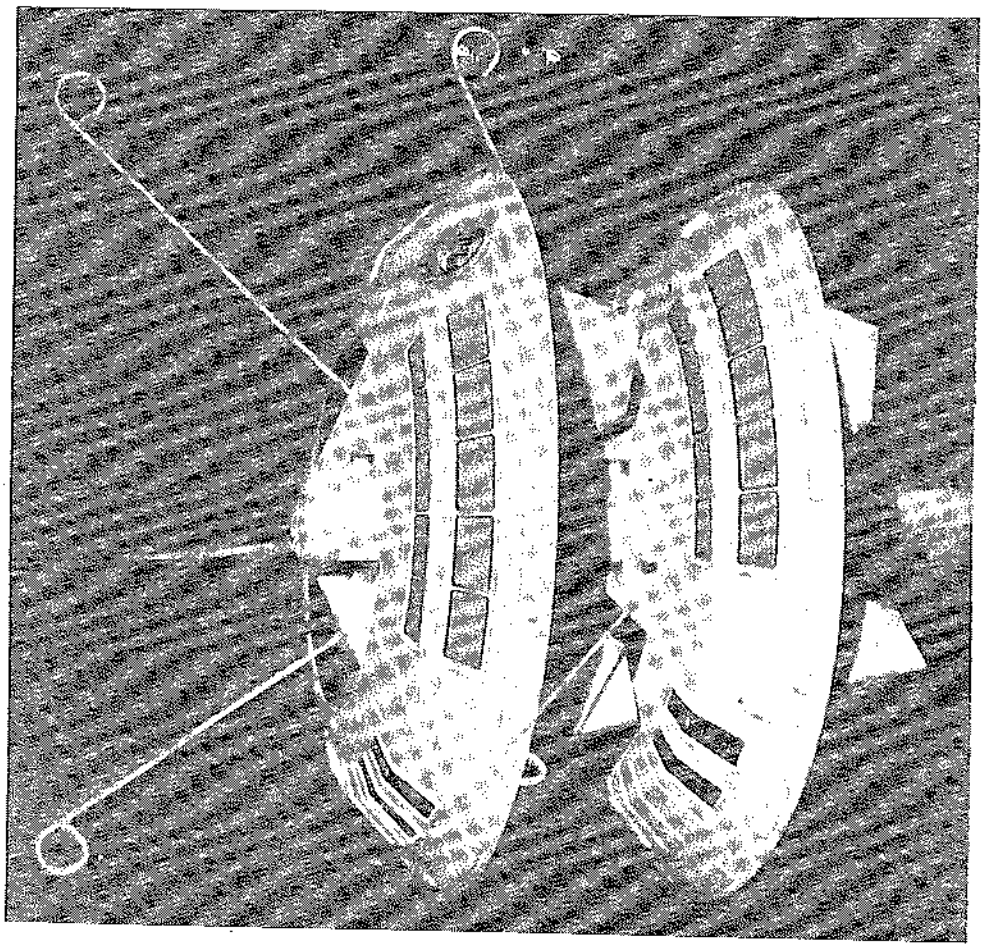
SNOAA NEWS

JUNE 1985



THE LEADER IN SPACEMODELING

SNOAA NEWS
"THE LEADER IN SPACEMODELING"
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HASTE!

SNOAR NEWS

JUNE 1985
VOLUME 11 NUMBER 5

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COVER STORY:

UFO FOR TWO? A two stage conversion of the Estes Flying Saucer is sure to attract attention anywhere you take it. This is too easy not to try! Complete conversion plans start on page 10.

CREDITS:

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GUYS WHO HANG AROUND THE OFFICE AND HELP OUT A LOT:
The Honorable Mr. George Gassaway, The Ledgendary Mr. Tony "Maddog" Williams, and The Questionable Mr. Chris "Norton Freek" Pearson
OTHER GUYS AND GALS WHO DROP IN TO USE THE COPIER AND DRINK A PEPSI (NOT THE NEW COKE) WITH US:
Chris Johnston, Bob Geier, Mike Wagner, Crazy Debbie Schultz, Ron Schultz, Wayne Hendricks, Chas Russell, Larry Peters, Carl J. Warner, Chuck Mund (or Mundt, as J. Pat seems to think), Terry (Cosine) Lee, Mr. Wonderful, Moose, Jerry Irvine (Not really, just seeing if you were awake), and sextillions of others. SNOAR NEWS is written, produced, scripted, and directed by MAC, who seems to have gone Hollywood. There is no grand plan for publication; we just do this whenever we have money to burn. EPA milage indicates 8 issues per year; your number may vary.
SNOAR NEWS is published by SNOAR, NAR section #337 (The greatest section ever) and is the official newsletter of that club. If you want to complain about content, write Johnston or Geier. It's not my fault!
This is VOLUME 11, NUMBER 5.

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FROM YOUR SOMETIMES SOBER EDITORS:

The 1985 Trustee Election

If you are a NAR member, in mid-May you should have received a letter with NARAM-27 information and the ballot for voting in this year's trustee election. If you have not received such a letter, contact Scott Hunsicker immediately for a replacement so that you can vote (unless you will be voting in person at NARAM).

It seems that every trustee election is a crucial one for the NAR. The NAR can not afford to have trustees who don't pull their own weight or continually make commitments they can't or won't complete. The following is a list of the candidates with some comments to consider about them.

Strongly Endorsed For Election To The Board:

Vern Estes– If you don't know who this is, perhaps you shouldn't vote! His long experience in management and the hobby industry is very useful to the NAR now and should be in the future.

Pat Miller– Without Pat Miller, the NAR would not be in as good a shape as it is now, and might not even exist. Pat has been a strong president of the NAR for seven years, and has been instrumental in moving the NAR forward on high power issues.

Matt Steele– Matt has been involved with the NAR for many years. He has the enthusiasm to pay attention to things that aren't working as they should, and to carry out his responsibilities. What else can we say?

John Worth– John Worth is Executive Director for the AMA and Secretary of the C.I.A.M. He is the person most responsible for the NAR insurance's continued inclusion under the AMA insurance, despite frequent changes in AMA insurance companies and policies. His C.I.A.M. duties cover model aircraft and model rocketry in FAI competition. While not a highly visible NAR member, he is invaluable to the NAR.

John Pursley– John is the editor of AMERICAN SPACEMODELING. He has long been known to be keenly concerned with what the NAR does, and in on what has been happening. His editorship indicates a willingness to make sacrifices, and he would be a good trustee.

The other candidates seem good for the most part, although not a lot is known about some. For the most part, their resumes tell their story. Here are some additional comments to consider:

Cloud Greenlee– Cloud has taken charge of the Education Committee, long-time dormant, and turned it into a very productive committee. He also got NARTREK off to a good start.

John Kane– John is responsible for Standards and Testing, and according to some, it has been taking a long time to get certain engines certified.

(Editorial Continued on Page 17)

For the Advanced Modeler:

How to Build and Use Your Own

VAC FORMER

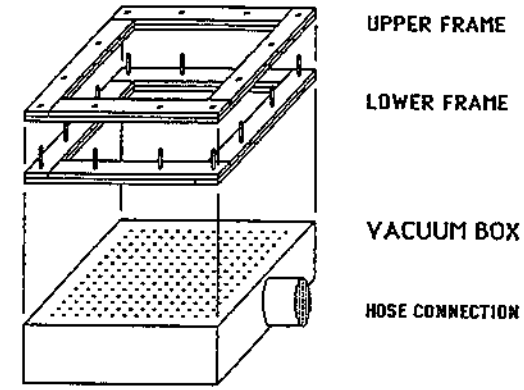
By George Gassaway

Occasionally a model requires a special part or set of parts that are not commercially available, and is not practical to make the part light enough with conventional scratchbuilding methods. In some cases, the best answer would be to vacuum form parts. That is, if you had a vacu-former. Now you can, with a scratchbuilt forming device that can be built in one night for as little as $10, depending on materials. It does require two appliances most people have, an oven and a vacuum cleaner. Due to the use of an oven for heating the plastic and the risk of fire if the oven is left unattended, this is recommended only for adult modelers or for use under adult supervision.

Building the Vacuum Box: The Vacuum Box's purpose is to serve as a good interface between the plastic (held in the holder frame) and the vacuum from the vacuum cleaner. Therefore, the vacuum box can be just about any size and can be built from many different materials as long as certain criteria are met. I made the vacuum box from fiberboard, which is fairly cheap but is not easy to cut. Plastic is a good material to make most of the box from, as long as the top of the box is not plastic. The top needs to be some sort of heat resistant sturdy material that will not sag from the combined effects of of the hot plastic in the frame and the vacuum itself. The vacuum box needs to have some supports under the top surface to keep the top surface from sagging while forming. At the same time, the supports should not interfer with the vacuum to any of the holes in the top of the box. The box must be airtight, except for the holes in the top surface and the side connection to the vacuum hose (the side connection can simply be a short piece of BT-55 or other tube that fits the hose). The top of the box can be made of pre-drilled perfboard from an electronics store (easy but expensive), or fiberboard/hardboard/plywood with holes you drill yourself (cheap but takes time). Your biggest decision will be in choosing what size to make the vacuum box, as it will determine the maximum size plastic you will be able to form. I chose to make a vacuum box two inches deep with top dimensions of 12" by 18" so that it could handle the largest plastic/frame combination that could fit into the oven, although so far the largest size frame used has been one 13" by 12" to hold a 12" by 11" sheet of plastic.

Building the Holder Frame: The frame holds the plastic during heating and forming. There are different materials to use for the frame. Metal would be best for heat resistance, and modelers with the equipment and skills to do metal working may want to make the frame from metal. the frames can be made from 1/4" hardboard (such as Masonite) and cut out, or they can be constructed from materials such as spruce. I have made frames out of 1/8" thick spruce, each top and bottom frame using eight pieces (four on top of

four others, with the joints overlapping). An upper frame and lower frame is required, the plastic will be held between them. Holes will need to be drilled in equally spaced locations for the bolts and nuts which hold the frames together. It is best to tape the frames together so that the holes will be aligned properly, and make a mark on each frame to indicate how to align



them once they have been apart. The best bolts to use are 6-32 with wing nuts to hold the frames together; the wing nuts make installing and removing the plastic much easier. Use cyanoacrylate type glue to permanently bond most of the bolts to the bottom frame, upside down with the threads sticking up. Do not glue bolts in place along one side however, so it will be easy to slide out leftover scrap plastic and slide in a new sheet (this way, you don't have to remove and replace all those wingnuts every time you form a part). Since the heads of the bolts wil protrude down from the bottom frame, add some strips of spruce along the bottom frame so that the bottom frame will meet flush with the the top of the vacuum box for a fairly airtight seal.

You will most likely find a need to make several different size frames to hold different sizes of plastic, depending on how large or how small the part to be formed is. Plastic sheets 4"x4" can handle small nose cones (less than 1" dia and 2-1/2" long) and 6"x6" plastic sheets for larger cones up to egg capsule halves. Some frame sizes will be dependent on the source for the plastic. Evergreen Scale Models plastic sheets are 6" x 10.5", so a special size frame is needed to hold Evergreen plastic (for economy, it is good to make a smaller frame to hold a half sheet too, which is 6"x 5.25"). Once the size of the plastic sheet has been determined, plan out the size of the frame so that the bolts of the frame will be just outside the edges of the plastic sheet. For example, for a 6"x 6" sheet of plastic, the frame should be about 7"x7" with 1/2" frame overlap beyond all edges of the plastic. There should also be about 1/2" of the frame gripping the plastic sheet. This would mean the frame would measure 7"x7" on the outside and 5"x5" on the inside, the frame itself having a one inch "wall thickness" all around. See figure #2.

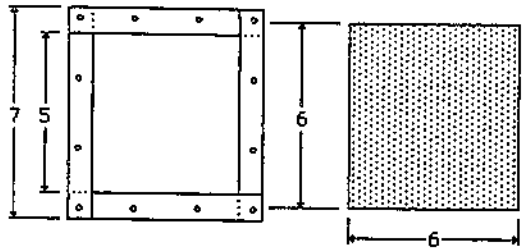


Figure two: frame for 6"x 6" sheet of plastic

Other items: A holder needs to be made to hold the plastic and frame above the oven rack. This can be any heatproof material that can hold the frame 3-4" off of the rack. Sheet metal can be bent into a large "U" shape to hold the frame.

The vacuum box has holes all over the top, but you may want to use a frame smaller than the area with the holes. To effectively cut off a vacuum leak thru those holes outside of the frame area, cut out a mask from poster paper. The rectangular hole in the mask should be about 1-2" smaller than the frame inside dimensions, to allow a little leeway if the frame is not centered exactly during forming. The outside mask dimensions should be about the same as the top of the box, or at minimum it should be enough to cover the outermost holes in the vacum box top. The mask can be secured by tape along the edges. Make enough masks to handle the different frame sizes.

Molds: Molds can be made from several materials, such as balsa, hardwood, metal, resin, and plastic (most any material that can adequately withstand the heat and vacuum). It is even possible to use plastic model parts as molds as long as the hollow plastic is filled inside with something such as plaster and the part formed over it is not from very thick plastic (thick plastic will tend to transfer some of its heat to the plastic mold so much as to disfigure it or cause it to sag). Other hollow molds should likewise be filled, as the vacuum force can cause the mold to sag or collapse.

The mold should have a flat bottom and not have any undercut. No undercut means that the sides of the mold must not taper back inwards once past the maximum width, otherwise the part cannot be removed from the mold. This is not a problem with most nose cone shapes since at worst the sides become parallel. For a nose cone mold, make it a bit longer than where it will be trimmed for the shoulder. There will be a limitation as to how tall a nose cone can be and still have the plastic draw down properly around the mold. Four to five inches will be about the maximum height the plastic will draw with this homemade set-up, depending on the exact shape being formed (a wide cone like an Apollo capsule or SRB nose will draw well, while a long 3:1 type ogive may be difficult). Such high draw parts will also need large sheets of plastic, such as an 11"x12" sheet. Experience will give you a better idea what shapes and sizes are likely to form properly or not.

The mold needs to have a good heatproof finish. The best finish is to use finishing resin. If you use resin, pay attention to the warnings about eye protection from the hardener, avoiding skin contact, and its use in a well ventilated place. A dope or similar type finish is of little use, as the hot plastic will cause it to bubble. Besides providing a smooth finish which the

formed part will duplicate, it will be easier to remove the part from a smooth mold than a rough mold. Still, some non-tapered shapes may be difficult to remove from the mold. This sticking can be reduced by dusting the mold with talcum powder as a lubricant. Do not use any mold release waxes or liquid type lubricants, as they will tend to bubble from the heat.

Plastics: There are many different plastics that can be used for vacuum forming, but use only those that are recommended for such use. Such acceptable plastics are styrene, A.B.S., butyrate, vinyl, and acetate. There are others, check with a local plastics supply house for the best type for your purpose for a reasonable price. Plastic sheets can be bought in large sizes up to 4'x8', at a cost per square foot tremendously cheaper than the hobby store variety. However, sometimes the only way to get a certain thickness is to get a few small sheets of hobby plastic as plastic dealers do not have all thicknesses. I found a sign shop which uses and sells plastic sheets offering 2'x3' styrene .060 plastic for $2, with lower prices for thinner plastic. It isn't a great grade of styrene, but it works for most parts made from it. So, shop around for a good price. The thickness of plastic will mostly be determined by just what size the part to be formed is and what strength it will need. Most big noses will be strong enough with .060 plastic, an egg capsule should be strong enough to protect the egg as well as a CM capsule. Some BT-50 or smaller noses may be better if made from .040 plastic. Special non-nose cone parts which need to reproduce mold detail or have minimum weight could use very thin plastic .010-.020" thick if the strength is adequate.

Forming: (safety note- Due to the fumes released by the hot plastic, set up a fan and open a window to help ventilation). Choose the plastic to use and mount it in the holder frame. Turn on the oven and set it for about 250-300 degrees for styrene (other plastics may take less heat or more heat). As the oven is heating up, set up the vacuum box and connect it to the vacuum hose. The vacuum box should be as close as possible to the oven, as the plastic loses heat within seconds. Place the mold in the center of the window of the mask. In some cases, it may be necessary to make a small pedestal to hold the mold about 1/4-1/2" above the vacuum box so that the plastic will form completely around the lower portions of the mold. Dust the mold with some talcum powder, which will act to help the formed part slip out of the mold.

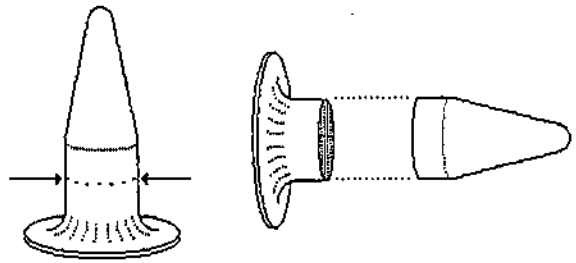
When the oven has heated up, place the frame holder on the oven rack and place the frame with the plastic on the holder. The plastic must be watched continuously to see when it is hot and soft enough for forming. Some thin plastic can be ready in less than 60 seconds, thicker plastic can take 2-3 minutes. Styrene tends to sag a good deal as it becomes hot and soft enough to form, so you can watch for the sag. Other plastics may have different tendencies, and become taut and rubbery. It may be necessary to open the oven door to poke a corner with a dowel to determine how soft the plastic is.

When the magic moment arrives, turn on the vacuum, open the oven door, and grab the frame (use some sort of hand protection; gloves or potholder). Quickly remove the frame and lay it over the mold, with the frame centered over the mold and mask window. Once the frame bottom seats flush with the mask window, the plastic will immediately form over the mold. If it does not form well, it is likely that either the plastic was not hot enough or the vacuum cleaner is not powerful enough (shop vacuums are best, but most

regular vacuums should be able to do the job). If the plastic was not hot enough and the plastic is still intact, it may be possible to put the plastic back in and re-heat for another try. When the part has formed, turn off the vacuum and let the plastic cool for about a minute or so before trying to remove the mold.

It is preferable to use an assembly line approach so that the most parts can be formed in the shortest period of time. Use a modeling knife to to score the plastic near the inner edges of the frame. Do this before the plastic completely cools, as it will score more easily. Once the plastic and frame are cool enough to take off of the box, pop the mold out (if it will come out easily), and with the aid of a modeling knife cut and rip the plastic from the frame edges along the scored lines. Once done, put the formed plastic portion aside and loosen the wingnuts of the frame. It should be possible to remove the remaining "crust" of plastic from the frame by pulling it from the inside. Remove the removeable bolts along one side of the frame, slide in a new sheet of plastic, replace the bolts, tighten the wingnuts, and you're ready to start forming another part. Certain long parts with near-parallel sides will not easily pop out, so this quick method will be slowed down by the effort needed to remove the mold. Some parts may turn out to be impossible to remove, so cut them carefully off of the mold and try again.

For nose cones which were formed on a mold turned on a drill or lathe face plate, mount the mold again on the drill or lathe and put the part on the mold, with some of the excess plastic taped to the mold to hold the part in place. Carefully touch a modeling knife to the nose cone as it spins on the mold to score the plastic nose where it should be trimmed. This ensures the nose shoulder will be straight when completely trimmed.



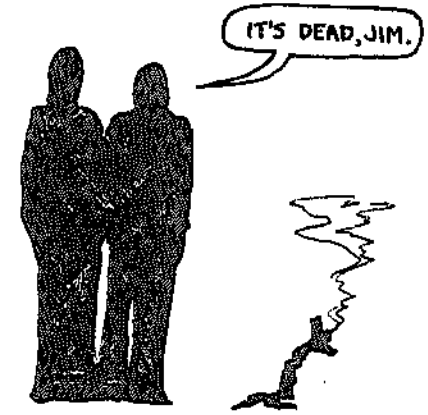
rough formed part ready for trimming | scrap | finished part

Final Notes: Vacuum forming can do some parts well, and others poorly or not at all. It's great for some Sport Scale models but difficult for scale parts due to the problems of controlling the final thickness of the finished part, thus the external dimensions of parts made with male molds in this way (and with this crude type of vacuum forming). It has real problems with small noses for contest models, I still use CMR nose cones for them (CMR parts are made by a machine that can form parts far more accurately and consistently). Here are some examples of what sort of parts have been made for certain models: A Sport Scale Delta main core nose cone, with 9 nose cones and 9 nozzles formed for the Castor strap-ons (models with multiple parts like this are very good vac-form candidates). It has been used to make a few custom shaped egg capsules for Eggloft altitude and Eggloft duration models.

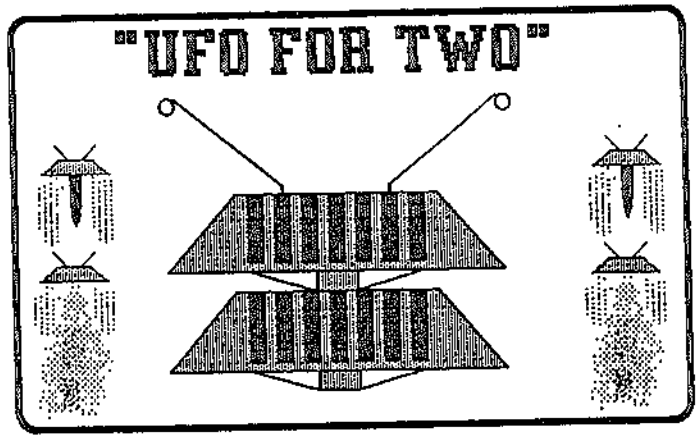
It has been most used to make special parts for models of the Space Shuttle. Originally the parts were orbiter main engines and OMS pods (weighing about 5 grams total at 1/72 scale and formed from .015-.02 plastic). With the all-up shuttle model the parts list expanded to SRB noses and aft skirts, ET nose and aft dome, and the orbiter nose section. The orbiter nose was formed by using half shell molds from a plastic model kit. The orbiter nose will not form in one piece, so it was formed in two halves the same as the plastic kit and glued together with a reinforcement strip inside of the seam. The most significant forming was the ET nose, which is 4.6" diameter and about 7" tall, weighing 30 grams. It was formed by the half shell method like the orbiter nose, with the mold laid sideways on the vacuum box. The only problem is the critical nature of trimming the plastic seam line for the proper diameter and shape nose.

Other potential uses for special models would be to create shells for unusual fuselage shapes such as the shuttle orbiter, ME-163, Natter, and lifting body models. It should even be possible to duplicate the Centuri Saturn model wrap-arounds by pouring epoxy in an unused wrap-around to create a male mold, then form over it with thin plastic. For that matter, you can make up your own corrugation molds for vehicles such as the Ariane and Shuttle ET intertank. Imagination may be the only real limitation.

I hope this has taken some of the mystery out of vacuum forming. It really isn't all that difficult, and the results are usually well worth the effort. Be careful, and have fun making your own custom parts.



"UFO FOR TWO"



By Matt Steele

With the release of the new "Flying Saucer", Estes has invited kitbashers everywhere to improve on the basic design. Not that the new saucer needs design improvement - it goes together in a snap, and is considerably better than the old Centuri UFO - but something as radical and as unique as the Flying Saucer just begs to be kitbashed.

Of course, the first impulse upon seeing the kit was to go the two stage route, as was previously described in a vintage SNOAR NEWS. The result gives one a D12 powered Flying Saucer and a standard Flying Saucer, as if the two stage version isn't enough.

Conversion is pretty straightforward. Build the upper stage saucer according to the kit instructions. Don't worry about the engine retaining ring, as it will only be used if the singe stage version is flown. The lower stage needs a bit more modification. Cut a 2.75" section of BT-50 from all those scraps cluttering up the workshop. Take an AR-2050 centering ring and peel a way a few of the inside layers. This will be the thrust ring, and a standard motor needs to fit through the ring without binding in any way. Epoxy the centering ring into one end of the BT-50, and add an engine hook. Each of the saucer side plates need to be cut about 1/16" to 1/8" to center the BT-50 properly. Do this carefully to obtain a good fit. Use epoxy to bond the plastic to the paper tube, as cyanocrylates don't seem to be strong enough. The prototype had the BT-50 strip at burnout when the super glue bond didn't hold. Fillet the fins with a generous amount of epoxy, but be careful not to slop any epoxy near the launch lugs. Insert the antennas, and then carefully bend them down so the upper stage will not touch them. Be carefull, as the metal is brittle, and breaks easily if bent too hard.

Paint the model. Don't be wimp and leave it "stock". Use you imagination, and decals from other kits, to really spruce up the "UFO for Two".

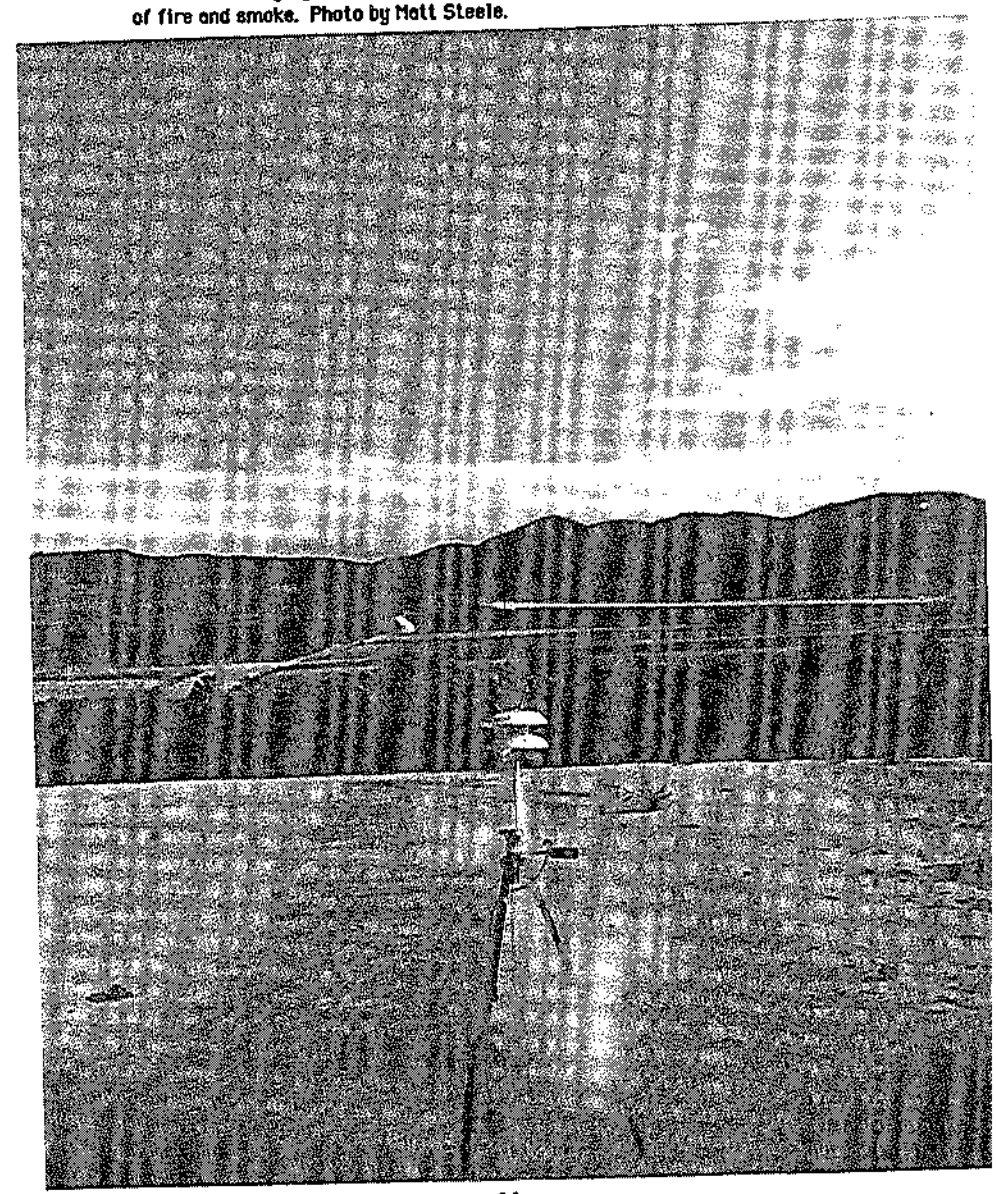
Prepping is slightly more complicated than a standard two stage rocket. Install an igniter in the D12, and then insert it into the lower stage. Take the upper stage motor and insert it about 3/4" into the D12-0. The fit should be snug, but not tight. Wrap tape around the upper stage motor to get a good fit, if necessary. Place the upper stage on top, and note where the upper stage motor fits into the motor tube. It will hang out a bit. Remove the upper stage motor, and friction fit it into place in the upper

stage, so that it will fit back into the D12-0. Mate the upper and lower stages, and "the stack" is ready to fly.

Use a D12-0 in the bottom stage, of course, and either a B6-0 or a C6-0 in the upper stage. Don't bother with E5's or other long burn motors in Flying Saucers; the longer the burn time, the more they weathercock. However, I have this flourescent red UFO that I use as a "calo test bed" for E60's, and....

(Thanks to Estes for supplying the prototype kits!)

Below: The Flying Saucer lifts off, with the mighty D12 providing plenty of fire and smoke. Photo by Matt Steele.



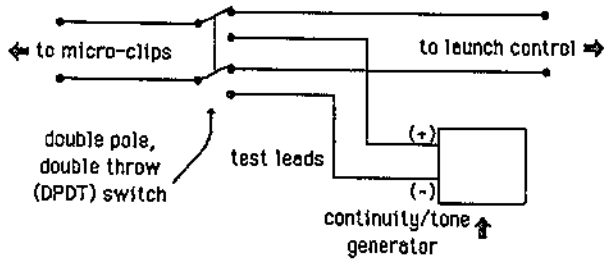
Low Cost Safe Flashbulb/Electric Match

AUDIO CONTINUITY TESTER

By Randy Kelling and George Gassaway

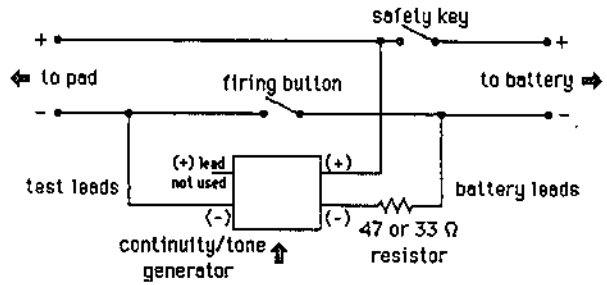
Radio Shack has a limited supply of an interesting item described as a Continuity and Tone Generating Chassis, #277-1014, selling for $1.95. It is powered by a 9-volt battery, and has an on-off switch and test button. It measures 1.1 x 2.7 x 2.7 inches. It is a surplus item that seems to have been used for something like a soil moisture indicator, lie detector, and/or biofeedback device. The tester generates a pulsed tone when there is any continuity at all, a fast rate for "real conductors" and a slower pulsed tone for such little continuity as holding the test wire leads with your fingers. Depending on the battery voltage used, the test leads send from 50 to 75 micro-amps to the ignitor, too little current to set off flashbulbs or any known electric matches.

The device in basic form is useful as a clip-on continuity tester at the launch pad, such as for testing the continuity of a piston launcher. However, when checking continuity thru micro-clips disconnect them from anything first to see if the current back-tracks into the launch control. If so, the tester will only be of use for checking pistons and other add-on leads (some advanced launch systems may be prone to this backtracking). For your own set-up, you could connect the tester into your launch pad or beside the launch control with the firing system leads and continuity tester leads switched into and out of the ignitor leads by means of a double throw, double pole, switch, as shown below.



The tester can be added directly into a launch system. The case can be pried apart to remove the tester circuit board to relocate it inside a firing system. Or, the tester can be made into a firing control itself,

using the battery area in the chassis to mount a safety plug/key and firing button. Use the wiring diagram below as a guide for using it in a launch control, or as a launch control itself. Note that the firing button and safety switch are on separate lines, with the firing button on the negative line. Since most systems do not use a 9 volt power source, some testing was done to determine suitable dropping resistors. For a 12 volt power source, use a 47 ohm resistor for the tester's negative power lead. For 10-10.5 volt power (eight cell nicads), use a 33 ohm resistor.



Check out the unit for proper operation, both sound continuity and launch control operation of the safety key/plug and firing button before putting the unit into use. Do not alter this wiring unless you check thoroughly for any backtracking; an earlier wiring arrangement alowed the tone generator to bypass the safety key, arming the control, which was definitely not acceptable. It is a good idea to turn off the tone generator once you have heard the continuity. For one, the continuous sound can be a nuisance. But more importantly, when the firing button is pressed the device could be damaged by some current feeding back into the tester. If you add the tone generator to a firing system, rather than modify it into a system itself, you can add a toggle switch to the tone generator's positive battery lead to disable it.

Remember, this is a special temporary item Radio Shack obtained,so if you're interested in it try to find one soon. These sort of things usually don't stay available for long.

Special Reader Bonus!

"IT WILL NEVER HAPPEN HERE!"

BY GEORGE GASSAWAY

"The Launch Field catch fire? Oh, that might happen at other places, but I've never seen one. It'll never happen here." -- Overheard at a contest.

As everyone set up the launchers for a contest in Atlanta last April there didn't seem to be much of a potential for fire. The launch site was an industrial development area which consisted mostly of dirt and clay. The only apparently dry vegetation consisted of some weeds in a field a few hundred feet away and some Monkey Grass to control soil erosion on a dirt bank about a hundred feet to one side.

Things went well during the meet until a rocket glide model arced onto its back on boost and crashed into the dirt bank. The ejection charge went off and immediately the dry Monkey Grass caught fire. Within seconds the fire spread to 4-5 feet in diameter and the flames were rising over 3 feet. Most of the contestants ran up to try to put the fire out, but it was impossible. The dry grass was extremely flammable and the wind helped fan the flames. Most importantly, the steep slope of the bank contributed greatly in convection currents sucking air from underneath to feed the flames, on level ground there would have been more of a chance at putting out the fire. One of the contestants emptied his fire extinguisher trying to stop the spread of the flames, but it had little effect on this type of fire. A plastic ice chest with water in it was also used, and it became a casualty as it was accidentally dropped into the flames and melted.

At least the dirt bank was bare on top, so the fire could only spread laterally and down to the bottom of the slope. The fire department was called, and within minutes they arrived. The fire proved to give even the fire department a little trouble, as a couple of areas they sprayed water on started up again, but within 5 minutes of arrival they had put the fire out. In all the fire had burned about 150 feet along the side of the bank and from the top to the bottom

This was a very shocking as well as embarassing incident. The launch site location had been chosen so relatively close to the dirt bank to make most use of the recovery area, as the wind had been coming from the direction of the dirt bank and the recovery area was limited. In hindsight it is now clear that the launch area should have been further away from the dirt bank, though that would have made the launch site closer to the area of the field covered with weeds.

What can be done to prevent such a nightmare? Rocket fliers should do what they can to try to reduce the potential for a fire. It may not be possible to prevent all types of fires, but it would be a shame to have a runaway fire that could have been stopped if the fliers had been adequately prepared.

The most likely area for a fire is in the immediate launch area. Select a launch area that seems less flammable than other areas of thew field when at all possible, free of weeds and/or more moist. Tall weeds or grass can be cut down with a garden swing-blade. Poor blast deflectors or lack of blast deflectors can allow the engine exhaust to catch the grass or weeds at the pad on fire. Even the glowing nichrome ignitor from launch leads falling to the ground can cause a fire at the pad. After each model is launched, at least

one person should check the launch pad area to see that the model did not start a fire as it took off.

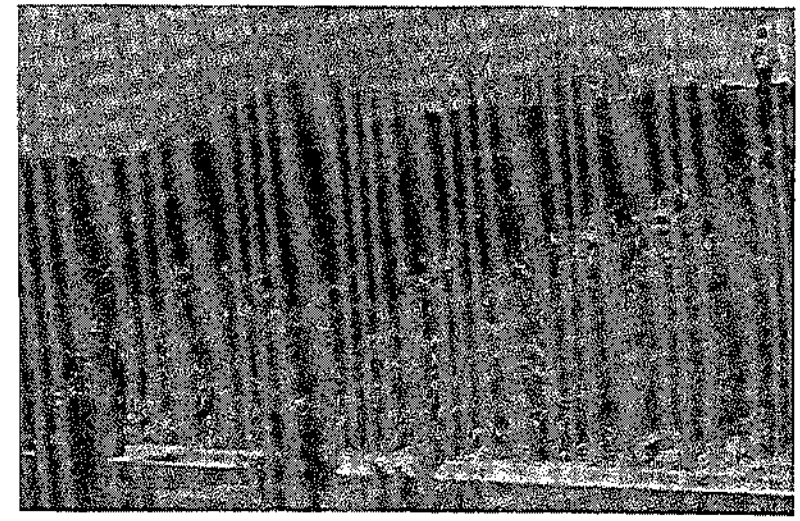
Bring a fire extinguisher or supply of water to use in case a fire starts, set near the launch pads for quick use. If there is a table on hand, be prepared to quickly clear it and flip it upside down to use as a huge "stomper" to help put out the fire, or have a large piece of plywood available for that purpose.

Try to double check models to ensure that they will fly properly. Ironically, the R/G that crashed in the above example was built from Model Rocketeer plans, and also happened to be the only crash of the meet (it still isn't clear why it looped, and of course it was burned up in the fire). Models that go unstable or otherwise crash before ejection are the most likely to start a fire. If the field is dry, it might be best to put off the test flight of an unusual design until conditions are better. Should a model crash before ejection, it is best to grab the fire equipment and head for the model immediately rather than wait to see if a fire develops. If the model uses a fuse wick type dethermolizer, plan to get to the model quickly if it lands before the fuse wick has had a chance to burn out. And of course, use flameproof wadding.

Should the precautions fail and a fire start, the key to controlling if it it is possible to control will be to get to the fire quickly. If there are a group of people, some should try to get to the fire immediately to try to stomp or beat the flames as others bring the extinguisher, water, and other equipment to stop the fire. However, be very careful. Those wearing polyester or similar clothing should not try to stomp out the fire. It is better to let the field burn than for someone's clothes to catch fire.

Keep in mind that some fires will be impossible to control, and it may be necessary to abandon the effort. Be sure that the fire department has been called, and evaluate whether it is possible to slow down the fire's progress or keep it from spreading to a certain area until the fire department arrives. Again, do not risk your own safety or allow others to risk their safety.

Here's hoping that you're always prepared, and never need to use the equipment.



FROM YOUR SOMETIMES SOBER EDITORS *(Continued from Page 3)*

Howard Kuhn- Chairman for the FAI Subcommittee on Spacemodelling. Has served as U.S Team manager and has also acted as a juror in past FAI World Championships, including running the 1980 WSMC in Lakehurst.

Art Rose- Art has the knowledge and spirit to make real contributions to the board of trustees. Art is an innovator and an experienced administrator.

Chris Tavares- Served as editor of the Model Rocketeer for nearly six years, longer than anyone. Helped to run the convention & sport flying range at NARAM last year.

There is one candidate who deserves special mention, who we **recommend NOT voting for:**

Mark Bundick- His main responsibility the last couple of years has been to run the Section Activities Committee. His last comunication with his regional managers was in March, 1984, which promised several things by summer (of 1984). We know of a group trying to get started which sent a self-addressed stamped envelope to him for a section application last November, and heard nothing. To make a long and ridiculous story short, the application was received in January only after prodding by Pat Miller. This section finally got chartered, getting the insured charter from AMA HQ, but has never received any section materials from the Section Activities Committee Chairman, Mark Bundick. His recent articles in American Spacemodeling are apparently just for the purpose of getting his name in print for personal publicity for the election. No real actions have been seen which back up what he has been saying. Worse than a "do-nothing" trustee is a "promise anything" trustee who doesn't deliver. Oh, and one other bit of trivia: of those "Winner, National or Reserve Championships, 74-76,79, 1981-84", that Mark claims in his resume, Mark was a member of the reserve champ SECTION for 1981-84 (NIRA) and the champion SECTION in 1974 (Vikings). To be a little more accurate, Mark was a national team champ once, a team reserve champ one, and an individual reserve champion once. I've never seen anyone claim a section championship as an individual honor before. Maybe that gives you an idea of how much Mark likes titles and such....even if they don't completely fit quite right. Can you seriously vote for this guy?

Some people have said that all SNOAR NEWS does is criticize people and take the fun out of the hobby. Well, it is our contention that there's alot of other people out there who are taking EVERYONE'S fun out of the hobby. We just aim to let you know where these people stand. Additionally, please note that the majority of the endorsements in this editorial are positive. We can hand out the good with the bad, and praise those who deserve it. And, we don't hold a grudge, or good 'ol J. Pat Miller wouldn't be on our "strongly endorse" list.

Give the candidates serious consideration and vote for those you feel will serve you and the NAR best. Keep in mind that you may vote for a maximum number of 13 candidates. Be sure to send in your ballot in plenty of time to be received by the July 1st deadline. Why not do it now?

That's it for now!

Matt and Mac

BULLSHEET

As we had hinted, Aerotech has announced a number of new motors. Here's the specs:

	G10	G15	I65	I140	J700
Total Impulse:	120 N-sec	120 N-sec	640 N-sec	640 N-sec	1280 N-sec
Burn Time:	12 sec	8 sec	9.8 sec	4.6 sec	1.8 sec (!!!)
Max Thrust:	7.75 lb	8.25 lb	22 lb	45.5 lb	180 lb
Diameter:	1.125"	1.125"	2.125"	2.125"	2.125"
Length:	4.5"	4.5"	7.625"	7.625"	11"
Propellant Mass:	62.5 g	62.5 g	343.5 g	343.5 g	604.3 g
Type:	Endburner	Moon/ Endburner	Moonburner	Moonburner	Segmented end/ coreburner
Delays:	0,2,4,8,12	0,2,4,8,12	0,5,10,15	0,5,10,15	10,15,20
Price:	$18	$18	$60	$60	$125

Aerotech announced these motors in anticipation of LDRS-4, with the understanding that single high power motrs are safer and more desireable than large clusters of smaller motors. The I140 is being distributed through Ron Schultz and Lots of Crafts for his monster kits. The J700 is also intended for the Lots of Crafts Magnum. Of course, these motors are available only to those who qualify to the exemption requirements of NFPA-1122.

Lots of Crafts will also be releasing a new kit for LDRS, the Mini Magnum. It's the answer for those of you who can't shell out for the regular Magnum. More info to follow in the next issue.

Don't bother to order an engraved NAR nameplate from Village

Engraving. They've bit the big one, and don't do dat no mo.

The latest point totals are in, and while they are far from complete, there are trends. It looks like George Gassaway is on track for yet another national championship, with fellow Zunoforker Matt Steele in second place. The What Team (Dan Winnings, Greg McCain, and others) seem to be doing quite well in the team division. More on this as it develops.

The 1985 US Team just recently completed a successful team practice at Allentown College over the Memorial Day weekend. It looks like the team is on track to take on the world in Bulgaria. Most details are under wraps right now, as some are afraid that you'll tell the commies. Don't worry, though as SNOAR NEWS special correspondents Chris Pearson, Terry Lee, and Matt Steele will chronicle the entire event for you in a future issue.

If you want more, come to...

LDRS-4