



THE BUZZ!



#752

Newsletter of the South Western (Ontario) Association of Rocket Modellers

SWARM

Saucer S.W.A.R.M.

Fun contest is a big hit!

S.W.A.R.M.'s first ever casual competition took place on Saturday, September 24. The idea of Saucer S.W.A.R.M. was to build a Sigma Rockets Tri-F-O kit and dress it up in a unique way. There would be prizes for craftsmanship and a spot landing competition.

Six S.W.A.R.M. members entered kits. First to fly was Chris Halinaty's Space Invader saucer. It turned in a

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An Orbital Transport Laboratory – Part I

John Brohm NAR #78048

In 1963, Secretary of Defense Robert McNamara announced an ambitious US Air Force program to develop a Manned Orbital Laboratory, or MOL. The MOL was to be a vehicle based on the Gemini capsule, and one that would have allowed for extended periods of space-based political science (A.K.A.: spying) had the program retained its funding. Alas, with the ongoing financial impacts of the Vietnam War and the apparent duplication with NASA's various programs, the MOL never reached space, and the program was cancelled.

Yet while the MOL never reached space, it did reach the imagination of a model rocketeer. Ted Nomura of Las Vegas provided the winning Estes Design of the Month (DOM) entry for June, 1971 (Plan #73), and his entry was for a model called the Orbital Transport Laboratory, OTL-7A. Thanks to the magic of the internet, Ted's plan can be found here:

http://www.spacemodeling.org/JimZ/eirp_73.htm

Being such an evocative plan, someone (perhaps Ted?) produced a scratch built model; a photo of it appears on the cover of the [1972 Estes model rocket catalog](#).

The model can be found just above the number "3" on the cover, and an enlargement of the image is shown in Figure 2:

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Figure 1: Artist's Rendering of the US Air Force's Manned Orbital Laboratory

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Figure 2: The Orbital Transport Laboratory, DOM Plan #73

The model uses the seldom seen BNC-60AB nose cone; this is a BT-60 based balsa nose cone, ground into the shape of the Gemini capsule, and it was produced for the old BT-70 based [K-21 Gemini Titan](#) semi-scale model that Estes introduced in 1965.

I've always thought that Ted's plan made for an interesting model, and so I began mine by crafting the Gemini capsule (Team Pittsburgh issues [#162](#) and [#165](#)). The capsule was completed in 2012, and it was placed on the display shelf in my den, patiently awaiting its airframe. While perhaps the balance of my project has been somewhat delayed, unlike the Air Force I intend to complete my MOL/OTL, and this article will show you my interpretation of the build.

We'll start by crafting the four fins, as shown in Photo 1. These were fashioned from 1/8" balsa sheet stock, per the plan.

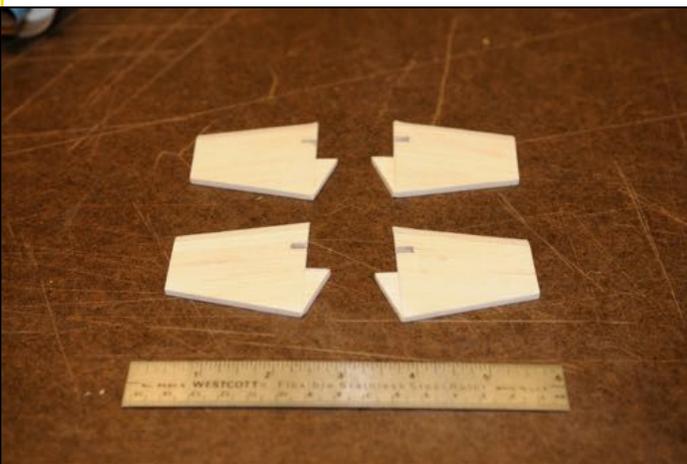


Photo 1: OTL Fin Blanks

The fins were sanded with a 3/16" wide leading edge taper and then pre-finished with Silkspar and three coats of Nitrate dope. The



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decent flight on a C6-0 engine but the landing was spectacular! It was slightly heavy due to some added "windows," so the whole saucer burst into a dozen pieces the instant it hit the ground! The remaining flights, though less exciting, were certainly better. Matt Turner flew much higher on his Red and White saucer (also using a C6-0) and ended up closest to our target at 26' 2". All other flyers used B6-0 engines but couldn't get close to the target. Charlotte Halinaty flew a blue and pink saucer, Mark Halinaty entered a black and yellow checked rocket, Ron Orr flew a wood-grain steam punk rocket, and Matt Gallerno tried a black Canadian saucer. Although Mike Gallerno didn't participate in the contest, he did successfully fly an upscale Tri-F-O on an Estes F15. It was a loud, low altitude flight that worked just like it was supposed to. Good job, Mike!

Saucer Spot Landing	
Competitor	Distance
Matt Turner	26'2"
Mark Halinaty	62'8"
Ron Orr	66'1"
Matt Gallerno	67'6"
Charlotte Halinaty	75'1"
Chris Halinaty	DQ

After all flights were complete, all 6 contestants voted for the craftsmanship award, with Ron's stem punk saucer coming out the winner. For his efforts, Ron received a BMS clone of the Estes Astron Invader and a Semroc Recruiter. Matt Turner took home an Estes Chuter-Two for his first place spot landing showing.



Matt and Ron with their winning saucers.

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plan suggested using 1" lengths of 1/8" diameter wood dowel for the fin mounting pins; I opted to use 1/8" diameter carbon fiber rod instead. This will make for nice, stiff fin mounts, with no susceptibility for warping.

Next up was the motor mount. The plan suggested anchoring the fin pins in an AR-2050 centering ring that's butted up against the aft motor mount centering ring. I tried this but found that it was very difficult to accurately drill the ring for 90-degree fin separation, and without drilling through the motor mount itself. So I discarded this suggested instruction and chose to do something different.

I needed something that would anchor the pins in place and ensure a reasonably accurate 90-degree fin spacing. So I made a locking ring out of an RA-2055 and a few bits of 1/8" square balsa, as shown in Photo 2:

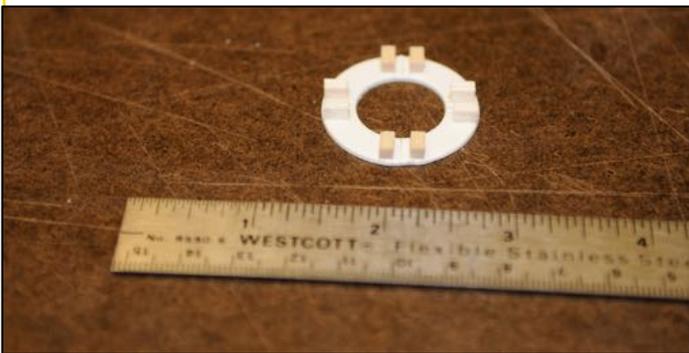


Photo 2: Fin Pin Locking Ring

Before gluing the pins into the fins, I tried a dry fit within the airframe. Photo 3 shows the aft view:

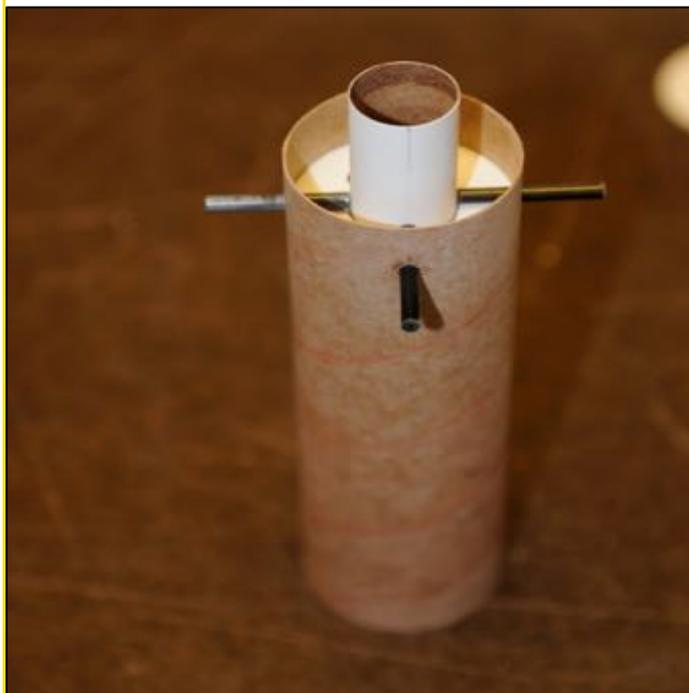


Photo 3: Aft Dry Fit

I oriented everything for a proper 90-degree spacing, indexed the ring and motor mount, and then glued the ring in place, as shown in Photo 4:

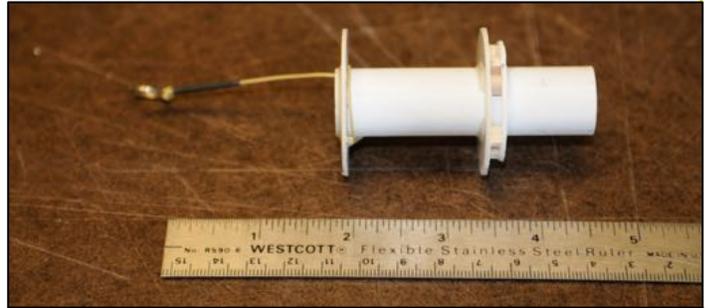


Photo 4: Motor Mount Complete

The motor mount was positioned and glued into the airframe, and then I moved on to the fins.

The pins were secured in place with epoxy, and as you can see in Photo 5, I've already started smoothing the fin/pin joints with Bondo, in preparation for the finishing stage.



Photo 5: Mounting Fins

While waiting on the epoxy to cure I looked ahead to the steps dealing with the preparation of the engine mount cap and nozzle. Each of these parts are to be fashioned from a paper shroud. There's no doubt that carefully rendered paper shrouds would do the job for these parts, as was the case for the original. Still, I got thinking that the model might look better if I could come up with a way to produce a more realistic looking engine bell.

My first thought was to mold and vacuum-form an engine bell, but then I recalled that there are several guys that market 3D printed model rocket parts on Shapeways. I thought I'd check that out to see what I could find.

Well I hit the jackpot, at least for what I had in mind. There's a designer on Shapeways by the name of Kevin Cespedes who offers quite a broad range of 3D printed model rocket parts. It so

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happens that he offers a well rendered engine bell, a part intended to replace the paper shrouds that represent the engine bells on the Estes K-21 Gemini Titan. Photo 6 shows the part.



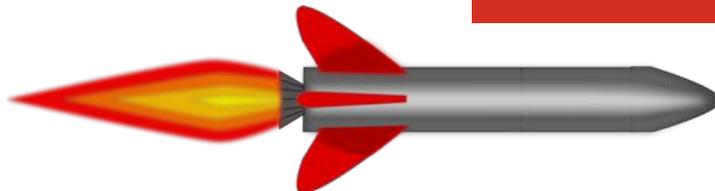
Photo 6: 3D Printed Gemini Titan Engine Bell

Looking at the photo I think it's evident that no matter how well my paper shroud nozzle turned out, it wouldn't match the look of Kevin's 3D part! Kevin's Shapeways store can be found here: <http://www.shapeways.com/shops/cespedesign-multimedia>

The particular Gemini Titan booster engine bells that I purchased can be found here:

<http://www.shapeways.com/product/LFGNJSXG4/gemini-titan-ll-lr87-engines-for-18-mm-motors?li=shop-results&optionId=43092028>

That's it for Part I; next time we'll pick up with the painting and finishing process for the model. See you in Part II!



Join SWARM Today!

Senior (21+) Membership—
1 year \$15 (includes a S.W.A.R.M. patch or pin)
\$10/year thereafter

Leader (16-20) Membership—
1 year \$5

Junior (under 16) Membership—
free

Check out the S.W.A.R.M. website for more details.

2017 NAR and Model Rocketry Events

NARCON
February 24-26, 2017
Chantilly, Virginia



NSL
May 27-29, 2017
Alamogordo, New Mexico



NARAM-59
July 29 – August 4, 2017
Muskegon, MI

Upcoming S.W.A.R.M. Events

November 5-6: The Harvest Classic 2016

December 3: Regular Meeting

December 10: Christmas Launch

December 17: Simulated Rocket Series,
Contest 1 Begins



Competing at Harvest Classic 2015