it... I became very frustrated with the PT because of problems with the plans and the overall size of the model. In honor of Kirby Hensen, I decided to go to the other extreme and construct a 1/2A Buzzard Bombshell that qualifies for the SAM Texaco events. Actually I purchased the model several years ago and built the tail and one side of the fuselage and packed it away because of the size of the radio equipment required. Recently I acquired a HITEC micro Rx that would fit nicely in the small plane so the construction began again. The model is featured in Flying Models a few years back. It is quite a change going from giant scale to 1/2 A Texaco but normal construction techniques were used. A target final weight of 16oz was desired and a wing area of 288

square inches results in a loading of 8 oz/square foot. To qualify for SAM 1/2 A events the model has to be designed prior to 1942 and have a wing loading of 8 oz/sq ft. Early models designed back then were different from today's laser cut models were covering materials and radio equipment must be accommodated. For example the wing airfoil is under cambered. What's under cambered - come to the meeting. Covering the model was the biggest and longest phase of the construction process. I used Micafilm which is a Coverite product that has no glue on the surface but is very strong and light. Balsarite on all surfaces must be used to hold it down. Painting this stuff on all overlapping seams was time consuming. Come to the meeting as see this smaller model, maybe it will appeal to you also.



Minutes from the February 1998 Meeting



Minutes by Bill, the Secretary



General:

The Feb. 12, 1998 meeting of the MSC R/C Club was convened at 7:05 by President Mike Laible. There were 39 members and visitors in attendance.

The minutes of the January meeting were approved as submitted.

The treasurer reported the income and expenses for January which left the club with a good working balance for the year.



Old Business:

A prize was never awarded for last year's overall Fun Fly winner. Brian Morris moved and Don Fisher seconded that the club award \$100 to Mike Laible who was last year's points leader. The motion passed. For this year the Fun Fly Committee, which is made up of Don Fisher, Jeff Longmore, Brian Morris, and Boyce Sterling, will make a recommendation at the next meeting.

Brian Oakley will take over managing the club's internet home page. As a result the site will be moving. The new address will be announced later.

The 1998 field badges were distributed to those who were at the meeting. The remainder will be mailed.

The R/C Flyer

EDITOR

Michael R. Laible

ASSEMBLY, POSTING, DISTRIBUTION

Bob Blaylock

Articles and want ads can be submitted to Mike Laible at 474-1255, on 3.5" floppies in ASCII or Microsoft Word, E-mail at mlaible@phoenix.net, or hard copy formats can be sent to: 2823 Sea Ledge, Seabrook, Texas 77586. Club Homepage at "http://www.phoenix.net/~mlaible/msc.html"



"Support Your R/C Flyer"

Dave Hoffman announced that new frequency pins are being bought to replace the old ones which were getting very worn.

A new metal field box has been donated by Brain Oakley to replace the wooden one that was in need of repair.

Mike Laible reported that nothing had been done yet to get a frequency spectrum analyzer to check the flying site for potential interference. He still plans to post a log book at the field which can be used to document crashes or lost control incidents to see if there is any pattern of suspected interference.

Ken White reported that the glider science project discussed at the last meeting was safely conducted on Jan. 17.

Any suggestions for meeting programs or newsletter articles should be forwarded to Charles Boehl

The club is out of Model of the Month trophies. Two suggestions for alternatives had been provided by Joe Parlanti. One was to create a plaque by taking a photograph of the monthly winner with his or her aircraft, scanning the photo into a computer, and merging it with a background mat. The other idea was to buy engraved acrylic block trophies for about the same price as the old metal ones. The club voted to go with the first option and to have a \$100 model of the year award which would be conducted at the annual Christmas party. To be eligible for the Model of the Year, a monthly winner would have to bring his model and show that it still roughly resembled the model in the photograph.

Refreshments for the March meeting will be provided by Kellan Goertemiller.

Charles Boehl presented a concept for a new flying field layout to address the concerns with vehicular traffic through the current layout, and a desire to

have a grass strip in addition to the paved runway. There was extensive discussion of the options and various pros and cons. No consensus was reached.

Charlie Stevens reported that the new District 8 AMA vice president, Sandy Franks, will be in the area April 17-20. He will be at the Prop Nuts auction and Fun Fly that weekend, and wants to visit as many area members, flying sites, clubs, and hobby shops as he can.



Model of the Month:

Kellan Goertemiller showed his almost completed Great Planes Super Sportster .40 which he is building from a kit he won at the Christmas party. He also showed his Ultra Sports ARF which is powered by a Super Tiger 51. Kellan says that the Ultra Sport flies really well.

Don White showed a Buzzard Bombshell which he built from a kit. It is a Society of Antique Modelers plane powered by a 1/2 A engine. The plane is covered in Mica Film. Don has not flown the plane yet, but has hand launched it several times to check trim and balance, and says it is ready to fly.

Don's plane was voted model of the month.



Program:

There was no formal program, but Charlie Stevens had added on board electric starters. Charlie also had an album show photo's of electric starters he has added to many other engines.

Two new youth members, Jonathan and Chris, brought an ARF kit to get advice on assembly. Mike Laible suggested that the club bring glue and basic building tools to the next meeting and actually help them build the plane.

The meeting was adjourned at 9:03

Fuel for Sale

John Campo		488-7748
Tas Crowson		474-9531
Don Fisher	474-4942(H)	483-2157(W)
Wayne Green		484-3151

Instructors

John Campo		488-7748
Charles Copeland		474-1195
Don Fisher	474-4942(H)	483-2157(W)
Mike Laible	474-1255(H)	336-4718(W)
Mike Goza		
(Heli and Airplane)	554-4016(H)	483-4696(W)
Wayne Green		484-3151
Jerry Hajek	486-4722(H)	246-4312(W)
David Hoffman	476-5206(H)	479-1945(W)
David Tadlock (Glider)		481-5227

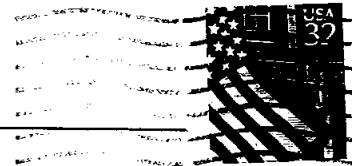
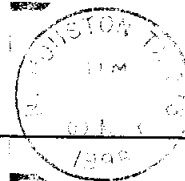
Club Officers

President	Mike Laible	474-1255
Vice-President	Charles Boehl	554-7116
Treasurer	Dave Hoffman	476-5206
Secretary	Bill Langdoc	482-2369

The R/C Flyer



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