THE OFFICIAL NEWSLETTER OF NARHAMS SECTION #139
2001 NAR NATIONAL CHAMPION SECTION

ZOG-43

September 2002

Are you ready for the NITE Launch? Vince Pearman is, with his clustered, Fat Boy based StrobeRoc.
Photo By Vince Pearman

IN THIS EDITION

- Field Search Committee Update
- Build a SportScale Warthog
- Check out the Website of the Month!
- And MORE!

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Volume 24 Number 9
September 2002

ZOG FORTY-THREE is the official newsletter of NARHAMS the National Association of Rocketry Headquarters Astro Modeling Section # 139

NARHAMS is the oldest model rocket club in the

United States ! ! !

ZOG- Forty-Three is dedicated to model rocketeers of all ages, abilities, and interest. We are committed to providing the most current, up-to date information on model and real world rocketry, and to provide educational material as well as entertaining information. ZOG FORTY-THREE is published monthly and is available to anyone on a subscription basis. Current rate is $15 U.S. Funds for 12 issues a year, payable to NARHAMS

For more information.....

if you have any questions about ZOG Forty-Three or NARHAMS, or if you have any comment(s), correspondence, free merchandise or if you'd like to submit an article, send them to :

ZOG Forty-Three

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ZOG Forty-Three is edited by Kevin Johnson, and is a six-time winner of the NAR/LAC "Rockwell" Trophy, recognized as the best NAR section newsletter.

Years won: 1969, 1973, 1975, 1990, 1991, & 1992

Zog-43 staff typist is none other then Jennifer Ash-Poole a.k.a. Secretary to the Stars !

Photographers: Jim Filler, Chris Kidwell, Scott Schuckert

ZOG-43

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http://www.narhams.org

Send and receive E-mail with other NARHAMS members through NARHAMS Web page grouplist via yahoo-groups.

ZOG ROYAL COURT

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NARHAMS serves Baltimore, the state of Md., Washington DC and the surrounding Metropolitan areas. The club is a section of the National Association of Model Rocketry (NAR) and we are the oldest continuously active model rocket club in the United States, first established as a high school club in 1963, changing our name to NARHAMS when chartered as a NAR section in 1965. NARHAMS is the only four time winner of the NAR "Section of the Year" award.

Years won: 1997,1998,1999, 2001

NARHAMS members regularly fly their model rockets at NASA's Goddard Space Flight Center on Soil Conservation Rd. in Greenbelt Md. The launches are open to the public and are held every first and third Sundays of every month (weather permitting), starting at 1 PM. Sport Launches are usually held the second Saturday of every month at Middletown Recreation Park in Middletown Md. Check the web page for updates.

NARHAMS welcomes all prospective new members to our monthly meetings. They are held on the first Friday of the month from 7:30 to 9:30 PM at the College Park Airport Annex Building. Dues are 10 cents a week, with an initial 50 cents up front (good for 5 weeks) as a sign of good faith.

NEW: Monthly meetings available on-line via chat-room , simply go to the NARHAMS homepage and click on the link.

Directions to College Park Airport:

Follow I-495 to Kenilworth Ave. South. Make a right onto Paint Branch Parkway, then make a right on Cpl. Frank S. Scott Dr. At the airport entrance go straight to the Operations building, the annex building is adjacent to the "Ops" building.

King Zog Says—

It is hard to believe that, at the end of this month, a year will have passed since I became your President. It was a very eventful year, indeed. We came off of an impressive victory at NARAM-43 and carried the Championship Banner throughout this 2001-2002 contest year to earn third place honors at NARAM-44. Our club continued its aggressive program of outreach in many areas and sport launches at Middletown through the year. Our membership has increased and we continue to see interest in our club by new rocketeers all the time. I am grateful to the active members who have made all of these achievements possible.

I truly believe that NARHAMS is one of the best clubs in the NAR. I also believe that we can become the best club by using the tremendous resources that remain untapped in our ranks. There are still a relatively small percentage of members who are active in most of our events. In the next year we will strive to increase member participation by a combination of better communication and understanding of the club's interests.

On the assumption that the club wants me to continue as King Zog for the next year, here are my goals for the club:

1. Complete the revisions to the constitution. We are close to completion on this effort now.

2. Make club publicity a high priority. Good publicity will add members, get financial support from outside sources and maybe GET US A NEW FIELD OR FIELDS. We should use all available newspapers and television opportunities to promote our club to the fullest. Any other ideas are welcome.

3. Field search must be geared up! The launch area at Middletown Park is discouraging fliers due to its limited space. THIS MUST HAPPEN! Khim Bittle has been leading the field search but he can't do it by himself. I will beat this drum EVERY MEETING UNTIL WE GET A FIELD. Everyone must step up and assist this effort.

4. Renew interest in club activities by existing members. A questionnaire will go out very soon to poll the club and find out what the members can do and want to do. Then we will form action committees to get everyone involved in some way. This is YOUR CLUB to use to satisfy your rocketry interests.

These goals are not unattainable if THE CLUB works together as a group. We did it when we overwhelmingly won the National Championship in 2000-2001 and we can certainly do it now to help the club to achieve greatness. NARHAMS needs you!

King Zog

LAUNCH WINDOWS

SPORT/NIGHT LAUNCH

Middletown Park
Sport launch starts at 12:00pm
Night launch pending
September 14th

AIAA PICNIC- JOHN HOPKINS APPLIED PHYSICS LAB

Demo launch at 1 pm, with regular flying afterward with a boy scout troop.
Directions:
From I-495, take 29 North (Colesville Rd) for 10 miles
Turn left at traffic light onto Johns Hopkins Road
Pass APL main entrance on right, take a right onto Sanner Rd
Pass laboratory buildings and parking lots on right, followed by tennis courts at the bottom of the hill on right.
Take next right into the softball field parking lot.
September 22nd

MARYLAND FUNNY MEET

Middletown Park
John McCoy, CD
October 12th

Where are my Zog-43's?

Due to a minor hardware issue with my computer, some of the recent additions to the Zog-43 subscriber list had been lost. This unfortunate occurrence meant that some of our newer members haven't received a newsletter since joining the club. This condition has been fixed and Ole Ed has got my list up to date once more. Please accept my apologies as I get back issues out to those that have been missed.

On another note entirely, due to my trip to NARAM last month, I neglected to provide King Zog with the mailing labels for the month's issues. I have the labels and the newsletters and will soon be hitting the post office.

Welcome New 'HAMSters

During July and August the club gained 4 new members. We're glad to have Stephan and Phillip Hrinko, Jean Drzyzgula and Arthur Marquardt as a part of NARHAMS! Please make them feel at home when you see them at our launches!

Planning Meeting is Next Month

The annual NARHAMS planning meeting is coming up on October 26th, are you going to be there? This meeting is open to all club members who want to have a voice in deciding the types of activities that we will schedule next year.

Do you have an opinion on what building sessions you'd like? Are there any special presentations or topics that you wish the club would make? Do you want more variety in the

themed sport launches or contest events that are flown during the year? If so, YOU should make every effort to attend this meeting. If you can't make it in person, find a club member who is going to attend (I can think of at least 4 members of the NARHAMS executive team tat will be there) and get a list of activities or topics to them.

You have the power to shape what sort of club activities NARHAMS will have next year. Use the power!

The A-10 Sport Scale Boost Glider

By Ed Giugliano NAR 46086

[*Plans and figures can be found at the back of this issue.-Editor*]

Introduction:

For several years I have wanted to try and scale down an Air Force A-10 and make it a flyable boost glider. In this issue of ZOG are plans where you can build your own A-10. Although early versions were not very successful, I've flown this final design about 6 times and each time it has flown perfectly. Anyone who has built boost gliders should have no problems with construction. If this is your first boost glider, then I highly recommend asking some of the more experienced club members for assistance.

Construction:

I used 5 minute epoxy as the construction adhesive. Photocopy the ZOG pages with the templates. Check the scales at the bottom of the plans to make sure your photocopier did not inadvertently enlarge or shrink the image size. Cut out the templates and use them to cut the balsa as indicated. Please note that the fuselage template was too long to fit on one sheet of paper and is given as two parts. Tape the template parts together along the match line (designated A – A) and trace the outline on to one sheet of ¼" balsa. I used 5 minute epoxy as the adhesive.

Cut out and airfoil the main wings. (Do NOT airfoil the center portion of the center wing box, where it will be glued to the fuselage. Leave a square cross section in this area for a good glue bond.) An air-foiled wing will have a flat bottom and a smooth, teardrop shaped upper surface. The high point for the airfoil is marked on the templates. See Figure 1 in instructions.

Fabricate the main wing as shown in Figure 2. The actual A-10 has some wing dihedral. I recommend some higher dihedral on the left wing for a slight left turn during glide. This cuts down on how far you have to walk to retrieve your model.

Cut out the rudders and stabilizer. These pieces are not air-foiled – round the leading and trailing edges. Assemble the rudders and stabilizer per Figure 3. Make sure the rudders are plumb and everything is squared up.

Cut out the fuselage but do not round any edges yet. Cut piece X out of the fuselage and set it aside. It will be used in the pylon assembly. Cut out the two piece X side holders from 1/64" plywood or 1/32" balsa and glue them to the fuselage on either side of where you cut out piece X. The side holders should be flush with the bottom of the fuselage. Make sure there are no big glue globs in the piece X void area, or on your carpet.

Glue the wing assembly and the rudder assembly to the fuselage. Again, make sure everything is squared up.

Cut out the pieces of the landing gear pods from 3/32" balsa. Glue the small upper pod to the lower pod using wood glue. The bottom of the pod, and the surface marked "this part gets glued under the wing" do not get sanded. Wait until the glue is good and dry and then round the front of the pod with sandpaper. See Figure 4.

Cut two 2.625" long pieces of BT-55 body tube. These are your jet engines (sheesh – that was easy. Why all the fuss at GE?) Mark one line down the length of each tube (tip: use a pencil to mark all lines, and erase all excess pencil marks). Cut out the engine pylon from 3/32" balsa. Glue the engine pylon to the tubes using the line as a guide. After the glue is dry, glue this assembly to the fuselage. Glue the assembled landing gear pods under the wings as shown in Figure 5.

Gather the materials for the motor pod: a 12" section of 18 mm (BT-20) tubing, an appropriate nose cone (any cross section is OK), a short piece of expended motor to act as a thrust ring, piece X cut from the fuselage, a 12" parachute (the pod is too heavy for a streamer), a launch lug, a small screw eye, 12" of ¼" elastic shock cord and 24 inches of heavy thread. Mark two pencil lines down the BT-20 tubing, 180° apart – these are guide lines for the pylon and launch lug. Cut out the pylon from ¼" balsa and glue it to the tube using one of the lines as a guide. Glue the launch lug to the aft end of the other side of the motor tube, again using the line as a guide. Glue piece X to the bottom of the pylon as shown in the plans. Install the thrust ring in the motor tube so a motor will stick out the back of the tube about 3/8". Using a glue fillet, secure one end of the heavy thread to the pylon/motor tube joint. Attach the screw eye to the nose cone. Attach the shock cord to the thread and the screw eye (I always put a drop of wood glue on the knot to keep them secure). Assemble the parachute and attach to the screw eye. To prevent the parachute from becoming tangled with the glider, pull the thread tight and tape the thread to the pod about 1" aft of the nose cone. Round the edges of the pylon and the fuselage with sandpaper. Coat the top of the pylon with a thin layer of 5 minute epoxy. This area needs protection from the hot motor exhaust or else it will char.

Painting:

My A-10 is unpainted so far. Numerous scale-like paint schemes are possible. If you are interested, purchase the Squadron/Signal book "Walk Around, A-10 Warthog" which has lots of information on A-10 paint schemes. An internet search will also reveal lots of data on this topic. The plans work out to 1/48 scale, in case you want to use commercially available decals for added realism.

Trimming:

Trial fit the pod into the glider. Piece X should fit into the glider so the glider slips off when the pod is inverted. However, do not have the fit so loose that the glider will wobble during boost. Sand piece X a little at a time until the fit is right. Take your time – this step is critical.

Add clay to the nose of the glider until the center of gravity (CG) matches the plans. Take your glider outside, and on soft or grassy ground give it a gentle, level toss into the wind. It should float away from you about 10 feet or so. If you are new to boost gliders this is where one of the more experienced members of the club can help you out. Add or subtract nose weight as necessary to achieve a good glide.

Flight preparation:

Flight prep is much the same for any boost glider. A B4-2 motor is recommended and will give glide times of about 30 seconds.. I always tape the exposed end of the motor to the tube to prevent it from ejecting. Also, make sure the igniter wires do not get tangled in the rudders during boost.

The Real Thing:

The A-10 Thunderbolt II (affectionately, and appropriately called "Warthogs" by A-10 pilots and crews) is a simple, rugged aircraft used by the U.S. Air Force to attack and defeat a variety of ground targets. It can carry and fire almost all the air to ground ordnance in the Air Force inventory. This plane was designed around the enormous GAU-8/A Avenger cannon, capable of shooting 30 mm diameter armor piercing rounds at the rate of 70 rounds per second. This cannon is the most powerful gun ever carried by an aircraft.

The A-10 was designed for maximum survivability. Redundant systems abound throughout the aircraft. The pilot sits in a titanium-armored "bathtub" for protection from ground fire and shrapnel. Their ruggedness was proven in the Gulf War – 18 warthogs suffered major hits by Iraqi surface to air missiles during the Gulf War, and 12 managed to make it back to base.

Of special note to NARHAMS members: A-10 final assembly took place in the Fairchild Aircraft facility at Hagerstown Airport, starting in 1978 until the mid-1980's. This is only about 20 minutes from our Middletown, MD flying field.

New Field Search Committee

By Don Brown, NAR 70318

It is of the utmost importance that we secure a new launch site that can support our existing sport launches and any contests that we plan for the future. Middletown Park has served us well for many years, but it has simply become too restrictive for our purposes. In order to attract new fliers and increase the participation in contests we need much more uncluttered space than Middletown Park can provide.

The search has actually been in progress for a long time, but has suffered due to lack of solid, sustained effort by the entire club. This will change as of now! Khim Bittle is gearing up the search effort so that we secure a new site as soon as possible. Everyone's help is needed and expected. Here are the guidelines for the renewed search program.

Khim will act as Field Search Chairman reporting directly to the President. A report will made monthly describing the contacts that have been made and their status. This will be forwarded to the club in the newsletter and reviewed at our business meetings every month. There will be at least eight (8) members on the committee along with Khim. Two (2) committee members should live in each of the following counties; Anne Arundel, Carroll, Howard, and Frederick, so that they can pursue field leads in their local area. These counties comprise the area of the state that is mostly central to where the membership lives. All members who are not on the committee should forward any field leads that they have actually contacted to the appropriate member of the committee who is covering that county. Information to be forwarded to the committee includes location, owner's name, owner's phone number and a confirmation that they are receptive to rocket launches at their property. More details on how to approach a landowner will follow in the near future. The committee will be equipped with a complete information package that clearly describes our field needs and pertinent club background, safety record, etc. This will ensure that we maintain a uniform approach to our efforts. Certain members of the committee, again to provide consistency in our efforts, will do actual final negotiations will landowners.

We cannot ignore this issue. NARHAMS cannot afford to continue without a good field or fields on which to fly our rockets. If we all apply ourselves I am sure that this club can accomplish this goal in the next few months. Contact Khim immediately to sign up for this committee. We have several members already signed up, but we need your support as well.

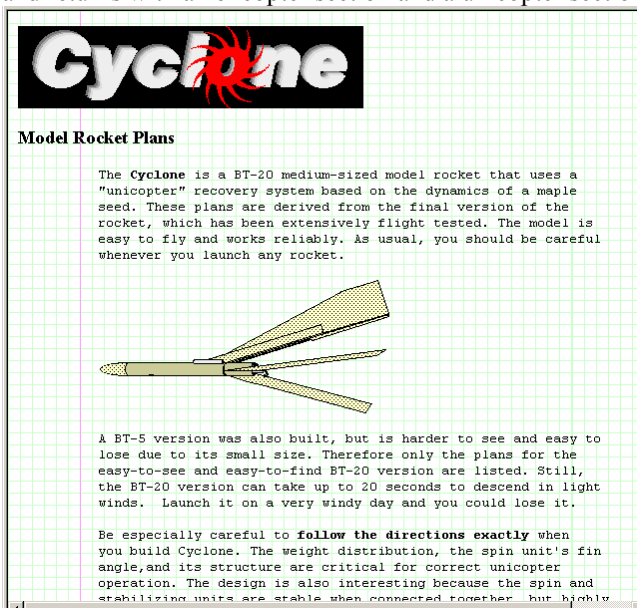
Website of the Month

By Mark Petrovich, Sr, NAR 29160

Maple Seeds! They are a sure sign of growth and the beginning of summer. I can't tell you how many seeds I've planted over the years to get about a dozen healthy bonsai Maple trees. It's been a challenge and it's been fun simultaneously. The only drawback is that it takes time.

Now that fall is around the corner and the contest year is still young, it might be a good time to plant some seeds of your own. Seeds of fun, that is!

Visit this URL and check out a FLYING MAPLE SEED. Named "The Cyclone", the design features break apart recovery of the single staged model. It ascends in one piece and returns with a helicopter section and a unicopter section.



Cyclone

Model Rocket Plans

The **Cyclone** is a BT-20 medium-sized model rocket that uses a "unicopter" recovery system based on the dynamics of a maple seed. These plans are derived from the final version of the rocket, which has been extensively flight tested. The model is easy to fly and works reliably. As usual, you should be careful whenever you launch any rocket.

A BT-5 version was also built, but is harder to see and easy to lose due to its small size. Therefore only the plans for the easy-to-see and easy-to-find BT-20 version are listed. Still, the BT-20 version can take up to 20 seconds to descend in light winds. Launch it on a very windy day and you could lose it.

Be especially careful to **follow the directions exactly** when you build Cyclone. The weight distribution, the spin unit's fin angle,and its structure are critical for correct unicopter operation. The design is also interesting because the spin and stabilizing units are stable when connected together, but highly

For those seeking adventure, a scale-up of the plan might be in order. As the author states, experiment with it! There is also a good deal of information about the author's prototypes leading up to the successful version which are interesting guidelines on what NOT to do, if you do decide to alter the original. So print the plans, change the blade in your X-Acto and start planting some seeds!

Point your browser to:
http://www.cs.indiana.edu/~jwmills/EDUCATION.NOTEBOOK/rocket/rocket.plans.html

New Motors Gain NAR Certification

The following motors have been certified by NAR Standards & Testing for general use as high power rocket motors effective August 25, 2002. They will NOT be certified for NAR contest use as they are not model rocket motors.

The following are reloadable motors, certified only with the indicated size casings and manufacturer supplied nozzles, end closures, delays (or smoke devices), and propellant slugs.

Animal Motor Works:
54mm x 326mm:
J450ST-P (1070 Newton-seconds total impulse, 533.1 grams propellant mass)

54mm x 492mm:
K950ST-P (1860 Newton-seconds total impulse, 887.4 grams propellant mass)

75mm x 497mm:
L777WW-P-SM (3140 Newton-seconds total impulse, 1762.3 grams propellant mass)

Propellant Key:
GG = Green Gorilla
ST = Super Tiger
WW = White Wolf
SM = Produces 10 to 15 seconds of smoke after burnout
P = Plugged Motor

Jim Cook, Secretary for
NAR Standards & Testing
<JimCook@AOL.COM>

Calendar of Contest and Special Events for 2001-2002

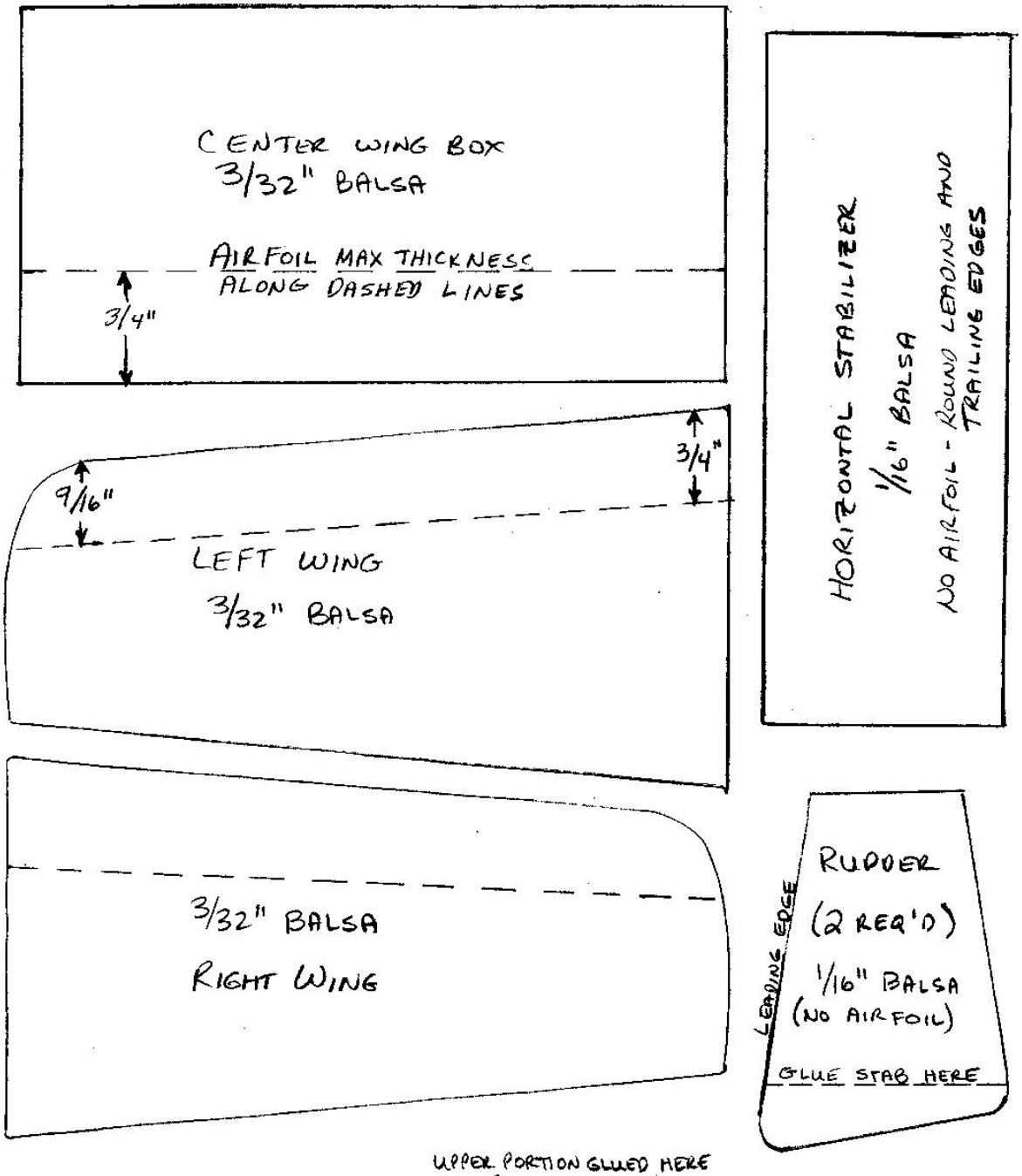
Sep 6 – Business Meeting, Elections and night launch discussion led by John McCoy and Khim Bittle
Sep 7 - Night launch building session, location TBD, start noon
Sep 14 - Sport Launch starts at noon, night launch pending approval
Sep 22 - AIAA launch, Johns Hopkins APL
Oct 11 – Business Meeting, Movie night and slides by Jim Barrowman. Cake and Internats review
Oct 12 - Maryland Funny Meet, John McCoy CD
Oct 19-20 - SCST-2 contest hosted by PSC
Oct 26 - Planning meeting, College Park Airport, starts at 9:00
Nov 1 – Business Meeting, Planning meeting review
Nov 9 –Sport Launch, Thanksgiving theme
Nov 16 - Building session at College Park Airport Museum
Dec 6 - Holiday party potluck, Raffle
Dec 14 – Sport Launch, Non-Denominational Winter Solstice theme

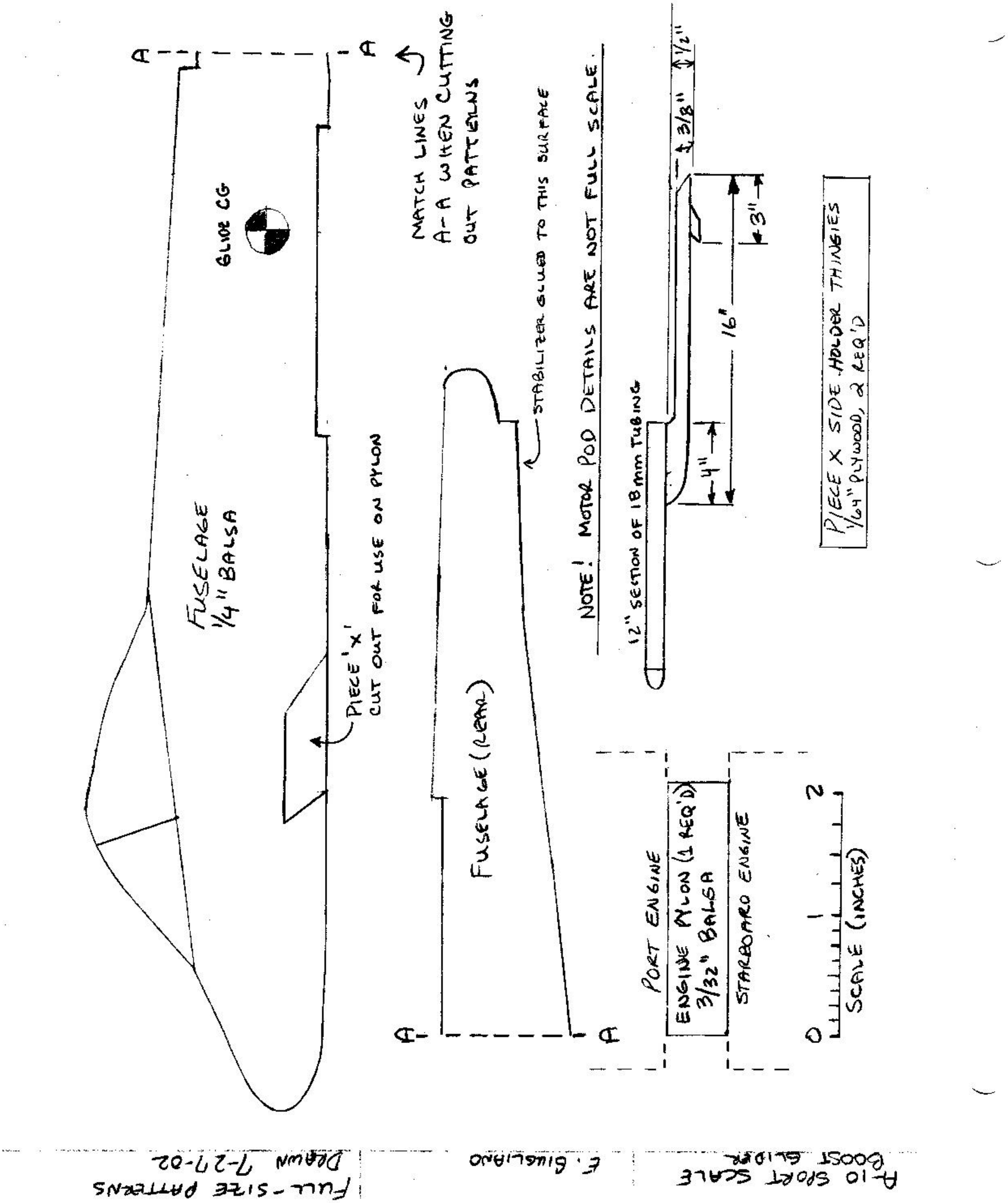
Sport launches are held at Middletown Park from 10am-4pm, waiver up to 3.3 lbs and “G” motors not exceeding 62.5 grams of propellant. All flights “E” power and above are restricted to 5 degrees from vertical and between the hours of noon and four PM. Call ahead to confirm launch and waiver availability.

Business meetings are held at the College Park Airport Annex Building. Meetings begin at 7:15pm with building sessions or presentations and last until 9:00pm or so. Regular Business meetings follow until 10:00pm. If no presentation or building session is scheduled, please bring whatever project you are working on currently.

Questions? Call Club President Don Brown at 410-781-7539.Visit NARHAMS online at http://www.narhams.org

A-10 SPORT SCALE BOOST GLIDER — E. GIUGLIANO — FULL SIZE PATTERNS DRAWN 7-27-02




A
A
MATCH LINES A-A WHEN CUTTING OUT PATTERNS
GLIDE CG
FUSELAGE 1/4" BALSA
PIECE 'X' CUT OUT FOR USE ON PYLON
STABILIZER GLUED TO THIS SURFACE
FUSELAGE (REAR)
NOTE! MOTOR POD DETAILS ARE NOT FULL SCALE.
12" SECTION OF 18mm TUBING
16"
4"
3"
3/8"
1/2"
PIECE X SIDE HOLDER THINGIES
1/64" PLYWOOD, 2 REQ'D
PORT ENGINE
ENGINE PYLON (1 REQ'D)
3/32" BALSA
STARBOARD ENGINE
0
1
2
SCALE (INCHES)
FULL-SIZE PATTERNS
DRAWN 7-27-02
A-10 SPORT SCALE
BOOST GLIDER

A-10 SPORT SCALE BOOST GLIDER | E. GIUGLIANO | ILLUSTRATIONS DRAWN 8-25-02

FIGURE 1: WING AIRFOIL

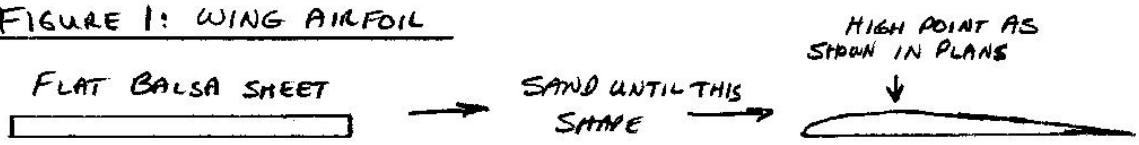


FIGURE 2: WING DIHEDRAL PLAN (NOT TO SCALE)

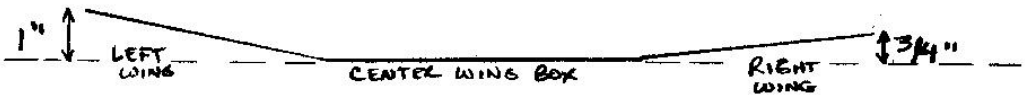
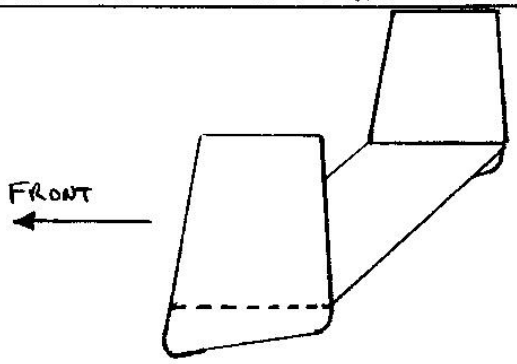
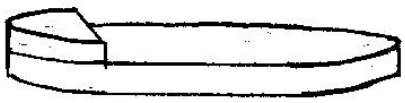


FIGURE 3: RUDDER/STABILIZER ASSEMBLY

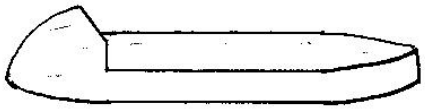


MAKE SURE RUDDERS ARE ON SQUARELY.

FIGURE 4: LANDING GEAR POD ASSEMBLY



GLUE UPPER PORTION OF LANDING GEAR POD TO LANDING GEAR POD



SAND THE FRONT EDGE UNTIL ROUNDED (BOTTOM SHOULD REMAIN FLAT)

FIGURE 5: LANDING GEAR POD/WING ASSEMBLY