

official digital newsletter of

# Skywriter

AMA Charter Club #970

[www.skymasters.org](http://www.skymasters.org)

24 year Gold Leader Club



**Skymasters Radio Control Club of Michigan**

*it's another beautiful day at Skymasters...*

**January, 2023**



### In this issue

|                              |       |
|------------------------------|-------|
| President's Message          | 1     |
| Circling Back                | 3     |
| Some Assembly Required index | 7     |
| Indoor flying                | 9     |
| Krazy Snow Fly (2022)        | 10    |
| Flyers                       | 11-14 |
| News                         | 15    |
| Calendar                     | 16    |



### Happy New Year!

Hope you had a great holiday season. We sure did with a nice trip to the UP to visit our daughter. We were there for 5 days and it lightly snowed the whole time we were there! The dogs had a blast bumbling in the poofy snow!

The club Christmas Party was a huge success with over 60 attendees! While I really appreciate how members always come together and bring a dish to pass, Carolyn and I would like to especially thank Joe R, Kurt and Jill, Jim S, Brad and Doni, Donna and Bob and Joy S for all their help at the party. Finally, when you see Brian V (Mr. Helicopter), thank him for me. He gave me a kick in the pants to talk to Orion Center and see if our traditional date was still available! After missing two years due to Covid, it was off my radar.

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We had a great turnout at the Krazy Snow Fly yesterday, especially given the weather at 9-10 AM! The rain started at 9:15 when I arrived to setup. A few minutes later, with the help of Kurt and Jill, Ken and Paul the coffee and chili were on the fire and the heater was running. But would anybody else show up??? Well, we had 10 or so more pilots roll in around 10 as the rain switched to snow for a bit and then stopped completely. All in all, a fun time to fly and eat Kurt and Jill's awesome chili. (We have lots of leftovers in our freezer, yum!)

On the upcoming events front, we have our weekly indoor flying at UWMSC every Tuesday 9-noon while PMAC will have a Snow Fly at their field on Jan 15<sup>th</sup> starting at 1PM. Hopefully they will have snow!

Fly Safe!

**Pete**

**Pete Foss, President**

**Skymasters RC**

[president@skymasters.org](mailto:president@skymasters.org)

### **Front Cover**

The revised day for the Krazy Snow Fly dawned dark and damp. Then it rained and snowed.... and didn't get much better ;) But a bunch of brave pilots came and flew anyway. Here's Brian Visintainer flying a heli in the mist.

Paul Goelz photo



### Happy New Year!

I hope that all of you had an enjoyable holiday season. I had some downtime in between family events which allowed me to continue working on the new model; a brief update is included.

I would also like to cover some of the basics when it comes to bench testing electric power systems along with some of the math needed to estimate system performance. Hopefully I will not bore you to death.

### Bench testing electric motors

I have been bench testing my electric setups for a long time; mostly to confirm if the motor, prop, and battery combination will work as intended.

In 2007 I built a sport plane around the wing and cowl from an Aresti ARF. I never completed the model as the fuselage had a pronounced twist to it but saved the wing for future use.



The model was loosely based on the E-Sport 10, a design which had been published in a magazine a few years before.

At the time geared systems were still common, so I

opted to use a Mega 22/20/3 motor coupled to a MEC gearbox.



The MEC gearbox allowed for a lot of flexibility as you could adjust the ratios by using different gear combinations. It was a neat piece of equipment and I still own a couple.

At the time I had access to MotoCalc which I used to determine the appropriate gear ratio and prop. The goals were modest: 600 watts, a max current draw of 35 amps on 5S, and be capable of turning a 14x10 in prop. This was for a model with an AUW of 5.5 lbs.

Armed with the results I proceeded to bench test the system.



### **A few observations:**

The test confirmed the prediction, the system generated 600 W at 35 amps turning a 14x10 in prop at 6900 RPM. This combination

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yields a theoretical pitch speed of about 65 mph. In reality, the model probably maxed out at about 60 mph or so; enough for it to whistle as it went by.

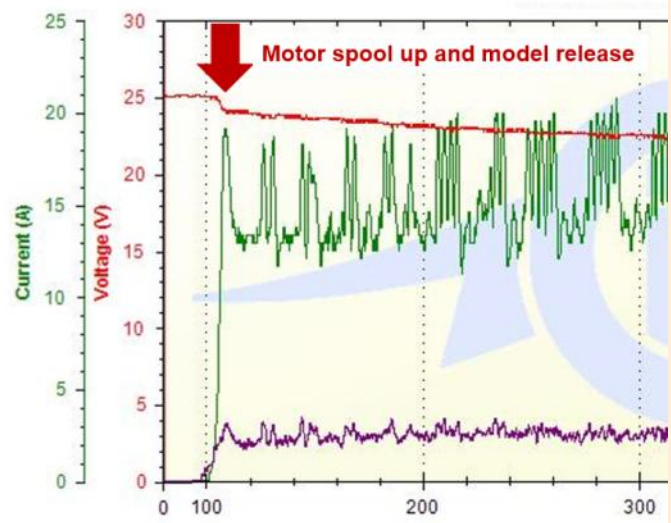
The flashlight taped to the test stand provides the steady light the optical tachometer needs. These are sensitive enough to capture the blinking of interior lights; the flashlight overpowers the ambient light so that you can get an accurate reading. Just for fun, aim a tach at a lightbulb; it will read 3600 RPM, the equivalent of a frequency of 60 Hz.

Not shown well in the image are the ESC, receiver, battery, transmitter, and wattmeter which complete the system.

A word of caution, always make sure to clear the area near the motor; it generates enough of a breeze to send things flying around.

Since the motor is stationary these tests measure the static performance of the system. It is important to note that the motor will "unload" in flight; it will reach higher RPM under full throttle or require less power for a given RPM.

This behavior is clearly shown on the ESC's data log for a control line flight. Before takeoff the motor is allowed to reach full RPM at which point it is released; the current trace clearly shows the peak and drop which follows once the model reaches flying speed. In this instance the current drops from a peak of 19 amps to 13.5 amps in level flight. Since the ESC is operating in governor mode the trace shows the current needed to hold the RPM at 8750. In this instance the current dropped by 28%; a significant amount.



The peaks that follow correspond to the changes in the load seen by the motor as the model performs maneuvers such as wingovers, loops, figure 8's, etc. Whenever the model slows down, the motor will see an increase in load which in turn will lower prop RPM. To counter this, the ESC will increase the current (i.e. power) to hold the RPM constant. Most control line models do not use a throttle; the main advantage of using the ESC in governor mode is that it will automatically add power when needed.

### Math comes to the rescue!

#### The problem:

While pondering what power system to use on the Oriental 2.0 it occurred to me that I might be able to copy the setup used on the Shark 402. What I did not know was if the Shark system had enough stretch in it to power a heavier and larger model. This would have been an easy problem to solve using CalcDe but I had allowed my subscription to expire so I had to figure out another way.

The Shark flies well at 33 oz and 305 watts of power; the Oriental will weigh 45 oz so it will need about 415 watts to achieve similar performance. Keeping the motor, ESC settings and 4S battery the same the only way to increase power is by increasing prop diameter. The Shark uses a 10x4 in prop spinning at 12K RPM so I was curious to see if the motor could handle spinning a 11x4 in prop at the same RPM. This is an easy test to run, just swap out the props and measure the power and current draw using a wattmeter. I checked my stash and realized that I had a 10x4 in and 12x4 in but

(Continued on page 5)

(Continued from page 4)

not the 11x4 in I needed.

Thinking about it I realized that I could use the 10x4 in and 12x4 in props to collect the data needed to derive the performance of the 11x4 in; it would just take a little math. The problem was also made simpler since I intended to keep the pitch the same; the only variable was prop diameter.

#### Estimating power for the 11" prop:

I had a rough idea that the power would be proportional to the propeller disk area. To be able to scale up or down from one prop size to another I figured that I would also need to use a ratio of the disk areas:

$$R_{\text{ratio}} = D^2/d^2$$

Where D and d, are the diameters of the larger and smaller prop respectively. I took an educated guess that the equation would look like this:

$$P = C(R_{\text{ratio}})^x$$

Where P is power, C is a constant to be determined and R is raised to the power of x, which also needs to be determined. Since I had two unknowns, I would need two pieces of information to solve for them. The data came from testing the 10" and 12" props:

10x4 in: P = 305 watts @ 12K RPM

12x4 in: P = 640 watts @ 12K RPM

It is interesting to note that the power more than doubled when using the larger prop; this hinted that x would be greater than 1, probably 2 or 3.

Using the data for the 10" prop and comparing it against itself yields the following equation:

$$P = 305 = C(10^2/10^2)^x = C(1.0)^x = C$$

So the equation now looks like this:

$$P = 305(R_{\text{ratio}})^x$$

Comparing the 10" and 12" props to solve for x:

$$P = 640 = 305(12^2/10^2)^x = 305(1.44)^x$$

This is where the guessing starts:

$$X = 1 \Rightarrow 640 = 305(1.44)^1 = 439 \text{ (Nope)}$$

$$X = 2 \Rightarrow 640 = 305(1.44)^2 = 633 \text{ (Yes)}$$

A calculated value of 633 watts is within 1% of the

measured value; given the accuracy of the wattmeter the results are basically the same. Now we can calculate the power for the 11" prop:

$$P = 305(11^2/10^2)^2 = 447 \text{ watts}$$

I had initially estimated that the Oriental would need ~415 watts so the 11" prop will definitely work.

#### Estimating the current for the 11" prop:

The power system relies on a 4S pack which nominally provides about 14.8V under load (3.7V per cell). To estimate the current, we divide the power by the voltage:

$$I = P/V = 447 \text{ W} / 14.8 \text{ V} = 30.2 \text{ amps}$$

The current is a little on the high side; under these conditions a 2600 mah pack would be fully discharged in 5:10 minutes. This value represents the static current draw; in flight it will be less, the question is by how much.

Let us look at the data I already have for the Shark. The 10x4 in prop yields a static current draw of 20.1 amps. A typical flight consumes 1200 mah after a motor run of 4:50 minutes (or 4.89 minutes). To calculate the inflight current, we need to determine how many mah would be consumed in one hour:

$$I = 1200\text{mah} (60\text{min}/4.89\text{min})$$

$$I = 14900 \text{ mah or } 14.9 \text{ amps}$$

The inflight current represents ~75% (14.9/20.1) of the static measurement. For the 11" prop the inflight current would be ~ 22 amps (75% of 30.2).

It looks like the power system will work with the 11" prop, but it will be tight. The sequence takes about 5:20 minutes to fly and the current draw will take the flight pack down to 80% in about 5:35 minutes.

The moral of the story is, do not let your subscription to the online performance calculator expire, this exercise would have taken about 5 minutes using the computer.

#### On the bench - Oriental 2.0

The wing is now mostly complete. Being a profile model, once the wing is done, the rest of the plane

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goes together rather quickly.

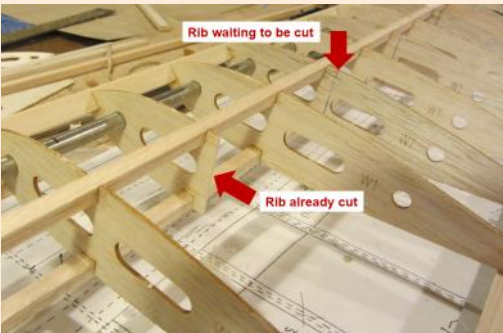
Newer Brodak kits include ribs with 5/16" holes which make it possible to assemble the wing using a jig. In my case the jig consists of two 5/16" steel rods (nice and straight) and two re-purposed plastic brackets to hold the rods.

To build the wing you simply slide the ribs in the correct order and locate them as shown on the plans:



I use rubber bands to hold the spars and leading-edge pieces in place as well. Once satisfied that everything is lined up correctly and level, I glue it up using thin CA. A panel can be framed in about 1 hour. If necessary, I use old playing cards to shim the brackets to make sure that the wing panel is straight and level.

As designed, each wing panel has 13 full ribs. To save a little weight, I opted turn 5 of those ribs into half ribs.



The wing structure is a traditional D-tube which means that the leading edge is sheathed with 1/16" balsa. It is easier to glue the sheathing if the panel has been removed from the jig. I normally do this in three steps:

**Step 1:** Glue the edge of the sheathing to the leading-edge piece and allow the glue to fully set. I add the top and bottom pieces of sheathing at the same time. Unfortunately, I did not take a picture of the

wing at this stage of assembly.

**Step 2:** Spread the glue over the ribs and the portion of the spar which will be covered by the sheathing. After this is done, I moisten the outer surface of the sheathing with a wet cloth. The sheathing will begin to curl, generally following the shape of the airfoil. When this happens, you are ready to tape down the sheathing against the ribs. I use plenty of masking tape for this step; start in the middle and work outwards towards the tips. It is important to make sure that the sheathing makes full contact with the ribs.

**Step 3:** Once the sheathing is taped, I place the panel in the jig once again to allow the glue to set and the wood to dry. My glue of choice for this step is epoxy finishing resin as it gives me plenty of time to finish the work before it begins to set.

Most plans show the leading-edge sheathing reaching the rear face of the spars; however, I prefer to trim the material so that it leaves about 1/8" of the spar exposed.



The reason for this is simple, the exposed portion of the spar provides a surface for the 1/16" ribs caps to rest upon. By doing this the rib caps will always be perpendicular to the rib.

More to come next month.

**Teo Terry**



### ***Some Assembly Required article Index.***

Below is a list of all of the "Some Assembly Required" articles published in the Skymasters "Skywriter" monthly newsletter. They are listed in the order that they were published indicating the year and month along with a brief description of the article content. There is an [index of the Skywriter back issues in the Skymasters web site.](#)

- |       |   |       |  |
|-------|---|-------|--|
| 8/15  | Mold-less composite sandwich construction.                  | 11/16 | How to paint a spiral on a warbird spinner.                      |
| 3/16  | How to make a fiberglass canopy ( could be any small part). | 12/16 | Construction of an Accentor wing.                                |
| 4/16  | Finishing a raw fiberglass part.                            | 1/17  | Construction of an Accentor fuselage                             |
| 5/16  | How make simulated flush rivets by painting.                | 2/17  | How to finish the Accentor.                                      |
| 6/16  | How to make simulated flush rivets with a heated tube.      | 3/17  | Converting a control line Accentor kit to r/c.                   |
| 7/16  | How to weather a warbird (less is more).                    | 4/17  | Applying "John Player Special" gold leaf detail to the Accentor. |
| 8-16  | How to make a very accurate c.g. machine.                   | 5/17  | Final assembly of the one-piece Accentor.                        |
| 9/16  | How to make scale looking metal simulated exhaust stacks.   | 6/17  | No article.  |
| 10/16 | How to make a scale instrument panel.                       | 7/17  | No article.  |
|       |   | 8/17  | The care and feeding of LIPO batteries (must read).              |
|       |   | 9/17  | Sig control line Banshee build #1.                               |
|       |   | 10/17 | Sig control line Banshee build #2.                               |
|       |   | 11/17 | Vintage Ed Kazmerski Taurus pattern plane wing build.            |
|       |   | 12/17 | Vintage Ed Kazmerski Taurus pattern plane Fuselage build.        |
|       |   | 1/18  | Painting the Ed Kazmerski Taurus Pattern plane.                  |
|       |   | 2/18  | Mold-less fiberglass fuselage technique.                         |
|       |   | 3-18  | Mold-less composite sandwich fuselage technique.                 |
|       |   | 4/18  | Mold-less composite sandwich fuselage technique part 2           |
|       |   | 5-18  | Wing-It competition design and build (Viper ).                   |
|       |   | 6/18  | Wing-It competition design and build completion.                 |
|       |   | 7/18  | Model airplane wing design aerodynamics.                         |

*(Continued on page 8)*

(Continued from page 7)

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|-------|---|-------|--|
| 8/18  | Model airplane aerodynamics part II.  | 4/20  | Fabricating a scale 3 blade prop for the FW-190. FW-190 scale details.       |
| 9/18  | Model airplane aerodynamics part III.   | 5/20  | Design and fabrication of a retractable tail wheel mechanism for the FW-190. |
| 10/18 | Model airplane wing structural design.  | 6/20  | FW-190 landing gear oleo strut scale detailing.                              |
| 11/18 | Model airplane fuselage structural design.                                    | 7/20  | FW-190 scale panel lines and rivet details.                                  |
| 12/18 | Crash repair techniques.  | 8/20  | FW-190 dummy engine and scale metal exhausts.                                |
| 1/19  | Design and build of a wood gear clock.  | 9/20  | Cobra RG finishing.  |
| 2/18  | "I-Beam" wing design and construction for Cobra II model.                     | 10/20 | FW-190 scale cockpit details.  |
| 3/19  | Cobra II build continued.   | 11/20 | Replacing the FW-190 canopy and adding more scale landing gear details.      |
| 4/19  | How to do a snake skin paint job  | 12/20 | No article.  |
| 5/19  | Snake skin paint applied to Viper biplane.                                    | 1/21  | No article.  |
| 6/19  | Snake skin paint applied to the Cobra II. Bi-Slob biplane scratch build.      | 2/21  | Fierce Arrow flying wing construction.                                       |
| 7/19  | Control line Bi-Slob completion.  | 3/21  | Fierce Arrow flying wing construction part II.                               |
| 8/19  | Cobra RG wing construction with retractable landing gear.                     | 4/21  | Fierce arrow color shift paint technique.                                    |
| 9/19  | Cobra RG fuselage construction with retractable landing gear.                 | 5/21  | FW-190 camouflage and markings paint techniques.                             |
| 10/19 | Brown B-2 "Miss Los Angeles" control line conversion to fly in the Nationals. | 6/21  | FW-190 many small scale details and wrap-up.                                 |
| 11/19 | Bi-Slob finish, Cobra RG progress, Nationals planes preparations.             | 8/22  | 2022 AMA Scale Nationals Part 1... preparation.                              |
| 12/19 | Bell P-39 control line conversion for Nationals competition.                  | 9/22  | 2022 AMA Scale Nationals Part 2... the competition and results.              |
| 1/20  | Focke Wulf 190 control line conversion for Nationals competition.             | 11/22 | Me-262 and Do-335 model preparation for 2023 AMA Scale Nationals.            |
| 2/20  | P-39 drop tank and FW-190 bomb drop mechanisms.                               |       |  |
| 3/20  | Modifying the FW-190 to have operating scale wing flaps.                      |       |  |



# Indoor Flying

*Click anywhere in the collage to view the entire photo album on the Skymasters web site*



# Krazy Snow Fly, Jan. 1st

*Click anywhere in the collage to view the entire photo album on the Skymasters web site*



A couple days ahead of time, the usual Saturday Dec. 31st date for the Snow Fly was forecast to be rainy and miserable but the next day (Sunday) looked better.... so we decided to move the Snow Fly one day to Sunday Jan. 1st. But OF COURSE the forecast changed on Saturday! Oh well ;) On Sunday it rained and snowed... but eventually the rain and snow stopped. In the end, the day wasn't TOO bad. We all ate Kurt and Jill's great chili, we had coffee and donuts, the people and the dogs visited.... and hey, we even flew!



# Skymasters R/C Club

**We'll Teach you to fly!**

Join the Skymasters Radio Control  
Club for an R/C Aircraft Event  
**PUBLIC WELCOME!**

## Float Flying

**Thursday January 19th, 2022  
7PM**

**Oxford Senior Center at Seymour Lake Park  
2795 Seymour Lake Road, Oxford MI 48371**

Join float flying expert and Midwest Regional  
Float Fly CD, David Wendt for a discussion on  
how to setup planes on floats!

**Bring in your winter RC projects!  
Show and Tell**



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For more information email [president@skymasters.org](mailto:president@skymasters.org)  
Visit our website at [www.skymasters.org](http://www.skymasters.org)



# Skymasters R/C Club

**We'll Teach you to fly!**

Join the Skymasters Radio Control  
Club for an R/C Aircraft Event  
**PUBLIC WELCOME!**

## **3D CAD Design**

**Thursday February 16th, 2022  
7PM**

**Oxford Senior Center at Seymour Lake Park  
2795 Seymour Lake Road, Oxford MI 48371**

Join Joe Rubinstein for a demonstration of 3D  
Computer Aided Design for RC

Bring in your winter RC projects!  
Show and Tell



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For more information email [president@skymasters.org](mailto:president@skymasters.org)  
Visit our website at [www.skymasters.org](http://www.skymasters.org)



## NEW SWAG!

Full Zip Hoodies • 1/4 Zips  
Kids Shirts • Womens  
Long Sleeve Tees • Hats • Mugs  
Tank Tops and MORE!

details at:

[www.milkhousepress.com](http://www.milkhousepress.com)

Click anywhere in this  
flyer to go to the Sky-  
masters section of the  
web site



# Skymasters Indoor Flying 2022-23

At UWM\* Sports Complex - Field #1

**Tuesdays: 9:00AM - 12:00PM**

(dates & times subject to change without notice.)

**Cost:** \$150 for Season Pass (25 sessions) or \$10 Cash/session at the door.  
Season Pass may be obtained at [www.Skymasters.org](http://www.Skymasters.org) or by check/cash at door

**Proof of AMA Membership is required.**

|                |                        |           |           |
|----------------|------------------------|-----------|-----------|
| Opening day is | 10/25/2022             | 1/10/2023 | 3/28/2023 |
|                | 11/1/2022              | 1/17/2023 | 4/4/2023  |
|                | 11/8/2022              | 1/24/2023 | 4/11/2023 |
|                | 11/15/2022             | 1/31/2023 | 4/18/2023 |
|                | 11/22/2022             | 2/7/2023  |           |
|                | 11/29/2022             | 2/14/2023 |           |
|                | 12/6/2022              | 2/21/2023 |           |
|                | 12/13/2022             | 2/28/2023 |           |
|                | 12/20/2022             | 3/7/2023  |           |
|                | <b>Closed 12/27/22</b> | 3/14/2023 |           |
|                | 1/3/2023               | 3/21/2023 |           |

"UWM" is United Wholesale Mortgage (formally Ultimate Soccer Arenas) located at  
867 South Blvd, Pontiac, Michigan 48341

For rules & additional information go to : [www.Skymasters.org](http://www.Skymasters.org)  
For questions, contact [Indoorfly@Skymasters.org](mailto:Indoorfly@Skymasters.org)



# ON THE WING

## The Retirees and Wannabes Breakfast At Ram's Horn

9AM, 1st and 3rd Mondays  
1990 Rochester Road,  
Rochester Hills

## Skymasters Breakfast At the Orion Grill

Every Saturday at 8:30AM  
3667 Baldwin Rd  
Orion Charter Township

## Indoor Flying at UWM Sports Complex (formerly Ultimate Soccer)

(AMA required - See web site for more info)

Every Tuesday

9AM — 12PM (note new times)

UWM Sports Complex field #1, in the rear of the complex  
Park and enter in the back  
867 South Blvd E, Pontiac, MI 48341

## Other local area indoor flying

### Premiere Sports Center

14901 23 mile, Shelby Twp, MI  
(northwest corner of 23 mile and Hayes)

Every Thursday beginning October 13th,  
9AM to 3PM

Electric planes and helis (separate heli space)

\$10/session, AMA required

Info: Steve Durecki 586-246-4203 (text or voice)

<http://www.stevesindoorflying.com/>

### Legacy Center

9299 Goble Dr.  
Brighton, MI 48139

(Off of Winans Lake Road, between Rickett Rd. and M23)

Wednesdays 12:30PM—2:33PM November 2nd through April 26th

\$10/session

Sponsored by the Hamburg Flyers RC club

# January 2023

| Sun  | Mon   | Tue   | Wed | Thu   | Fri | Sat                                      |
|--|---|---|-----|---|-----|--|
| 1<br>Krazy Snow Fly<br>10AM<br>Scripps Field | 2<br>Skymasters Breakfast<br>9AM<br>Ram's Horn  | 3<br>Indoor Flying<br>9AM-12PM<br>UWM Sports Complex  | 4   | 5<br>Indoor flying<br>9AM-3PM<br>Premiere Soccer  | 6   | 7<br>Breakfast<br>8:30AM<br>Orion Grill  |
| 8  | 9   | 10<br>Indoor Flying<br>9AM-12PM<br>UWM Sports Complex | 11  | 12<br>Indoor flying<br>9AM-3PM<br>Premiere Soccer   | 13  | 14<br>Breakfast<br>8:30AM<br>Orion Grill |
| 15   | 16<br>Skymasters Breakfast<br>9AM<br>Ram's Horn | 17<br>Indoor Flying<br>9AM-12PM<br>UWM Sports Complex | 18  | 19<br>Indoor flying<br>9AM-3PM<br>Premiere Soccer<br><br>Skymasters Meeting<br>7PM<br>Seymour Lake Park | 20  | 21<br>Breakfast<br>8:30AM<br>Orion Grill |
| 22   | 23  | 24<br>Indoor Flying<br>9AM-12PM<br>UWM Sports Complex | 25  | 26<br>Indoor flying<br>9AM-3PM<br>Premiere Soccer   | 27  | 28<br>Breakfast<br>8:30AM<br>Orion Grill |
| 29   | 30  | 31<br>Indoor Flying<br>9AM-12PM<br>UWM Sports Complex |     |   |     |  |



# Skymasters Information...

[The Skymasters field is located in Lake Orion, within the Bald Mountain Recreational Area](#) on Scripps Road, between M24 and Joslyn (see map). A recreation passport or sticker is required and can be obtained from the Park Headquarters located on Greenshield Road or you can check the box on your tab renewal for a "Recreational Passport".

## Flying hours:

**QUIET ELECTRICS ONLY from 8AM to 10AM and 8PM to 10PM and the noise limit is 80dBa at ten feet.** Regular flying is permitted between 10 AM to 8 PM and **the noise limit is 94 dBa at 10 feet.** These noise limits are enforced.

**Student Night & Pot Luck** Every Wednesday, May 11th through September. Flying any time but we eat at 6:00 p.m. - rain or shine, literally! For those participating we ask that

you bring something for the grill - enough to feed (at least) you and your guests -OR- bring a dish to pass -OR- bring your own (non-alcoholic) beverage. **Something for the grill:** The obvious choices are burgers, sausages/brats and hotdogs - but other alternatives are welcome. If you bring it we will cook it! We've cooked pork tenderloin and chops, salmon, venison burgers, steaks and more. Don't forget the buns.

We start cooking about 5:30 p.m. - having grill items by then helps us get everything ready on time.

**Potluck dish to pass:** Don't know what to bring, working late? Each week we'll let you know what is needed for the next week from plates to condiments, charcoal, etc. **Pick one of the needed items to bring instead!** Not one to cook? A quick stop at local supermarket deli

for a side salad, or bakery for dessert always works!

**From June through August**, club meetings are held at the field, on the second and fourth Wednesday of the month at 8 PM. A great chance to fly and socialize. **Winter meetings (September through May)** are held at the Orion Center, 1335 Joslyn, in Lake Orion. Bring a model for Show and Tell, enjoy coffee and donuts and listen to the speaker of the evening.

The Skywriter newsletter is available online at the Skymasters web site and is free to all. It may also be printed from the web site if desired. All contributions are welcome. Please send photos and articles to [newsletter@skymasters.org](mailto:newsletter@skymasters.org)

**Want to talk to someone?  
Call us at 248-403-8279 and  
leave a message. We'll get  
right back to you.**



## 2022 Club Officers & Appointees...

|              |                  |                 |  |
|--------------|------------------|-----------------|--|
| President:   | Pete Foss        | Oxford          | <a href="mailto:president@skymasters.org">president@skymasters.org</a>         |
| Vice Pres.:  | John Billinger   | Troy            | <a href="mailto:vicepresident@skymasters.org">vicepresident@skymasters.org</a> |
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| Treasurer:   | Kurt Kettler     | Lake Orion      | <a href="mailto:treasurer@skymasters.org">treasurer@skymasters.org</a>         |
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