THE OFFICIAL NEWSLETTER OF NARHAMS SECTION # 139

ZOG-43

JULY 2001

PHOTO: Rocket Dads have to find anytime they can to take a nap !
Khim Bittle snoozing while it rains at RAMTEC-9

Photo By : Jennifer Ash-Poole

IN THIS EDITION

THE ONLY NAR NEWLETTER PUBLISHED MONTHLY ! !

From the Editor:

July is here and we now get going in high gear. Even though the contest year is over except for NARAM-43, we have a lot on our plates for the upcoming months. A big issue has arisen for our club once more. The last several business meetings have had discussion regarding the issue of the shrinking of Middletown Park. Anybody who has flown at the Park knows what I am speaking about. The new homes keep popping up ever so close to the edge of the park. The easy answer is obtaining a new and hopefully larger flying site. We do have members that are on the lookout for such an opportunity. But until that happens, we must do what we can to hold onto Middletown Park.

NARHAMS has decided to take a proactive approach by sending out a letter to all the surrounding homeowners near the Park. The first draft of that letter penned by myself, is reprinted here in ZOG-43. The letter was sent to the NARHAMS on line group list, however, recognizing that not all members have access to the list, we have decided to open up revisions to all club members by printing a copy for your review here in ZOG-43. The club hopes to end up with the best possible piece of information we can in order to maintain a good relationship with the neighbors of the park as well as the Frederick County Parks and Recreation Department. If you haven't seen a copy of the letter, please review it and let the club know what you would change. What you would delete. What you would add to it. Remember we don't get a second chance at making a good first impression.

One issue that was not discussed prior to me drafting the letter was a demo launch. I think it would be a good idea to hold a regular public demo on site for anyone that accepted an invitation to attend. What I am saying is do a demo like we do at College Park or at Hopkins or any where else we do demos for the public. We would follow the standard NARHAMS demo routine of flying a power demo, identical models with incremental engine size increases, followed by a scale model, a glider, a helicopter and so on. All of this would be narrated over the club PA system to any and all onlookers. I believe we should follow through on this idea since we already decided to extend an invitation for anyone to come see the rocket launch. Of course a demo at Middletown Park would not be the normal mode of a sport launch, however I do believe it would be worth our time and effort to someone seeing the hobby for the very first time.

After you have had a chance to review the letter, take a moment and pass on your comments to one of the club officers. We are all available via e-mail or telephone. The officer's telephone numbers are all listed on the previous page.

King Zog

Jim Filler

LAUNCH WINDOWS

SPORT LAUNCH

Middletown Park
July 14 - 10am-4pm
Contact: Khim Bittle

Goddard Commemorative Contest
Hosted by GSFC & NARHAMS
Greenbelt, Md. July 15 10am-3:30pm
Non NAR contest , events: "A" altitude ,"A" spot landing.
Only 18mm NAR safety certified motors
Weight limited to 4 oz. at liftoff

NARAM-43 National Meet Hosted by MARS
Geneseo NY Aug. 4-10
Events: ½A BG, ½AFW, A ALT, B SRA,
A SD, C ELA, D HD, SpSc, R&D.
Contact: John Viggiano

SPORT LAUNCH

CANCELLED FOR AUGUST

SPORT LAUNCH / NIGHT LAUNCH

Middletown Park
Sept 8 – 2pm-10pm
Contact: Khim Bittle

DEMO LAUNCH & DISPLAY
College Park Airport
Sep 22 - 9am-4pm
Contact: Alan Williams

SPORT LAUNCH / SECTION MEET

Middletown Park
Oct. 13 - 10am-4pm
Contact: Khim Bittle
Events are 1/2A BG, 1/2A PD,
PRD, A SD.

NARHAMS LETTER TO HOMEOWNERS

Dear Neighbor,

The NARHAMS Model Rocket Club is sending you this letter for your information. Our club fly's model rockets in Middletown Park. Usually on the second Saturday of the month, sometimes a different date depending on scheduling.

A little history to start. NARHAMS short for National Association of Rocketry Headquarters Astro Modeling Section is a sanctioned club of the NAR, or National Association of Rocketry. The NAR, was founded in 1958 and has enjoyed an excellent safety record. Model rockets are inherently safe because they are flown according to a standardized safety code. If you would like more information about NARHAMS or the NAR, you can visit either site on the Internet at www.narhams.org or www.nar.org. A copy of the safety code is available to view from the NAR site.

The reason we are writing you this letter is actually very simple. We want to let you know that we do fly safely, and that we are good neighbors using the park. The Frederick County Dept. of Parks and Recreation reviews our information on a yearly basis in order for us to use the park. We have a general-liability policy on file with Frederick County Dept. of Parks and Recreation that is provided by the NAR for sanctioning our club each year.

With the constant growth going on around and near Middletown Park, we felt it was important to communicate who we are and what we are about. We started flying at this site over 10 years ago before many of the existing homes were built in the vicinity of the park. Our intention is to continue using the park through our diligent safety efforts and educating the neighbors.

With the close proximity of some of the homes built over the last several years, it is not unusual for one or more of our models to land on someone's private property. All members are required to obtain a property owners permission to retrieve their model before entering someone's property. We hope you will give your permission to do so, if one of our modelers comes to your door.

Model rockets land safely because they have a "recovery' system of various types. Some use a parachute, some glide like planes as designed. Model rockets are not in any way dangerous upon landing. The tail end where the motor was firing can be hot for a few minutes after they are done burning the propellant. All motors are certified by the National Fire Protection Agency and are classified as a propellant, **not** a firework.

Model Rocketry is also very educational. Model rocketry can be used to teach various science topics such as physics, aerodynamics and many more. NARHAMS regularly does demo launches across the region to "Outreach" or educate the public about the hobby.

On September 8th, we will be holding two launches at Middletown Park. A demo launch that will be narrated, will take place at 3:30pm. We invite you to come see the demo and ask questions if you would like. We are also holding a special "Night" launch later that evening starting at 7:30. This launch will be held with a Federal Aviation Administration (FAA) waiver and parks dept. approval. We also invite you to come see this launch as well. The models flown at dusk and into dark all require a "lighting" system for a safe recovery.

If you have any questions, please feel free to contact us via email at our homepage mentioned earlier in this letter.

Thank You in Advance,

The NARHAMS Model Rocket Club

R71: NAR S&T NEW MOTOR CERTIFICATIONS

The following motors have been certified by NAR Standards & Testing for general use as high power rocket motors effective June 4, 2001. They will not be certified for NAR contest use as they are not model rocket motors.

The following are Aerotech reloadable motors, certified only with the indicated size casing and manufacturer supplied nozzle, end closures, delays, and propellant slugs. All use the new "Redline" propellant.

Aerotech:
29mm x 333mm (RMS-29/360 casing):
H268R-10,14,P (320.0 Newton-seconds total impulse, 357.5 grams propellant mass)

38mm x 250mm (RMS-38/480 casing):
I285R-10,14,P (420.0 Newton-seconds total impulse, 458.6 grams propellant mass)

The following is a Aerotech single-use (disposable) high power rocket motor.

54mm x 235mm
I65W-P (640.0 Newton-seconds total impulse, 369.7 grams propellant mass)

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

Jack Kane, Chairman

SPACE NEWS

Compiled By: Jennifer Ash-Poole NAR # 61415

Astronauts Preparing for Next Shuttle Mission to Space Station

The next space shuttle mission to the International Space Station, STS-104, is scheduled for launch on July 12. Atlantis will carry a crew of five and cargo including the Station Joint Airlock, a pressurized module that will act as the staging area and departure/entry point for space walks. Also aboard will be EarthKam, a NASA-sponsored program that enables middle school students to take photographs of the Earth from a camera aboard the space shuttle. During missions, students work collectively and use interactive Web pages to target images and investigate the Earth from the unique perspective of space. Meanwhile, aboard the station, the Expedition Two crew continues to for the arrival of the airlock by conducting dress rehearsals of its installation. The crew is now in its 106th day in orbit.

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Pegasus launch of HESSI postponed indefinitely
BY JUSTIN RAY

CAPE CANAVERAL, Fla. -- NASA has halted plans to fly its HESSI solar probe aboard an Orbital Sciences Pegasus rocket until investigators determine what likely caused the botched X-43A launch earlier this month.

Facing a Saturday deadline to get HESSI launched before internal batteries on the rocket expired, the space agency had hoped the $85 million mission designed to observe and study solar flares could begin Friday.

HESSI will be carried aloft by an air-launched Pegasus dropped from the belly of Orbital Sciences' L-1011 "Stargazer" aircraft 39,000 feet above the Atlantic Ocean about 60 miles east of the Florida coastline. But officials decided on Tuesday to put the launch on hold and return the Pegasus rocket to its home base of Vandenberg Air Force Base in California. The cross-country ferry flight is scheduled for Thursday.

Once back at Vandenberg, the rocket's flight termination system batteries will be replaced and the HESSI spacecraft will be serviced. When the launch might be rescheduled remains very uncertain. NASA has five other unmanned rocket launches scheduled over the next two months, so fitting HESSI back into the line up will be tough, officials say.

And since it isn't clear when the X-43A failure board will complete its inquiry, NASA is reluctant to establish a new HESSI target date.

NASA was poised to clear the Pegasus rocket for flight this week after engineers studying data from the X-43A mission concluded it was safe to launch HESSI. Based upon the data the engineers had seen so far, it appeared that the HESSI launcher was exonerated.

HESSI will ride a full three-stage Pegasus XL vehicle. For the X-43A test, only the winged first stage of the Pegasus rocket was used. The stage also featured modifications to its thermal protection, plus a new guidance system and repackaged avionics.

The HESSI mission is already running nearly a year behind schedule. Set for launch last July, the satellite was significantly damaged in ground vibration testing and had to be repaired. Then part of the Pegasus' stage separation system had to be redesigned, delaying the launch from this spring.

HESSI is destined to orbit 373 miles above the planet to observe the Sun and take color X-ray images of solar flares. Scientists hope the two-to-three year mission will yield clues about what triggers solar flares, which are the most intense explosions in our solar system.

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Search begins for cause of X-43A launch malfunction
BY JUSTIN RAY
SPACEFLIGHT NOW

Video shot during Saturday's doomed launch of a Pegasus booster with NASA's X-43A experimental aircraft shows what might be one of the rocket's aero surfaces breaking off moments before the vehicle goes into an uncontrolled tumble through the sky.

The air-launched Pegasus was carried 24,000 feet above the Pacific Ocean, several hundred miles off the Southern California coastline, by NASA's B-52 aircraft where the 41,400-pound vehicle was released at about 4:43:31 p.m. EDT (2043:31 GMT).

After falling for five seconds as planned, the Pegasus ignited to propel the X-43A to an altitude of 95,000 where the craft would separate and begin its tests of a revolutionary scramjet engine.

The rocket booster is a modified version used by the Orbital Sciences Pegasus launcher that lofts small satellite cargos into space. For a typical space launch, the Pegasus features three stages and a protective fairing to enclose the payload.

For the X-43A launch, however, only the solid-fueled first stage was used. The stage is comprised of an Alliant TechSystems-built Orion 50S motor, a delta wing and three electromechanically guided fins used for steering during flight. And in order to carry the X-43A, an adapter is mounted to the front of the Pegasus booster.

The stage was modified to include a new thermal protection system designed to protect the Pegasus' composite structures against severe heating loads experienced in lower-altitude hypersonic flight. The rocket also featured an upgraded first stage guidance system and an avionics repackaging.

The flight plan called for the Pegasus to fly straight for about three seconds after ignition before pulling up to begin climbing in altitude. Mach 1 would be achieved seven seconds after ignition.

In video NASA released on Monday taken by an F-18 chase aircraft indicates the rocket followed its prescribed track and began pitching upward as expected. But disaster struck approximately eight seconds into powered flight when a piece of the rocket's back end breaks off. NASA is calling this point in the launch a "major malfunction."

Close examination of the video suggests that the piece is one of the fins -- the aero surfaces needed to steer the vehicle. What remains unknown is whether such a break would be caused by a problem with the Pegasus, or if aerodynamic loads exceeded what the rocket could handle. Further, it remains unclear if the object tearing off the vehicle was a cause or effect of the failure. As the piece falls away, the vehicle immediately rolls to the left and then violently yaws to the left (to the south from its westward trajectory). More pieces of the rocket then begin to rip away as the booster tries to correct and yaws back to the right. The recovery is hopeless and the vehicle begins to wildly gyrate.

NASA officials then made the call to destroy the rocket by sending a command to fire onboard self-destruct explosives. The debris fell harmlessly into the Pacific with no plans to retrieve the wreckage.

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Upcoming launches

June 30 Delta 2 * MAP
Launch window: 1946:46-1958:46 GMT (1546:46-1558:46 EDT)
Launch site: SLC-17B, Cape Canaveral Air Force Station, Florida

Boeing Delta 2 will launch NASA's Microwave Anisotropy Probe into space. The rocket will fly in the 7425-10 vehicle configuration.

July 12 Shuttle Atlantis * ISS 7A

Launch window: 0858:57-0908:56 GMT (0458:57-0508:56 EDT)
Launch site: LC-39B, Kennedy Space Center, Florida

STS-104 will be the tenth U.S. mission to the International Space Station. The flight will deliver the space station's airlock.

July 12 Ariane 510 * Artemis & BSAT-2b
Launch window: TBA
Launch site: ELA-3, Kourou, French Guiana

Arianespace Flight 142 will launch the European Space Agency's Advanced Data Relay and Technology Mission satellite, called Artemis for short, and the Japanese Broadcasting Satellite System

July 15 Atlas 2A * GOES-M
Launch window: 0659-0824 GMT (0259-0424 EDT)
Launch site: SLC-36A, Cape Canaveral Air Force Station, Florida

Lockheed Martin's Atlas AC-142 will launch the Geostationary Operational Environmental Satellite-M weather spacecraft for NASA and NOAA.

July 21 Titan 4B * DSP 21
Launch window: 0831-1231 GMT (0431-0831 EDT)
Launch site: SLC-40, Cape Canaveral Air Force Station, Florida

The U.S. Air Force Titan 4B, known as B-31, will launch the 21st Defense Support Program missile-warning satellite with Inertial Upper Stage 16.

July 22 H-2A * Demo Flight
Launch window: TBD
Launch site: Tanegashima, Japan

The inaugurual flight of Japan's H-2A rocket will launch an instrumented satellite simulator known as Vehicle Evaluation Payload No. 2 (VEP-2). This will serve as a demonstration mission for NASDA's newest rocket, which is an advanced version of the troubled H-2.

July 30 Delta 2 * Genesis
Launch time: 1636:01 GMT (1236:01 EDT)
Launch site: SLC-17A, Cape Canaveral Air Force Station, Florida

Boeing Delta 2 will launch NASA's Genesis solar wind sample return spacecraft. The rocket will fly in the 7326 vehicle configuration.

Aug. 5 Shuttle Discovery * ISS 7A.1
Launch window: 2305 GMT (1905 EDT)
Launch site: LC-39A, Kennedy Space Center, Florida

STS-105 will be the eleventh U.S. mission to the International Space Station. The flight will deliver supplies and equipment to station using a Multi-Purpose Logistics Module. The Expedition Three crew will launch aboard Discovery, replacing the Expedition Two crew that will return to Earth via the shuttle.

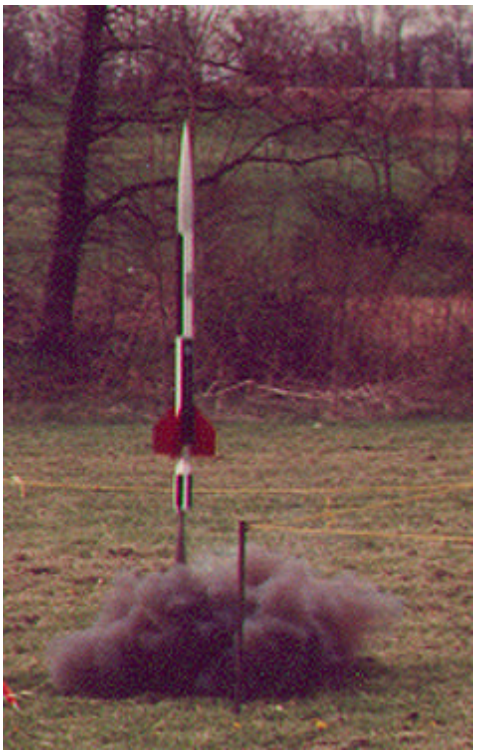

Photo: Chris Kidwell's ECRM Sport Scale IRIS
Photo: Jennifer Ash-Poole

New Glue

By Ed Giugliano NAR # 46086

I discovered a new product during a recent trip to Lowe's. It is called Gorilla Glue. My son and I used this glue on a birdhouse he was building for cub scouts. The glue worked well and the birdhouse is very strong. This might be a good glue to use for your rocket building activities. Before you PETA people start complaining, let me assure you that no actual gorillas were used in the creation of this glue. Gorilla in the name refers to this glue's holding power, which is considerable.

The glue is strong, waterproof, and should be unaffected by heat. Like any product it has limitations. For instance, it produces foam when drying. How? The glue contains an isocyanate curative (the same curative used in solid rocket propellants). When it contacts water, there is a chemical reaction that produces carbon dioxide bubbles and thus, foam. The foam tends to push apart whatever you are gluing; therefore, pieces being glued must be securely clamped. Working time is about one hour. Since no one wants to hold a fin in place for one hour, let the glue set on both pieces for a while prior to bonding them together (this is the technique I used for the birdhouse).

Gorilla glue costs about 4 dollars for a two-ounce bottle. You might want to give it a try on your next project.

RAMTEC-9

By: Don Brown

Ahhh....RAMTEC-9. As I packed up my gear and headed toward Allentown, I remembered the last RAMTEC that I attended 2 years ago. I was really looking forward to this trip since the past event was simply great. We had been blessed with perfect weather back then and the Feveryears had run a first class contest. It was held on a large field at Allentown College (now DeSales University). There had been a very large turnout of competition and sport flyers that made for an exciting 2 days. Every event at the range was well organized and the camaraderie amongst all of those present was heart-warming.

Well, from that perspective, RAMTEC-9 did not disappoint. Upon arrival at the school on Friday evening I was greeted by Glenn and Rita Feveryear and given a complete package of event entry sheets and other necessary paperwork. My room assignment was handled efficiently and I settled in for the weekend. Many other participants had already arrived and more continued to flow in after me. You could sense the air of excitement all around the dormitory. I think that I slept about 3 hours that night because I was pumped up and ready to fly!

Saturday morning dawned sunny and warm. And, after a hearty breakfast of creamed chipped beef over biscuits and home fries at the local eatery, I was ready to compete. I hauled my stuff out to the field and looked around. A fully equipped

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range and a small, expanding village of sun shelters surrounded me. The NARHAMS contingent erected all of their shelters in a line in a powerful show of unity. The range opened precisely at 9:00 a.m. C Eggloft Altitude was scheduled from 9:00 until the 12:00 lunch break. The weather cooperated and many very good flights were made. The weather forecast for the rest of the day was not good and we attempted to move on to duration events after lunch.

A few flights were made before conditions went downhill very quickly. A little rain at first got worse and worse until it was a real gully-washer. Reports started coming about flooding on the highways nearby. Around 2:30 or so, there was a lull in the wind and rain, so we thought that we might be able to resume the contest. But, the storms came roaring back with a vengeance. The decision was finally made to shut down the range for the day. Everyone and their gear were evacuated from under their "sun" shelters in my truck and we retired to the dorm. Later, with dry clothes and still high spirits we headed to a nearby family restaurant for a sumptuous feast. We all felt a lot better. The rest of the evening was spent socializing with fellow rocketeers and building for the next day.

The contest jury met on Saturday night and decided to open the range at 8:00 a.m. on Sunday to get in the remaining flights. It was also decided to limit everyone to 1 flight per event due to time constraints. So, just after the crack of dawn (with a little help from The Drill Sergeant) the 'HAMSters stumbled out of their rooms to fly for glory. Sunday was a very busy day, but everyone got in their flights. The weather was decent until about 9:00 when the wind arrived. It steadily got stronger and made for some long recovery hikes. Luckily the NARHAMS group worked together with radios and searchers to recover our models. Great team spirit! Special thanks go to Beth Bittle for her assistance in finding our rockets.

D Helicopter duration was interesting, to say the least. We saw all types of non-deployments and unstable flights. However, there were some very fine durations turned in. A Streamer models went up, up, up and awaaaay! They carried a long way downrange. 1/2A Boost Glider flights actually went off very well except when the wind drove the gliders down into the ground. B SuperRoc results were mixed with more than a few separations and non-deployments.

When the final scores were tallied, the NARHAMSters walked away with good results and 9,219 points overall. In summary, the weather did not cooperate but once again RAMTEC was a first-class contest with a lot of fine rocketeers enjoying each other's company.

BUILDING THE FOXY BOOST GLIDER

By: Kevin Johnson NAR # 77083

Even though it looks unconventional, the Foxy is a quick build using techniques common to most boost gliders.

Start off by tracing the pattern and cutting out the wing as one piece. This makes it easier to sand in an airfoil across all three-wing sections. Make your high point about 3/4 " from the leading edge. My original glider had a pretty broad, blunt airfoil, but if you want to make yours with a finer shape, go right ahead.

Once you have the airfoil done, sand the wing tips to a taper about 1/2" in to a tip of 1/16" or so thick. Then flip the wing over and cut your 3" wing tips off. Sand in bevel on the tips so that you can assemble a 1" dihedral on each one. Lay your center section flat and glue the tips on, keeping them propped up at 1" until the glue dries. Reinforce the joints with a glue fillet for extra strength.

Cut out your rudder/stabs and give the leading edges a quick rounding off. If you have an un-built Deltie, you can use the wings as a template for these parts. Sand a bevel into the root edge of the rudders so that they come together with a 1 1/2" anhedral (negative dihedral) and glue them up. Again, make sure you fillet the joint for extra strength.

Trace the template for the fuselage, making sure you mark the wing leading edge and CG locations. When cutting, keep the top edge as flat as possible. Also, cut out and glue the hook parts to the front of the fuselage. Note that there will be a gap between the hook plates; this is where you will add nose weight. Sand the top of the notch at the rear of the fuselage to an angle to accept the rudders so the wing will rest flat on top of the joint. Glue the rudders into the notch and fillet for strength. This joint will take some abuse as the glider lands.

Center the wing on the fuselage and line up the leading edge with the mark you made when tracing the template. Glue the wing on straight and level. Let that dry and then add nose weight to bring the balance point to the indicated CG.

Now that the glider is finished, you can start on the motor pod. Use either a 13mm or 10.5mm tube depending on your whims. I've only flown the Foxy with 13mm motors to this point. Cut out the remaining hook parts and glue them together in a sandwich. To make a better joint with the tube, wrap some sandpaper around a used motor casing and sand the root edge of the hook assembly round. Glue on the pod, leaving about 1/4" at the aft end for you to tape in your motors. Glue in a shock cord on one side of the pod/pylon joint and a launch lug to the other. Attach the other end of the shock cord to an appropriately sized nose cone. Tie on a streamer and you're set.

Trim the Foxy BG like you would any glider. I have found that a recommendation that Rob Edmonds has made for sanding an airfoil on the bottom of the stab to induce a pitch up works very well in the Foxy. Good flying!