

# THE LEADING EDGE

The newsletter for the Northern Illinois Rocketry Association

March / April 2007

## NIRAcon 2007



**NIRA members display their winnings from the NIRA auction. Members earned NIRA-bucks throughout the year for their participation in club activities.**

This year's NIRAcon was bigger than ever. We had the use of the full conference room in the basement of the Helen Plum Library in Lombard. NIRA members provided lots of drinks and snacks that came in handy as the conference went way past noon.

President Bill Ipjian welcomed our members and thanked John Hojek for all the hard work he put in with coordinating this conference.

The first presenter was NAR President Mark "Bunny" Bundick. Mark gave us the first go around of his Kitbashing presentation than he was later going to present at NARCON in Minnesota. He gave us a lot of ideas on how to modify-

ing existing model rocket kits so that they are a personal reflection of our interests.

Next up was Ken Herrick from Al's Hobby Shop. Ken talked about high powered rocketry. It was a great introduction for members who had no experience in this area. Ken provided an overview of the types of kits that are available as well as engines and recovery systems.

NIRA member Pat Butler provided a demonstration on vacu-forming styrene rocket parts. Pat talked about the process of making molds as well as how to construct a simple vacu-forming

*(continued on page 8)*

### President's corner

**Bill Ipjian**

On a cold day in February, I am sitting at my desk trying to figure out what to write about for our next newsletter. Pat is a real task master. He wants the articles in well ahead of time so he has time to publish a great newsletter. That made me think of how lucky we are at NIRA to have so many volunteers who keep this club functioning. There are so many members who give so much that I can't mention all of them but I would like to give some examples of the great work our members do.

First of all we have been blessed to have members willing to give a lot of time by being officers in NIRA. Before I became President, I never realized the amount of time and effort involved in being a club officer. I really believe that my predecessors deserve a great deal of thanks for all their work thru the years. Being a club officer certainly is fun but it also takes a lot of time. I can certainly see why the officers change so often. Thank you to all the former and current officers of NIRA.

Then there are all the club members who have given and are still giving to NIRA by being on different committees. Where would we be without our newsletter editors, our scout representatives, our MRFF committee people, Hobby Show committee representatives, our Tarc leaders, NIRA equipment committee, our NIRAcon committee representatives, and all the rest? Talk about given of their time, expertise, and money. These members deserve a BIG THANK YOU from all of us.

*(continued on page 8)*

# Meet your officers

## Tom Pastrick

I completed my high school education at a technical high school in Detroit, where I completed the Printing Curriculum,

with an extra 3.5 years of science. I worked in the Printing Industry for 30 years, as a journeyman Typesetter and journeyman Lithographer. I worked in both the Milwaukee and Chicago areas until becoming medically disabled.

During my working career, I was able to successfully troubleshoot several processes, increasing productivity.

I was a Civil Air Patrol member from 1961 to 1974, initially as an Instructor, later as a Military Education Officer, Photographer, ran a multi Squadron Information Office, Basic Instrument Flight Instructor, Observer, Aircraft Commander. I flew 25 actual search missions, some lasting 10 days. I flew about 60 practice search missions. I retired from the CAP with the rank of Captain. I established the CAP's first Rocket Club in 1961, and remained its Senior Advisor till 1974.

Joining the Milwaukee Council of the American Youth Hostels in 1961, I went on many weekend trips, later becoming a Leader. Then, I organized and ran bike trips, canoe trips, hiking trips, and ski trips until 1978. As an expert skier, I was named as one of their two Ski Instructors, and taught skiing to many members. I still have a life membership that I still use occasionally. I earned my Silver Skates in 1965 as an expert ice skater. As an avid bike rider back then, I participated and ran many Century Runs of 100 miles in 12 hours or less. As a volunteer with the Milwaukee Boys Club, taught and supervised youths in printing projects for several years.

In 1962, I joined the NAR and attended NARAM-4 and every NARAM since, missing only NARAM-18 due to spending too much vacation time to photograph and film Apollo 14. In the

1960s to the mid 1980s, I was actively competing at Section, Open, and Regional NAR Contests. In two different years, my contest standings were to identify me as NAR's 3rd best contestant. For several years, I was among the top 10 and top 20 best contestants in the country. I mentored several NAR youths in model rocketry, encouraging them to high levels of rocketry expertise. I was the Vice President of the Western Wisconsin Association (WWAR) in the year that they won their first National Championship. I was Vice President of NIRA, the first time it won its first National Championship. I have participated in previous Rocket make it and take it booths at the local hobby shows. I now organize and manage the NAR's booth at the iHOBBY EXPO in Rosemont. I expect to continue to volunteer with the Federal Aviation Agency's aviation outreach to disabled children in Illinois and Michigan.

I have been and expect to continue to be one of NAR's Mentors in the Team America Rocketry Challenge. In addition to actually going into schools to work with Teams, I also advise Students around the country on some of the problems they encounter. This is my 5th year in volunteering to help the students in the engineering challenge of this Contest. While cash prizes are an incentive, the real worth of this program is to encourage students to consider engineering as a career. Even if they don't go into engineering, learning to solve problems will be to their advantage in their adult life.

As your current Club Safety Officer, I will be working to upgrade the Club to meet the NAR's current expectations in running club Launches. It has been the NAR's intent that every one in the club be aware, and capable of maintaining, the Safety of everyone at a Launch. Yes, even the youngsters should be able to act as a Safety Officer. I also plan on implementing the NAR's Final Report of the Special Committee on Range Operation and Procedure.



## THE LEADING EDGE

PATRICK BUTLER  
 Newsletter Editor/Publisher  
 editor@nira-rocketry.org  
 (630)897-3339

### NIRA OFFICERS

BILL IPJIAN  
 President

JIM BASILE  
 Vice-President

RICK GAFF  
 Secretary/Treasurer

TOM PASTRICK  
 Safety Officer

The Leading Edge is published bi-monthly for members of the Northern Illinois Rocketry Association (NIRA), NAR Section #117, and is dedicated to the idea that rocketry is fun!



## Upcoming launch dates

Think Spring! Have fun flying rockets, meet new friends!

March 18, April 15, May 20, June 17,  
 July 15, August 19, September 16,  
 October 21, November 18



# Polar Bear Launch

*it was cold... but it was fun*

**Bill Ipjian**

NIRA'S launch on January 21<sup>st</sup> was a great success. The temperature was about 28 degrees with light snow and a small breeze. The launch permit was for a 12:00 start but the ranger did not show up until 12:20. That was the only thing that went wrong all day. We had ten brave members attend. John and Victor Hojek, Tom Pastrick, Marc Mitchell, Adam Elliott, Hugh McGrady, Tony Lenti, Jim and Jimmy Basile, and Bill Ipjian. Tom set up his first range as Club Safety Officer.

The first launch of the year went to Adam Elliott. Adam made his launch and promptly left for a Bears Championship game party. There were approximately 35 flights which ranged from an A motor to a G64 which Bill Ipjian used in his 12" flying saucer. There were NO catos, NO engine failures, and NO rockets were lost.

Marc Mitchell was a man possessed.



**(l) Adam Elliott enjoys the day, despite the cold weather. (r) Marc Mitchell and his bat wing tent.**



Marc launched 17 flights. They were all spectacular. Especially his last flight of the day. The Mitchell Family Flying Circus had a very long and beautiful glide. Marc did have two rockets lose fins when they hit the hard turf. Marc earned the nickname "FLYING MANIAC" with all the flights he made in a little over two hours. Nice flying, Marc!

John Hojek and Hugh McGreevy made some great flights on F motors.

They made sure that the geese stayed away with the roar of their motors. John even let Jimmy Basile press the button for one of those F motor flights. Jimmy was very pleased. Great job John and Jimmy.

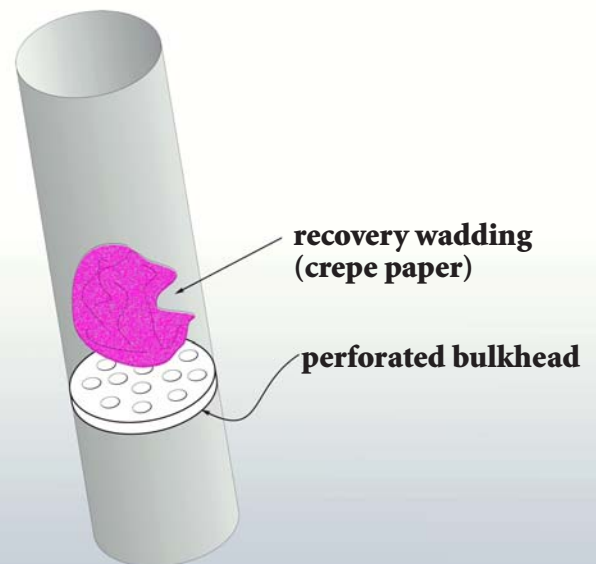
This launch just proves that no matter when or where that NIRA club members can conduct a safe and fun launch. Maybe next January we will do it again!

## Safety Officers Column

**Tom Pastrick**

Recovery wadding; A less expensive recovery wadding other than the stuff you get from the rocket motor manufacturers, is crepe paper. This is less expensive(cheaper) and can be bought in rolls 2 inches wide, or in sheets. For body tubes up to BT-50, the roll crepe paper works well as a parachute protector. For body tubes like BT-60 and larger, the crepe sheets can be cut oversize, to form a cup, with the parachute inside the cup. To keep the parachutes from sliding down to the motor because of the 'G' load of acceleration, a perforated bulkhead may be added, even if the kit instructions don't say so. The perforated bulkhead will still allow the ejection gases to push out the parachute.

Ordinary paper towels for recovery wadding ARE NOT ALLOWED. They are not chemically treated to be fire resistant, and could start a grass fire. If you run out of parachute wadding, ask to borrow some from another member. Remember to repay that member at the next launch, It will help everyone stay friendly.



# Student Launch Initiative

## Len Johnson

A group of High school students from the Chicago area has experienced quite an adventure over the past three years. They are known as the St. Andrews Team Orion from Park Ridge, IL.

In 2004 they were introduced to Tom Pastrick at one of the NIRA

weekend club launches. They originally went to the East Branch Forest Preserve located in Glen Ellyn, IL. to just have a fun day flying

their model rockets. Mr. Pastrick being a dedicated club member and pioneer of model rocketry told them about the Team America Rocketry Challenge or TARC. It was a National Rocketry competition originally initiated by the Aerospace Industries Association and NASA to celebrate the Wright Brother's Century of Flight. The competition became so well received that it is in its fifth year now and is also a major stepping stone for our Nation's youth to get involved in science and math; ultimately producing our next generation of Scientists, Engineers and Space Explorer's.

From that point on we became known as the St. Andrews Rocket Team. We became officially registered with TARC as Team # 3370 along with the other 10,000 students registered for the rocket competition. Our Team Leader became Mr. Leonard Johnson who guided us through our first Season's rocket design, construction and flight testing phases. We learned much through trial and error over this nine month program and experienced a lot of literal Ups and Downs. Throughout the course of the year our financials were building up fast created by permits, software, supplies, equipment, and motors. Our fundraising endeavors were limited and valuable time was a necessity for rocket construction and test flights which were

usually all day events. Eventually our Team was blessed with the generous sponsorship from Numerical Precision which machines very specialized Aerospace components. Team #3370 forged ahead and made its qualifying flight of an almost perfect score on that cold spring day. The qualification goals set for all teams that year was to launch a payload of two raw eggs for a duration of 60 seconds from lift-off to touch-down. The two raw eggs had to survive the flight unblemished. St. Andrews had scored a 60.3; which was good enough to get us to the National Finals. We were on our way! The first year at the

National Finals we finished in the middle of the pack of the 100 Finals Teams. We had a great experience and learned very much.

St. Andrews rocket team now well established and experienced decided to register with two Teams the second year out. We had twice the amount of work to do with two Teams now. Our rocket engineering, ignition systems, launch towers and recovery systems became much more advanced and specialized. For a Team to qualify for the National Finals is an honor and a rarity in itself. After another long and highly motivated season of intensity both St. Andrews Teams made qualifying flights that earned them another trip to the National TARC Finals ! St. Andrews Team #4020 finished in 50<sup>th</sup> place and Team # 4284 finished in 17<sup>th</sup> place which gave St. Andrews a shot at writing a Proposal for NASA's Student Launch Initiative ( SLI ) and possibly earning a Contract to work for NASA.

St. Andrews Rocket Team thought about what their NASA Proposal would

consist of throughout the summer. The Team was invited to perform for two days on the Hero's stage at the Oshkosh Air show EAA-2006. It was another great experience given to us promoting Rocketry and our accomplishments. One night at the campfire after another long and adventurous day at the Air show; some serious brain-storming was going on under those Wisconsin stars. St. Andrews Rocket Team decided that their NASA experiment would honor Henri Pitot who invented the pitot-tube which measures airspeed on every aircraft worldwide. We would measure our NASA rocket velocity and acceleration via two

pitot-tubes while sampling atmospheric temperature, pressure and humidity for the study of Air Density. The Team also decided to call themselves Team Orion from St. Andrews after the great Hunter in the night sky constellation.

Ironically; NASA announced later that month that their next Program after the Space Shuttle retired would be called ORION ! Team Orion worked hard writing its 100 page proposal which was due to NASA on October 2, 2006.

Two weeks later; Team Orion was notified that their Proposal was accepted and chosen by NASA. Team Orion was awarded a Contract to design, build and test both a Rocket and a Payload for the Marshall Space Flight Center in Huntsville, AL.

The rest is history for these modern day rocket boys and girls of the 21st Century as we celebrate the 50<sup>th</sup> anniversary of Space Flight this 2007 year.

---

*Len Johnson, NAR member, is the leader of the 2 Park Ridge TARC Teams mentioned in this article.*



## Model of the month winners for February 2007

Secretary/Treasurer Rick Gaff shares the prize with Adam Elliott for Adult honors this month. That's Rick's Not-So-Giant Pyramid along with Adam's Four A Cluster altitude competition rocket. Rick's Pyramid is scratch built using foam core and a paper shroud. Adam's completely scratch rocket uses a cluster of four 13mm engine mount tubes that vent to a single 24.8mm tube for the airframe. The fairing is handmade by cutting and forming the individual engine mount tubes.

Youth had a unique team rocket for winner; sisters Allison and Jenna Butler built their first coordinated effort, the SisterRoc, with no help at all from dad. Well done, girls!

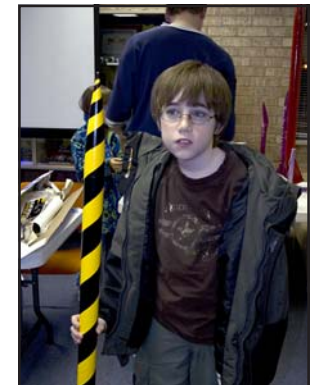


(l to r) Adult winners Rick Gaff with "Not-So-Giant-Pyramid", Adam Elliott with his Four "A" cluster competition mode, and the Butler girls with their "Sister Roc".

## Model of the month winners for March 2007

The honors for March go to Marc Mitchell with his sharp Este's Scissor's Wing Transport, and to Ian Timberlak with his Nuke Pro Max 38mm.

The youth winner was Gabriel Lake with a smartly painted version of an unknown Aerotech kit. The spiral paint job was exceptionally well done.



(l to r) Adult winner for March is Marc Mitchell with his Estes' Scissors Wing Transport, Junior winner Ian Timberlake with his Nuke Pro Max 38mm. Youth winner was Gabriel Lake with his customized Aerotech rocket.



There are always lots of interesting rockets at NIRA's monthly *model of the month* competitions.

# Building the FlisKITS TRES rocket kit

*Jim Basille*

To date, my design team consisting of my 7 year old son and I had built various models ranging from level 1 and 2 in terms of degree of difficulty. We were looking for a model rocket kit that would satisfy two objectives. The kit had to offer us a challenging model to build as well as provide us with experience in model types we had not previously undertaken. The second objective had to afford my design team the opportunity to modify the kit and allow us an opportunity to calculate the new center of pressure and center of gravity for the modified bird. Again these were new areas we had not previously undertaken. After looking through the various model kits available, we choose the Flis model Tres rocket. We were attracted to this particular model kit for two reasons. First, it was listed as a level 3 model, and second, the Tres model offered us an opportunity to build our first cluster rocket. We had the opportunity to see the built up model as well as scaled up versions of the Tres at the Chicago Hobby show. The built up versions of this model suggested that the model could be easily modified to allow us to achieve our second design objective as well. Our design team decided to purchase two (2) Flis Tres kits. The first model would be built as specified. The second kit would be modified. Construction of the second kit will be discussed in a future article.

Once home we opened the package to examine its contents. We found a very detailed instruction sheet consisting of 24 separate steps. I read and then reread the instruction sheet several times. Notes were taken for further reference as well. In addition I accessed a web site ([www.rocketreviews.com](http://www.rocketreviews.com)) that offered a written review of the Tres rocket by various model builders. I read the reviews prior to beginning construction of the model.

Step 1 provided instructions to build the three (3) engine tubes. This step involved three activities: installation of a motor block in each engine tube,

drawing a line along the long axis of each tube, and marking a  $\frac{3}{4}$  inch line at one end of each tube perpendicular to the line drawn along the engine tube axis. As shown on the instruction sheet the  $\frac{3}{4}$  inch mark is drawn across the line along the long axis of each tube and at the opposite end of the engine block. This mark would serve to correctly align the engine tube with the centering ring. The line that was drawn along the longitudinal axis of each tube would serve as a means to line up each engine tube along the edge of the motor mount



**Figure 1.**

shroud. To draw this line I used a 12 inch piece of scrap door jamb clamped to my workbench as my straight edge (see figure 1). To lay out the  $\frac{3}{4}$ " mark I used a 6" long machinist rule placed on door jamb (see figure 2).



**Figure 2.**

Step 2 involved the assembly of the motor shroud. Step 3 provided instructions to mount the shroud to the centering ring. The Flis kit utilizes card stock in construction of this component.

The instructions call for cutting the pattern out along the outer edges. I obtained 65lb card stock at a local art supply store and made several practice runs constructing practice motor shrouds from this card stock material. I sent an email to Jim Flis asking him to confirm the card stock weight used for the shroud assembly. He replied that he believed that 110 lb card stock was used. My initial thoughts when I read studied the instructions lead me to believe that constructing the motor shroud would be a "show stopper". In fact my contingency plan called for making the shroud from either balsa wood or bass wood. However, making the motor shroud from card stock material did not prove to be as difficult as I originally anticipated. I practiced making light cuts on the card stock until I was satisfied with my results. To ensure I made clean light cuts, I started with a new hobby blade. A light score utilizing a new hobby blade is made along each of the three fold lines. To verify I was using the correct technique, the opposite side of the card stock was examined to check that the cuts did not pass completely through the material. Once I was satisfied that I could construct the motor shroud, I began work on the actual component. The cuts were completed to remove the pattern from the sheet furnished with the kit. I pre-assembled the motor mount by using a steel straight edge to make the folds "straight and clean" as specified in the instruction sheet. To bond the two ends, I used a glue stick made by the German firm UHU. This glue worked very well in the assembly of the motor shroud. I choose not to use white glue in the construction of components made from paper stock in order to avoid distorting the paper. Too much white glue on a paper product will result in the paper warping. I must admit that I have yet to make a successful bond to paper that did not warp. Once the assembly was dried, a check was made for fit and alignment with the centering

*(continued on page 7)*

(Flis Kit Tres- from page 2)

ring. If the shroud assembly is correctly made the corners will line up on the centering ring at the center of the scallop cuts. In addition the angles made along the edges were also checked. If my assembly was properly made these angles should be equal. Refer to Figure 3, I checked the angles formed by the three sides using a carpenter's protractor. I was satisfied with the results and moved to Step 3 to glue the shroud to the centering ring. The assembly was allowed to dry for 24 hours.

Step 4 and Step 5 assembled the motor tubes to the shroud centering ring assembly. The line drawn in step 1 along the longitudinal axis of the engine mount is lined up with and glued to the corner of the shroud. I used white glue to attach the engine mounts to the shroud. Prior to gluing, each engine



Figure 3.

mount was test fitted to the shroud assembly. The engine tubes at the block end will line approximately 1/8 inch below the apex of the pyramid. This position will also coincide with the 3/4 inch mark made in step 1 to line up the engine mount with the bottom of the centering ring. White glue was applied along the entire length of each corner as well as on the scallop cut. To ensure the 3/4 inch mark lined up correctly I initially placed the 3/4 inch mark on the engine tube approximately 1/8 inch below the centering ring. Final placement of the tube was accomplished by sliding the tube into position until the 3/4 inch mark was in line with the bottom surface of the centering ring. These steps were repeated for the



Figure 4.

remaining two engine tubes. The completed assembly was allowed to dry over night. After the assembly was dried, glue fillets were added to the engine tube shroud joint and the joint where the shroud attached to the centering ring. In addition glue fillets were added to engine tube centering ring joint as well. White glue has a tendency to run when first applied. To prevent this, the fillets were applied with the joint in a horizontal position. These glue fillets were added over a period of one day to allow each fillet to adequately dry. Glue fillets were added on the three inside edges of the motor shroud. Figure 4 shows the completed assembly.

Step 6 and Step 7 provide details to mark the locations of the three (3) fins and to remove the three engine cutout areas. Flis provides a fin and engine cutout pattern that must be cut from the pattern sheet provided with the kit. Refer to figure 6. This sheet provides the locating points for the fins and for the areas to be removed on the BT-60 body tube. The BT-60 tube has an inside diameter (ID) equal to 1.595". To perform these steps I utilized a wood dowel with an outside diameter (OD) equal to 1 1/4". The size chosen was made strictly as a matter of convenience; I had a 3 foot long piece left from a previous project. To make up for the difference in diameters I wrapped the wood dowel with several layers of 8 1/2" by 11 inch plain bond paper folded in half along the 8 1/2" dimension. I tightly wrapped 6 double layers of paper around the wood dowel to bring the OD to



Figure 5.

within 1/64" to the ID of the BT-60 body tube. The seams of the wrapped paper were staggered. The intent was to provide a working surface that would support the tube as I cut the engine areas out and at the same time provide a sacrificial surface for the blade to cut through. The working surface provided a means to support the tube as the cuts were being made. This prevented me from inadvertently damaging (bending/distorting) the tube as I made my cuts. In my construction process I combined Steps 6 and 7. First, after carefully cutting the fin and engine tube cutout pattern from the sheet with a sharp hobby knife, I wrapped and attached the pattern around the BT-60 tube using painters masking tape. I next marked the fin locations as indicated on the sheet. I removed the pattern sheet and then drew a line that connected the marks. The length of the line was determined by measuring off the lengths of the fins on the pattern sheet. To be conservative the line length was 11 inches. The line was drawn using the 12 inch door jamb clamped to my workbench as my straight edge discussed in Step 1. Once the lines were drawn I reattached the fin /engine pattern back onto the BT-60 tube. This allowed me to check my lines with the pattern prior to inserting the wood dowel into the tube to make the cuts to remove the engine tube cutout areas. After I verified that the fin reference points lined up, I began to make light cuts to remove the engine cutout areas. To ensure clean

(continued on page 8)

*(President's corner from page 1)*

There are also those members who volunteer their time and efforts to move and store NIRA'S equipment, to do RSO AND LCO duty, do setup and take down at our launches, do gate duty, to answer questions and give advice to new comers and other club members. Then there are those members who freely give of their time to distribute flyers and give rides to other members. There are also NIRA members who have donated equipment and funds to keep NIRA going like the members who went into their wallets and donated the prize money for our MODEL OF THE YEAR COMPETITIONS. Of course, there are many other activities that our members have stepped up to the plate and helped out in numerous ways.

I just want to point out that as much as I speak about the need for volunteers to help at various functions NIRA has been blessed with a great many members who have done just that. As President and as a club member, I would just like to thank everyone for making this club a true organization of volunteers. If no one ever thanked you before I am sorry but you are certainly appreciated. THANK YOU!

*(NIRAcon from page 1)*

machine. It's a pretty neat thing to see the hot styrene get suddenly pulled down over a mold- and whoosh- a new part is born.

NIRA member Adam Elliott is an experienced NAR competitor and gave a great introduction to competition rocketry. Adam emphasized to keep things simple and to remember to be aware of the local contest rules. And to practice-practice-practice.

NIRA member Ian Timberlake gave a presentation on making rockets from recycled materials. Ian showed us some great examples of some detailed and large rockets that he has built using scrap materials. His rocket car that travelled along a string was particularly fascinating. His ideas are especially useful for some of our younger members who are perhaps on more of a fixed budget.

Finally, NIRA members got to redeem their NIRAbucks that they earned throughout the year by participating in club activities. These NIRAbucks were used during the auction to bid for new and historic rocket kits and parts.

*(Flis Kit Tres- from page 7)*

cuts, I used new hobby blades. Wrapping paper around the dowel protected the tip of the blade further which also contributed to clean and accurate cuts.

Once the engine cutouts were removed, the engine shroud assembly was test fitted. The assembly did not fit properly. An additional 1/4" of material had to be removed to provide for a proper fit. To remove the additional material around the cutouts, I used 180 grit sandpaper wrapped around a grease pencil. I wrapped painter's masking tape around the circumference of the BT-60 tube, approximately 1/8" below the apex of the cut (see figure 6). This provided a measure of control to ensure that equal amounts of material were removed from each engine cutout. It is important that you take your time when performing this step. If it is done correctly, the engine mount assembly will fit properly in the tube.

---

*This article will continue in subsequent issues of The Leading Edge.*





# Kaplow on gliders



**Bob Kaplow shows how to use a razor plane and sanding blocks to properly form an airfoil.**

Bob Kaplow had created a glider presentation for the upcoming (at that time) NARCON presentation that he shared with our club. It's obvious that Bob is among the best in the business when it comes to his knowledge of rocket gliders.

Bob emphasized that weight is the biggest enemy of a rocket glider's competitive performance. He suggests designing gliders so that they will fail with the next engine class. For example if you are building a rocket glider for an "A" engine then that glider should not survive being launched with a "B" class engine. If it does survive, then it's overbuilt.

Bob takes copious notes as he is building his gliders. He suggests weighing your glider at every step in its assembly and recording this information in a notebook. This includes such things as the before and after weights of sanded parts and the amount of glue that is used. This information can be used in the future to possibly lower the weight of your glider by modifying these assembly steps.

Most gliders are made primarily of balsa wood and it's a good idea to start compiling your own custom stock of balsa wood by selectively shopping. Bob carries a small postal scale and weighs the available pieces of balsa wood that are available in a particular hobby shop. He calculates the density of each piece using a chart that he handed out to the

NIRAmembers in attendance. This has allowed him to build up an inventory of super lightweight balsa stock to be used for competition gliders.

Bob suggests using a building board for glider construction. This building board can be a piece of scrap counter top material that can be purchased inexpensively at one of the big-box hardware stores.

Competition gliders typically use airfoiled lifting surfaces. Bob demonstrated how a consistent airfoil can be created by using a small razor plane and a large aluminum sanding block. He also showed how he uses a simple block of wood, accurately placed on his building board in order to set the proper dihedral in a wing.

He uses high quality Japanese tissue paper glued over the surfaces of his wing to strengthen it. It's always a trade off between weight and strength and Bob is constantly experimenting to find the proper balance between the two. He now



**One of Bob's contest winning gliders. It really is a work of art if you have a chance to view it up close.**

uses a combination of carbon fiber strips and yarns to selectively reinforce parts of his gliders that are more apt to get damaged.

There is a lot to know in order to be competitive in rocket glider competitions and Bob gave our group an excellent introduction to these topics. We all appreciated Bob's presentation.

## February meeting notes

The February NIRA meeting got started with President Bill Ipjian handing out NIRA membership cards for 2007 while the club's intrepid new secretary/treasurer hastily put his own signature on the cards. Bill then informed the members of an upcoming equipment maintenance session on February 25 in Downers Grove and asked for volunteers.

John Hojek gave us an update on the rapidly approaching NIRAcon; NAR President Mark Bundick would be the first speaker of the day, lots of other speakers, building session for the kids, NIRAbuck auction from 12-1. John also reminded people to bring rockets for display and to let him know what snacks everyone is bringing.

Newsletter editor Pat Butler let us know that the latest issue of the "Leading Edge" is now available online. Pat reminded everyone that the newsletter belongs to all of us and urged everyone to think about contributing material; launch reports, product reviews, how to articles, photos, etc. Pat also let us know that he would like to see NIRA win the LAC newsletter trophy and to do that he needs our help. Contribute!

Three people have each donated \$50.00 as prizes for 2007's Model of the Year; Hugh McGreevy, John Hojek, Mark Mitchell. Thanks gentleman!

Bill then discussed filling some committee chairs as follows-

**Equipment:** Marty Schrader, Adam Elliott, and Rick Gaff.

**NIRAcon:** Chairperson needed for next year. Any volunteers?

**Scouts:** Joe Charaska.

**Competition:** Adam Elliot.

**TARC:** Tom Pastrick.

Vice-President Jim Basile has taken charge of the NIRAbuck program and suggested we change how NIRA-bucks are redeemed. Alternatives were discussed but no decision was made.

Meeting was adjourned with Culver's the after meeting choice.