



Member - National Association of Rocketry ("NAR").

Special points of interest:

- "Ignition!" The ramblings continue...
- Stuart Powley gives us part one on building the iconic Disneyland / TWA Moonliner rocket.
- DARS participated in the Apollo 11 Celebration at the Frontiers of Flight Museum in Dallas. If you missed it, here's the scoop.
- We also have lots of pictures from that event.
- Want to see your words in print? We tell you how!

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Ignition!

By J. Stuart Powley



Royce Frankum launches Gary Briggs' Wac Corporal. Actually, I'm not sure that these pictures go together, but at least they are a reminder that we did have launches a couple of months ago, and they will be back soon, because it can't rain forever!!!

Hello and welcome to another issue of *Shroudlines*! In this issue I was going to cover the Fall Classic and maybe even DARSTAR TNG Episode 2.0, but Mother Nature decided to ruin that plan. As many of you know, The Fall Classic is now scheduled for December, and DARSTAR TNG Episode 2.0 is dead. The problem, of course, is rain. This has been the wettest couple of months I can remember in quite a while. Still, it pays to remember that if we don't have the rain, we have burn bans, so be careful what you wish for, I guess...

Anyway, all of that was to say that this issue turned out quite a bit differently than I had planned. Instead of the before-mentioned articles, I went to the back story file and pulled out a couple that I thought were interesting. The Moonliner article was going to run in the next issue anyway, so I simply moved it up one, and the "Moon Day" pictures got bumped from

the last issue due to actually having club member stuff to run. Therefore, what we have here is an illustration of why we have back story files. And we also have a cautionary thought.

The back story files are now (except for the second half of the Moonliner piece) empty. We got nothing. Nada. Zip. I've been hearing a lot about some really interesting stuff people are planning on writing, but I don't have anything yet. So, let me encourage everyone to put pen to paper (or fingers to keys) and get those works of art out of your heads and into these pages. You can even print it out on really fancy heavy glossy paper and make people think we're a big shot, important publication or something....If you don't, I may have to start re-running old Calvin and Hobbs cartoons, and probably get sued.

I don't want that...really.....

Building The Disneyland TWA Moonliner– Part One

By J. Stuart Powley

For years I have not only been a rocket nut, but also a Disney fanatic. This project that I built for the DARSTAR TNG Episode 2.0 contest took both of these interests and combined them in a way that was interesting, challenging, and quite rewarding. This is the story of both the original Moonliner and the model built in its honor.

The original Moonliner stood in Tomorrowland at Disneyland from opening day (July 15, 1955) to 1966. Howard Hughes of TWA personally approached Walt Disney about the idea of placing his company somewhere in the park. At 80 feet tall it was the tallest object in the park and it served to draw people into Tomorrowland much like Sleeping Beauty Castle served to draw them down Main Street. Walt Disney called these landmarks “weenies,” since their primary purpose was to tempt



*The Moonliner at Disneyland in about 1956.
Photo by Yesterland.com*

people to wander in their direction.

The Moonliner was designed by Disney imagineer John Hench, with input from Dr. Werner von

Braun. The iconic rocket almost didn't appear on time, however. Few people realize that Disneyland went from orange groves to theme park in just under a year, and that time and money were always short. By the time the designers and builders started focusing on Tomorrowland, they were almost out of both. Hence, the Moonliner was started just 90 days before opening day and was lifted into place with just three days to spare. The “Rocket to the Moon” attraction that it stood in front of missed the deadline by five days.

It is not surprising that the rocket resembles von Braun's A-4 (V-2) since he had quite a bit of say in how the final product should look. The Moonliner, however, is more pointed and has no fins. It's also not quite as streamlined, since the nose and tail cones are actually unblended cones (the nose cone does appear to be slightly blended into the body in photos, but this fact is open to debate) The simple cones were probably a concession to the time and money issues since early concept drawings show a much more rounded, streamlined ship. It also has a cockpit on the nose and portholes. Instead of fins it has three landing gear that look suspiciously like the nose gear on the Super Constellation that was being flown by TWA at the time.

The Moonliner stood at the entrance to the “Rocket to the Moon” attraction, in which guests were whisked away on a virtual trip around (but not to land on) the moon. This attraction was later

changed to “Flight to the Moon” in 1967, and then “Mission to Mars” in 1975 before closing forever in 1992. The Moonliner wasn't around by that point, having been removed and believed demolished in the “New Tomorrowland” project of 1966. Actually it stopped being the TWA Moonliner in 1962, when Douglas Aircraft took over sponsorship and gave it a new paint job. The Douglas markings are generally considered to be less attractive than the red and white TWA markings, however. In 1998 the Moonliner returned to Tomorrowland... sort of. In the “New New Tomorrowland” refurbishment a scaled down, slightly altered Moonliner was placed above “Redd Rocket's Pizza Port.” The red and white paint now stands for Coca-Cola (“Delivering Refreshment to a Thirsty Galaxy”).

When I first started considering modeling the Moonliner, the project seemed pretty straightforward. I thought that the V-2 shape would make it possible to simply kitbash the Estes V-2 or Canadian Arrow. I found a Canadian Arrow kit on clearance at Hobby Lobby for less than five bucks, so I snatched it up.

The first thing I noticed when I got a good look at the kit is that actually almost nothing would work. First of all, the nose cone is wrong. The Estes cone is not as pointed as the scale V-2 cone and the V-2 cone is much less pointed than the Moonliner nose. Therefore, the Estes cone was about three inches too blunt. The second thing I noticed was that the tail

cone was completely wrong. As stated earlier, the tail cone on the Moonliner is a true cone that is not blended into the main body tube. The Estes cone is curved and blended quite a bit. It also has "slots" for four fins, where the Moonliner only has three landing gear. These issues meant that there was going to be a lot more building in this project than I had originally thought.

I decided that the first place to start designing was establishing the scale of the model. Again, this task was a bit trickier than one might think at first glance. The problem was that the original Moonliner at Disneyland was a 1/3 scale model of a proposed prototype. Therefore, I had to decide if I was modeling the Moonliner as it stood at the park (at 80 feet tall), or the prototype (at 240 feet tall). Of course, it really didn't matter other than getting the scale ratio, but it bugged me anyway. I finally decided to take my measurements from the original "model" at the park, and thereby eliminate a step. However, I can still claim that it is a 1:124.6 scale model of the proposed vehicle.

After I made that major decision, I began to run the numbers. My main source for measurements was an article that Jack Hagerty had written a while back. I really want to eventually buy his "Spaceship Handbook," but kits and motors keep stealing that part of my rocket budget. Anyway, the Moonliner article is easily obtained online, so I used it instead. Mr. Hagerty's article gave the length as 80 feet and the diameter as 9 feet. I used his scale drawing to get most of my measurements for

the model. As it worked out, if the Moonliner is based on a BT-80, it is just over 23 inches long. After I finished all of my scaling, it was time to focus on the actual construction.

I started with the nose cone. As I stated earlier, it was clear that the Estes cone was much too blunt. In order to get an idea of how pointed I needed to make it, I rolled up some typing paper into a cone and placed it on top of the Estes cone. I was surprised to find that the resulting cone was almost perfect in shape and size. I then rolled up some poster board to see if I could get the same effect with a sturdier medium. I couldn't. As it turns out, the poster board refused to roll tightly enough without crimping.



The nose with typing paper extension, covered with F&F.

In the end I used my original typing paper cone. I made it sturdier by coating it with CA glue and then Fill & Finish. I glued a sharp-

ened 1/8 inch dowel to the original plastic cone and let it extend out of the paper cone. This gave the nose its distinctive point, while further strengthening the overall structure. The results look good, but any sort of nose down crash will surely completely destroy it. Next, I began construction of the tail cone. The fact that the original tail cone was a simple cone shape made this part much easier to fabricate. I used my paper shroud generating program and then printed out the pattern on regular paper. I cut the pattern out and traced it onto poster board. Next, I cut the cone from the poster board and carefully rolled it into shape. The poster board cooperated this time, and I ended up with a fairly sturdy cone when it was finished.

Next, I cut my body tube to length. I was a little concerned that it came out quite short. It seems that



The basic tail cone assembly.

this bird is mainly nose and tail

cone. I saw that stability (not to mention recovery system storage) might be a problem. Still, I kept building.

I then focused on the nose cone again. The Moonliner has a distinctive cockpit on the nose. I



She is pretty much just nose and tail cone...

first thought about building it out of 1/32 inch plywood, but later thought it would be difficult to get the shape right. Therefore, I simply took a 3/8 inch square piece of balsa and cut it to shape.



The cockpit under construction.

I sanded it until it fit fairly well, and glued it into place. I then coated it with Fill & Finish and sanded it again, so that it blended into the nose cone. It was now time to look at the tail section again.

The next step involved cutting slots for the landing gear in the tail cone and lower body tube. The Moonliner was displayed with its landing gear deployed, and I knew that the gear would be the only thing that could act as fins (short of putting clear plastic on the model -- which I hate to do). The issue this fact brought up was that there were slots, struts, and sliding gear workings that needed to be modeled. All of this stuff took some thought.



Slots cut in the tail cone.

After I had carefully cut the slots, I framed them on the inside with 3/16 inch balsa sticks. I then glued 1/32 inch plywood to the frames to

make the landing gear boxes. The boxes on the lower body tube are separate from the ones on the



The landing gear boxes on the body tube.

tail cone, but they are joined into a single unit when the tail cone is attached to the body tube. I test fitted the tail cone several times to make sure the slots and boxes matched up and fit as closely as possible.

I then reinforced the tail cone with the centering rings from the Canadian Arrow kit. I had to trim some of them to shape, as the cone is slightly smaller than the original Estes kit. I also had to cut notches in the top rings to fit over the landing gear boxes. I built my engine mount out of eight inches of BT-50 and installed the three rings on it. I then glued it into the tail cone. The top ring serves to align the assembly with the main body tube. When I test fitted the two parts, I found they didn't exactly match up due to the tail cone not being perfectly round. I fixed this problem after I glued everything together by adding pieces of masking tape to the seam between the body tube and the tail cone that pulled everything into line. Later, I coated the tape with Fill & Finish and sanded it to hide the seam. It actually worked

DARS Participates in Apollo "Moon Day" Celebration



The pre-sanded completed body tube / tail cone.

pretty well. I then glued a 3/16 inch diameter launch lug to the main body tube.

At this point I quit and never went back to the project.... Not really, but if I'm going to get anything else in the newsletter, I need to cut it off here. In the next issue we will deal with such terrifying sub-



The pre-assembled main parts of the Moonliner.

jects as landing gear as fins, actually making things stable, and fun with paint!

DARS has always been known for its outreach programs. George Sprague, the Outreach Director, always has tons of opportunities for club members to help reach out to the community. Once in a while, an opportunity comes up that is even more fun than launching a bazillion Alphas with a Cub Scout group.

On July 19, 2009 the Frontiers of Flight Museum at Love Field sponsored "Moon Day." The idea was to both honor the 40th anniversary of the Apollo 11 moon landing, and to encourage people to think about more aggressive space exploration in the future. The Frontiers of Flight Museum was a natural choice to sponsor such an event since it houses Apollo 7, among other moon related exhibits.



The DARS booth at the Moon Day Celebration.

DARS made its presence felt with a large display (expertly manned

by many DARS club members) and a model rocket build session. Participants in the build session were also given full DARS memberships with their rockets. In addition to DARS, there were many others represented, including authors, scientists, speakers, and space organizations.

On the next couple of pages, we have included some of the pictures taken on that day. A great time was had by all! Enjoy the photos!



A couple of shots of the various booths at the event. The DARS booth was straight ahead and to the right.



A really cool exhibit of vintage 50's and 60's space toys. Notice the "Tomorrowland" game in the middle, complete with Moonliner!

DARS President Royce Frankum checks out the crowd while manning the DARS booth.



George Sprague explains rockets to all ages!



James Gartrell helps with the build session. Every builder also got a membership to DARS with their kit.

How to Contribute to Shroudlines

Well, it has finally happened... we are OUT of back articles. Therefore, if you want to see something in your newsletter other than my mind wandering over the keyboard, you had better contribute now!

This newsletter lives and breathes because of the members of DARS. Without you we can't survive. So far several members have really risen to the challenge and given us great stuff, so we want more!

If you have any kind of article, picture, cartoon, rambling, etc., just send it to stu29573@yahoo.com. I usually work best with stuff in Word, and JPEG files, but I can make just about anything work if I have to. I can also handle items not in a digital format, but that may mean I have to type, and that can be a bit touch and go... But I'll take them anyway!

You can also give me things at the meetings (that I almost never miss...almost) and I promise to try my best not to lose them. I can return the items at the next meeting if need be.

In short (I know, too late) I really want this newsletter to be by the club and for the club. You guys can think up much better stuff than I can (as is evidenced by the articles we've been getting lately). So, stop just thinking about maybe writing something and actually do it! You'll be glad you did! (or at least I will).

And yes, I know that this is exactly what I said last issue....

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DARS

The Dallas Area Rocket Society is a non-profit chartered section of the National Association of Rocketry ("NAR"). Its purpose is to promote the hobby of consumer rocketry in the Dallas / Ft. Worth metropolitan area.

Membership in DARS is open to all interested persons. Membership in NAR is encouraged, but not required. Annual dues are \$10.00 for individuals and \$15.00 for families. The entire family, including children, are welcome to the meetings. Go to the website and fill out and send an application to join or renew your membership.

The club normally meets on the first Saturday of each month at 1:00 p.m.

Visit the DARS website for the meeting location: www.dars.org



Stay connected! All of us will reach greater heights with your attendance at the club meetings.

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