



Academy of Model Aeronautics

Chartered Club #970
5 Year Gold Leader Club



PRESIDENT'S MESSAGE...

BY: ROSS JONES

Support my resolution to extend summer...

August has been the hottest month for flying yet – and people still fly (although there are fewer). We had a good month, with the “Warbirds and Scale” and student night “Fish Fry” chalked up as great successes. As you read this, the “Midwest Regional Float Fly” is about to start and I anticipate an excellent turnout. There are lots of volunteers and participants signed up, hope to see you there!

The fall meetings are upon us with the venue set for Larson Middle School. Red Hun-

tinton from Midwest Products is scheduled to be with us to discuss the secrets of how kits are made and made successfully on our first meeting – September 10th, 2003. The format I would like to support this year goes as follows... Meetings with presentations by guests would be on the first meeting of the month, followed by meetings discussing Skymasters pol-

icy and internal matters on the 2nd meeting of the month. It's rather difficult to get speakers and keep the topics fresh, if you know what I mean.



DAVE LANGE'S MAGIC "HOT DOGGIN" IN NEW LONDON, OHIO (PG 2)

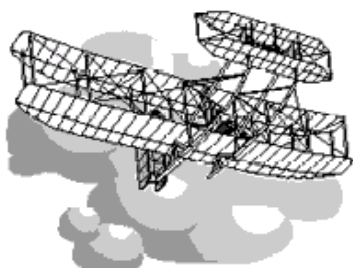
Things on the table this year for us to consider are: Discussions of Db limits at the field, advanced flight instruction, 2004 student night potluck organization and progress with potential new fields. We also have some issues to vote on that will involve modifying existing club rules. Lots to do, and, I'll have new anecdotes this year to keep things mov-

ing! Events left yet this year and coming up fast are – “Scout Day”, Darrell Watts, Sunday, October 5th, 2003. A gaggle of scouts will be at the field to

fly and be flown for. They will be launching rockets also. On October 11th, Gary Weaks will be organizing “Barn Daze Kid's Day” from 1-5pm. Now, kids can be any age, but this event is off site and organized with Lake Orion Township Parks. We'll need volunteer fliers and instructors for this well attended public event.

Dave Lange is planning “OCTOBER EVENT,” on October 11th, 2003, where hearty souls will Bar-B-Q, fly and camp at the field. This promises to be a lot of fun for the whole family! Watch for more info in next months newsletter.

Some of the best flying weather is upon us! Don't miss it! Get out to the field while the flying is good! See you at the field. ~Ross



CENTENIAL OF FLIGHT

2003 Club Officers & Appointees...

President:	Ross Jones	6028 Meadowgreen	Waterford	48327	248-738-4435
Vice Pres:	Paul Zabawa	PO Box 138	Metamora	48455	810-678-3332
Secretary:	Gary Weaks	2512 Red Fox Trail	Troy	48098	248-540-8358
Treasurer:	Bob Donohue	260 Four Seasons Dr	Lake Orion	48360	248-391-1385
Editor:	Mark Smith	1955 Hopefield	Lake Orion	48359	248-391-5970
C F I :	Ron Sokacz	40714 Matlock	Sterling Hts	48310	586-977-1404
State Park:	Bill Stark	1010 E. Clarkston	Lake Orion	48362	248-693-8639
Membership:	John Billinger	943 Vanderpool	Troy	48083	248-680-3318

SKYMASTERS IN OHIO...

BY: MARK SMITH

The New London, Ohio Club "Firelands Float Flyers" had their first annual float fly August 8-9. Seven Maze & Blue Skymasters headed down to Buckeye country to join in the fun. You use the same exit as Cedar Point off the turnpike but head south. (don't miss this exit or you will be going along way until you reach the next exit, don't ask)

The site is the New London reservoir & campgrounds. The city went out it's way to accommodate us by closing down the lake to boaters & swimmers for the 2 days we were flying. The club consists of 8 members and they have a flying site on the reservoir so they can float fly any-time they want!

We had great weather both days, sunny with light winds. About 30 pilots registered to fly, the flight line was never very busy, so we got a lot of water stick time.

The gang included Bob Donohue, Steve Fredericks, Mike Holmes, Dave Lange, Roger Schmelling, Darrell Watts & myself.

We had a great time & hope to return next year. If you see any Buckeye's at our MRFF be nice they are friends of ours.



BASE CAMP "LANGE" FOR THE 2 DAYS OF FLOAT FLYING



MARK SMITH'S MAGIC ON OLD TIMERS



STEVE FREDERICKS "MAULE ROCKET"

Photo's
By
Dave
Lange



MIKE HOLMES' LAKER ON FINAL



"CRASH" DONOHUE TAKES A BREAK AFTER A HARD DAY OF A..... FLYING?

WARBIRDS & SCALE...

BY: JOE FINKELSTINE

Hi All,
 This year's Warbirds and scale was another success judging by the number of ships I saw on the flight line. According to my always unscientific counting at around noon, we had over 60 ships on the tarmac. This continues to be a popular event, and if I ever get over my cheap-skate ways, I'll actually buy a digital camera to shoot some pictures. I am hoping that your newsletter editor has "borrowed" a few from one of the shutterbugs at the event.

Once the meet started with Dan Devine taking the maiden flight, I had to nag people to get flying, but things picked up considerably by noon with several beautiful flights. Jim Held kept buzzing the field with his Spitfire (Jim won Pilot's Choice on best Military with this ship!) and

I enjoyed some of the slower civy's out there as well. I was hoping like crazy to get my Dauntless up, but

choice a pure pilot's choice in that ARF's, non-flying, and even semi-scale ships are allowed to be in the pilot's choice award (although I draw the line at that ugly stick thing with the invasion stripes that your club president flies - If I let it in our meet, the gods of scale will rain upon us all day!)

From a financial perspective, the meet cost approximately \$120 to hold, (including kitchen costs) and the kitchen returned \$90-\$100, so

the meet cost us ~\$20

Attendance at this meet has always been better than +50 ships every year I have run it and it appears that it's popularity is staying constant to a slight increase.

I hope to see you all next year as we buzz the skies again!

~Joe Finkelstine



GARY WEEKS WITH HIS "WILDCAT" - JOE WITH HIS "DAUNTLESS"

new ship Gremlins kept her grounded. Wade Wiley showed us the way with his pilot's choice for civys with his Gee Bee Model Y. Both of these ships were great and I hope many of you can take heart from the fact that these were not huge projects, but 90-120 size ships. I have chosen to make our pilot's

7TH ANNUAL FISH FRY...

The 7TH Annual "FISH FRY" was on August 6. I heard it was a success. No one

send in a story, but Mike Holmes was kind enough to send in this picture.



DAN DEVINE WITH HIS B-25 BOMBER, HE DROPPED THE BOMBS (NOSE WEIGHT) ON TAKE OFF AND THE TAIL HEAVY PLANE HEADED TOWARDS THE SWAMP FOR A SOFT LANDING - SHOULD BE BACK IN THE AIR SOON.

PROP WASH...

Joe Finkelstine

Hi Gang,

Well, I got all of my complaining done last month, so this time I am going to turn to a technical topic that I actually used last month.

As I began to attempt to get my Dauntless flying at the filed last month, I noticed I had a significant electrical issue that I was hoping to avoid, but as you know in this hobby, things don't tend to fix themselves.

When I attempted to deploy the dive flaps and regular flaps at once on a ground check (5 separate flap sections), severe glitching occurred in other servos. In addition, my range was severely reduced with the dive flaps deployed. Now, since this was a dive-bomber and I could not imagine a flight without dropping a bomb, so I had to resolve this one. The ground checks clearly said this ship is grounded.

My original attempt to thwart this problem was similar to my engine choice method. With engines, I usually install near or above the maximum recommendation for engine size – I let horsepower fix my heavy building ills. In keeping with this brilliant thought process, I decided to buy a big 5 cell pack (2400Mah) hoping capacity of the pack would keep my instantaneous power problems at bay. Keep in mind for a moment that the Dauntless has 13 total servos, 5 of which are small and will only be used minimally in flight, but the other 8 are high torque/high current monsters to deal with. I knew the ultimate answer from previous research, but I spent lots of effort avoiding what I had to really do.

Ultimately, I decided on an opto-isolated unit to power my high power servos, and it was the answer. The effort I had to install and configure it was far less than the idiocy I displayed in avoiding it (sounds like my daughter who will spend endless energy arguing with my wife and I when we ask her to do a simple task that could have been completed in 1/10 the time she spent arguing with us!)

Now, a few of you may be wondering what this opto whatever is, so let me fill a page or two with my less than electrical engineer description for you.

For most of our ships, we have one

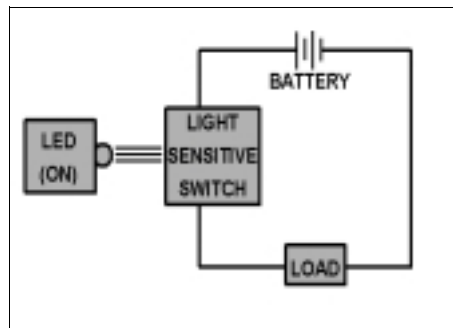
battery pack supplying power for two essential tasks. One task is to power the receiver to receive and process the transmitter signals and generate the commands for the servos. The other task the battery does is supply power to the servomotors to actually move and hold position.

The problem in my Dauntless is that when I throw the switch to deploy all of these Hitec 545's, the current draw is strong enough to drop the battery voltage and make the receiver do crazy things, as it no longer sees the minimum voltage it needs to function properly.

What I needed was a way to power the receiver separately from these big power hungry servos. The opto-isolator unit does exactly this (and a few other things).

Opto-isolated circuits have been around for a long time actually (I remember them from the late 70's myself) and they are surprisingly simple. If you look at the switches we use now, we actually ask our switch to do two things. This first is to make (or break) a connection to allow (disallow) a complete circuit. Our switch, once in the "on" position is also asked to be a conductor passing all of the battery current required to the receiver and servos. The Optically isolated switch breaks the connection and conduction tasks into separate (hence isolated) pieces

A picture below illustrates this



In this example, the light sensitive switch closes (i.e. turns on), whenever the LED is turned on. When the LED is off, the Light sensitive switch is open and no power flows through the load on the right.

Now, think about the circuit on the right above for a minute. One would

think it would be possible to use one battery on the load side, and another battery on the LED side. As long as the LED controls the communication between them and no physical contact is made, I can use this type of circuit to power my servos with one battery, and my receiver with another. The issues here now becomes, how do I get the control signal (i.e. the third wire in the servo) to the servos, since we have two isolated circuits?

Well, the opto-isolator units on the market for us take care of this little task. First off, they provide the physical separation of the servos from the receiver by having you plug the servo into the opto unit rather than the receiver (you only plug in the servos you want isolated, you can still run other servos from the receiver like normal). The unit requires another battery pack to power the servos, and this battery pack can be any number of cells and capacity and does not have to be the same as the receiver battery. The Unit also provides the optical switch described above for the servo signal. So what happens here is that the servos still receive their position signal from the receiver, but the power necessary to move and hold comes from a different battery. When I deploy my dive flaps, they still draw a bunch of current, but it now draws from the servo battery, and the receiver is isolated from this current draw and continues to work off of the other battery pack. The receiver never sees the load of the isolated servos and does not glitch because the battery on the receiver is never loaded heavily.

The setup is extremely simple on these things. They are about the same size as a receiver and have servo leads coming out one side, and a receptacle for a servo lead in the other. For each servo you want to isolate, you unplug it from the receiver, plug it into the unit, and then plug the unit lead back into the receiver channel for channel. No extensions or additional wiring is needed for

Wanted to trade:

I have several Hitec 555 (small 5 channel) receivers I would like to trade even up for Hitec Supremes or Hitec 8 channels one-for-one. My receivers are JR/Airtronics compatible (not Futaba) and am looking for trade only at this point as the 555 actually listed for more \$\$ than the Hitec receivers I want in return. Please contact Joe Finkelstine. (248) 375-0530

(Continued on page 5)

(Continued from page 4)

servo hook-up. As far as servo hookup is concerned, the opto-unit is a pass thorough and sits in the middle between the servo and the receiver. The biggest pain for me though was that since I added an additional battery, I needed to add another switch to my plane. This switch only powers the servo side battery. My actual problem was that I had to add another switch to a ship that I had already finished the scale cockpit on, so it was quite tricky not to mess up what I had. Once I got the additional switch in my ship, the rest of the install took 15 minutes to accomplish, including testing it out.

For those of you who are not electronics challenged, this is very similar to the old standby known as a relay. In the relay, a coil and a length of conductive material, such as aluminum, replace the LED and light sensitive conductor. The relay uses a magnetic field generated in the coil to bend the aluminum strip to make contact and turn on. The coil is energized separately from the aluminum contact side, so it also acts as an isolator in a similar manner. Besides being big and heavy, the mechanical relay is too slow for our needs.

Two vendors supply opto-isolators that I know of for R/C. One is Electro-dynamics (6 channels available, but can be chained to isolate more) and the other is EMS (Jomar). The EMS unit is 8 channels. Keep in mind that it is not necessary to isolate every servo on your ship. I did not isolate my throttle; gear, bomb

drop, and tail hook servos. They are all small and low load and I can power them with the receiver battery.

Both units also claim to boost the signal, so they can drive ganged servos, or drive servos with long leads. I think they are also both around \$70, which is like buying another receiver.

I should also point out that this is much different that just connecting two batteries to a receiver through two switches or a battery doubler unit. In either of these cases, the pair of batteries still has to power all servos and the receiver since no isolation occurs. This situation is a redundancy issue, not isolation. With the opto-isolator setup, I do not have redundancy in my battery packs - There is only one battery powering the receiver and if it fails, my ship is an unguided missile.

The dauntless is quite the spaghetti mess in the wiring department, but when she flies by and drops a big bomb (and hopefully does not crash!), it will be worth it.

Keep the balsa dust flying!



Count how many times Joe uses "ship" in this month's article and win a prize, bonus points for guessing why he refers to his model airplanes as "ships". To my knowledge he was not in the Navy.



MIKE HOLMES - ULTIMATE BIPE



BOB MOSS - SOMETHING EXTRA



JENNIFER BROOKS - SUKHOI



BOB DUKELOW - SWEET STICK

7 LAKES/STONY FLOAT FLYING

The Skymasters will be float flying at Seven lakes State Park. Every Saturday starting September 13. We will also continue to be at Stony Creek every Wednesday. Weather permitting there will be flying from 9:00 - 12:00. 7 Lakes Exit I-75 at Grange Hall head west, right on Fish Lake Rd. to the park entrance. After entering the park head for the Beach. For Stony after entering the park stay to the left then watch for winter cove on the right. There is a daily park fee or annual park pass is available.



**“Get your floats & join us
at Seven Lakes every Saturday
& Stony on Wednesdays”**

AREA EVENTS...

AMRCC CONTEST SCHEDULE

- ◆ SEPTEMBER 6-7....."MIDWEST REGIONAL FLOAT FLY".....ROSS JONES 248-738-4435
- ◆ SEPTEMBER 6-7.....KITCHENER SCALE RALLY...http://home.golden.net/~snglbuny/Dutchmen_pg_1.html
- ◆ SEPTEMBER 6-7.....NSRCS.....PRECISION AEROBATICS.....TOM WHEATON 734-697-0875
- ◆ SEPTEMBER 6-7.....WEAK SIGNALS.....F5D TEAM TRAILS.....KEVIN MATTNEY 734-848-8195
- ◆ SEPTEMBER 13.....CHESANING.....STANDOFF SCALE FUN FLY...BOB MUNSELL 989-624-5996
- ◆ SEPTEMBER 13-14.....MIDWEST R/C.....INVITATIONAL AIR SHOW.....KEN MYERS 248-669-8124
- ◆ SEPTEMBER 14.....PMAC.....SCALE CHAMPIONSHIPS.....GEORGE DZHRISTOS 248-681-2355
- ◆ SEPTEMBER 18.....WEAK SIGNALSOLD TIMER.....CHUCK HUTTON 734-761-9304
- ◆ SEPTEMBER 20-21.....RCCD.....MELEE OVER LENNOX.....DON VERES II 586-778-7362
- ◆ SEPTEMBER 21.....WEAK SIGNALSSAM 40.....CHUCK HUTTON 734-761-9304
- ◆ SEPTEMBER 28.....WEAK SIGNALSSAM 40.....CHUCK HUTTON 734-761-9304
- ◆ OCTOBER 11NEW FOR 2003....."OCTOBER EVENT".....WATCH FOR MORE INFO NEXT MONTHBAR-B-Q.....BONFIRE.....CAMPING.....DAVE LANGE 248-969-3914

SKYMASTERS SEPTEMBER "2003"

SUN	MON	TUE	WED	THU	FRI	SAT
31	1 LABOR DAY	2	3 BOD MEETING	4	5	6 MIDWEST REGIONAL
7 MIDWEST REGIONAL	8	9	10 MEETING Red Huntoon Midwest Products	11	12	13 CHESANING MIDWEST
14 MIDWEST PMAC	15	16	17	18 OLD TIMER	19	20 RCCD
21 RCCD SAM 40	22	23	24 MEETING CLUB BUSINESS	25	26	27
28 SAM 40	29	30	1	2	3	4

Heat Treating Music Wire

by Roy Vaillancourt

The music wire used by sailplane modelers to make landing gear and cabin struts is medium carbon steel heat-treated to spring temper or about 45 on the Rockwell C scale of hardness (RC45). On this scale, RC20 is soft, RC45 is tough, and RC60 is hard. Tough wire can be bent and cut using the proper tools and techniques. One way to soften steel music wire is to heat it, which makes it easy to bend and form. But after heating and forming, the subsequent cooling often at an uncontrolled rate can make the finished wire too hard or too soft since its hardness is determined by the rate at which it cools. For some parts, the final hardness isn't critical. But a landing gear formed from wire softened too much won't spring back to its original position; and a gear made from wire cooled to a harder than normal state will snap on its first use. To restore the wire to its original specific spring temper, it must be heat-treated a second time and cooled at a controlled rate.

Three Steps

To form wire easily, first anneal it; next, form or bend it to the desired shape; and then heat-treat the part back to spring condition that is, temper it.

First the wire should be annealed 2 at the location to be bent. To anneal it, heat the wire with a torch until it becomes a bright cherry red about 1400 degrees Fahrenheit. Let it cool completely to the touch. Don't quench 3 it or blow on it. Just let it cool naturally away from any drafts. The wire should now be in the RC25 soft range, and it will bend easily. After forming, once again heat the wire with a torch until it becomes bright cherry red, but this time quench it that is, cool it rapidly by immersing it in room temperature water. Plunge the steel into the water with a twisting, swirling motion to keep water vapor from insulating the wire against the cooling action of the water.

At this point the wire should be very hard, probably above RC60. To test the hardness, try to make a mark on the worked area with a file. The file should slide off without cutting into the steel at all. If it cuts the wire, try the heat and quench cycle again. If the file still cuts the wire, it isn't high carbon steel. Get another piece of wire and start over you won't be able to add the necessary carbon to low-carbon steel. When the file test signals success, the wire is ready for the final step, but not for use, because it's very hard and quite brittle, and will

probably snap off.

The final step is to temper the wire back to the desired hardness Tempering is a form of annealing but is controlled so that the steel achieves a specific hardness. Start by sanding the wire with steel wool or emery cloth. Then heat it gradually with the torch. Watch for the following colors as a guide: straw color (350 degrees), followed by dark blue (600 degrees), and then medium blue (750 degrees). At this point, remove the wire from the heat and allow it to cool slowly. Don't quench it or blow on it; just let it cool naturally in still air. Once the steel returns to room temperature, it should be at the target RC45 hardness, which has a good spring temper. Try the file test again. You should be able to make a mark now, but only with some effort. If it passes this test, the wire is properly tempered.

Besides parts for model planes, tempered music wire can also be used to make special purpose tools. Instead of tempering to 750 degrees (medium blue), stop at the straw color stage. The wire will be at about RC60, which is still very hard, but not brittle. Wire at this temper can be used to drill wood and plastics, and most aluminum and copper.

Notes

1. Rockwell hardness testing, named after Stanley Rockwell who made his first testing machine in 1921, is a general method for measuring the bulk hardness of metallic and polymer materials. Although hardness testing does not measure performance properties, hardness correlates with strength, wear resistance, and other properties.

Rockwell hardness testing is an indentation testing method. An indenter is impressed into the test sample at a prescribed load to measure the material's resistance to deformation. A Rockwell hardness number is calculated from the depth of permanent deformation of the sample after application and removal of the test load. Various indenter shapes and sizes combined with a range of test loads form a matrix of Rockwell hardness scales that are applicable to a wide variety of materials. The Rockwell B and C scales are used for metallic substances.

2. Anneal: To heat and then cool (as steel or glass) usually for softening and making less brittle.

3. Quench: To cool (as heated metal) suddenly by immersion (as in oil or water).

Credit, Internet find by Scott Thompson and the South Bend "FLY PAPER"

PHOTO'S BY: MIKE HOLMES



OTTO GUTGSELL- P-51



MARK SMITH - RAZZLE



JIM FRITCHER - WACO BIPE

~WANTED~
SIG 1/4 SCALE CUB
KIT OR BUILT
FRED PRESTON
248-743-0794



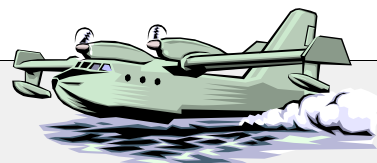
SKYMASTERS RADIO CONTROL CLUB OF MICHIGAN

Mark Smith
1955 Hopefield Rd.
Lake Orion, MI. 48359

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 Email: masmith248@earthlink.net

UPCOMING EVENTS

- ◆ SEPTEMBER 6-7.....MIDWEST REGIONAL
- ◆ SEPTEMBER 6-7.....KITCHENER SCALE
- ◆ SEPTEMBER 6-7.....NSRCS
- ◆ SEPTEMBER 6-7.....WEAK SIGNALS
- ◆ SEPTEMBER 13.....CHESANING
- ◆ SEPTEMBER 13-14.....MIDWEST R/C
- ◆ SEPTEMBER 14.....PMAC
- ◆ SEPTEMBER 18.....WEAK SIGNALS
- ◆ SEPTEMBER 20-21.....RCCD
- ◆ SEPTEMBER 21.....WEAK SIGNALS
- ◆ SEPTEMBER 28.....WEAK SIGNALS



**HOME OF THE
"MIDWEST REGIONAL FLOAT FLY"**

Skymasters Information.....

Skymasters field is located within the Bald Mountain State Park on Scripps Road (see map). State Park Permits are required and can be obtained from the Park Headquarters located on Greenshield Road or at club events. Flying is permitted from 10 AM to 8 PM. The noise limit for 2003 is 94 dBa at 10 feet—this noise rule is strictly enforced.

In the summer, Wednesday evenings are Student

Nights and there are usually instructors around all day. Student night is also a pot luck buffet, bring something for the grill & a dish to pass. Meet the Instructors and arrange for more instruction time together on other days. Our Chief Flight Instructor is Ron Sokacz (810) 977-1404.

From June to August, Club meetings are held at the field, on the first Saturday of the month at 12

Noon. A great chance to fly and socialize. Winter meetings—September to May—are held at Larson Middle School (on Long Lake just east of John R—see map). On the second and fourth Wednesday of the month at 7:30 PM. Bring a model for Show and Tell, enjoy coffee with donuts and listen to the speaker of the evening.

The Skywriter newsletter is sent to members, local hobby shops, and other R/C clubs in the area and around the country. All contributions are welcome. Please send articles to the Editor. If you know of anyone who may be interested in R/C Aviation, please give them a copy of this newsletter or a copy of an AMA magazine. It may spark their interest!

