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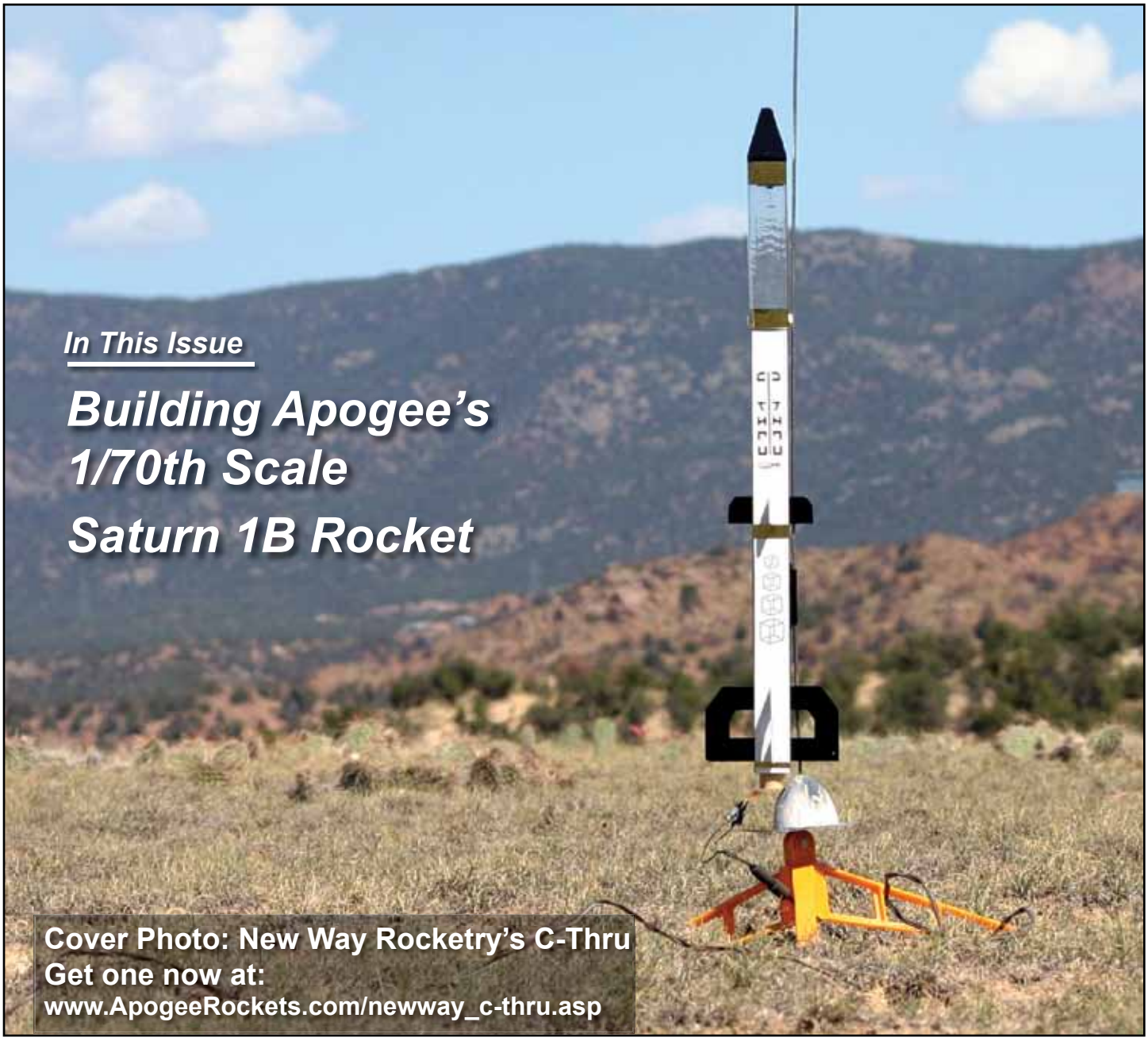

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Building Apogee's 1/70th Scale Saturn 1B Rocket

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Building Apogee's 1/70th Apollo Saturn 1B

By Phillip Gore

Editor's Comment

Normally I don't publish articles on how to build a specific Apogee kit. But this is a little different. Phillip Gore is a regular contributor to Fine Scale Modeling magazine, which tells you how advanced his modeling skills are. This particular article was submitted to them, but for some reason, they turned it down. Their loss, and our gain!

In this issue, I'm reprinting his honest opinions of the kit, and how he modified it to suit his needs. - Tim Van Milligan

Figure 1 - The completed Saturn 1B kit.

Introduction

Development of NASA's Saturn 1B family of rockets grew out of the need for a launch vehicle to send an Apollo spacecraft into Earth's orbit, so it could be tested before going to the moon. To meet deadlines and budget restrictions, the main booster stage was comprised of one Jupiter rocket tank surrounded by eight smaller Redstone rocket tanks. Building on already proven technology made the design and production stages go much faster. This rocket's moment of glory in America's quest to reach the moon came on October 11, 1968, when the first manned Apollo Saturn 1B (designated Apollo 7) carried astronauts Wally Schirra, Don Eisele and Walter Cunningham into Earth's orbit for an 11 day mission.

After the moon race was over, this same configuration was used three times in 1973 to deliver astronauts to the Skylab Space Station. It was launched one last time in 1975 for the joint U.S./Russian Apollo-Soyuz linkup in space. Building Apogee's 1/70 scale flying model (www.ApogeeRockets.com/saturn_1B.asp) of this historic rocket is the subject of this article.

A Different Modeling Path

I am a static plastic model builder, so working on this kit required some adjustments to my typical building routines and techniques. Being a flying model, most of the kit materials were paper tubes, thin vac-form plastic wraps and a small number of resin and injected plastic parts. There were no printed instructions (*What?*-!), but there were two CDs containing several hours of short "how to" videos. These went into great detail and were very specific on how to avoid common mistakes. They also were very specific in recommending which types of glues work best for the different materials used. For my build, wood glue, thick/thin superglue, 5-Minute epoxy and liquid plastic cement were used to assemble the model. Because a static display was built I was able to skip over several construction steps.

Basic Construction

The first step was filling the main booster body tube seams by coating the tubes with a heavy coat of primer paint. Next, almost all of the paint was sanded away, except for what remained in the seams (see Figure 2). After painting the eight booster body tubes (four flat white/four

Figure 2: Filling the tube spirals was done per the video instructions provided with the kit.

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Building Apogee's Apollo Saturn 1B

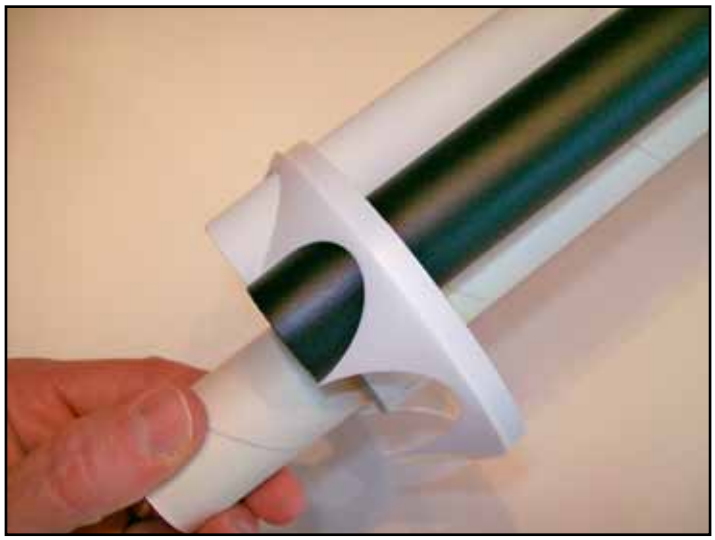

Figure 3: The plastic transition is used to make sure the fuel tank tubes are evenly spaced.

flat black) they were glued in place. The kit's plastic transition shroud was used as a locator guide to make sure each tube was evenly spaced (see Figure 3).

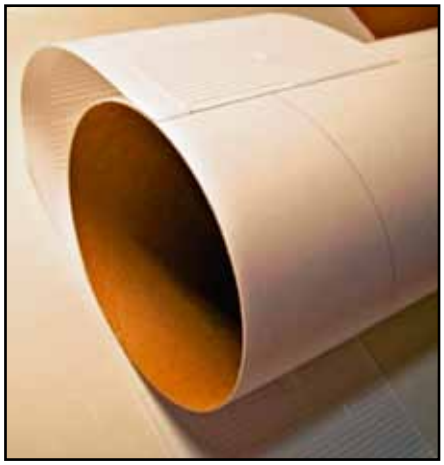

Figure 4: The plastic vacuum-formed wraps applied to the body tubes.

The excellent color drawings on the CDs took the guesswork out of correctly locating the thin vac-form wraps and other details. Repeated measurements were taken on the vac-form wraps so that when the final cuts were made a near perfect fit around the tube was produced. When working with unforgiving, fragile materials like these it is always better to measure three times and cut once (see Figure 4). Only a small amount of thick superglue was used on the vac-form wrap vertical seam lines. A small bead of 5-Minute epoxy was applied at the top and bottom horizontal seam lines, and then a damp Q-tip was swiped across the epoxy to remove all the excess. Using the epoxy added strength and eliminated any tiny gaps that would show up during painting. I used these two glues to apply all of the vac-form wraps.

The two kit supplied vac-form tunnel parts were replaced with styrene pieces that were cut and sanded to shape. The paper tube seams on the SIV-B Stage were filled with Squadron Green Putty (see Figure 5) and sanded smooth (see Figure 6).

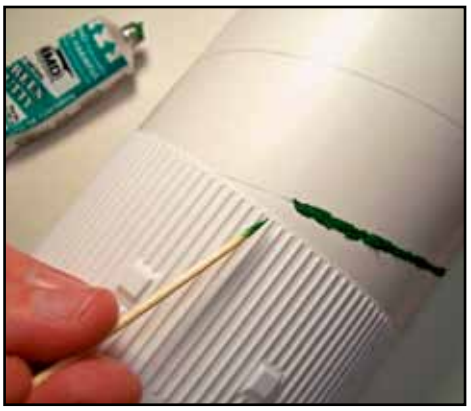

Figure 5: Green putty was used on the spirals once the wraps were attached.

Figure 6: The green putty sanded smooth on the tube.

The Lunar Excursion Module (LEM) transition consisted of an inside and outside paper wrap that had to be care-

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Figure 7: The LM Shroud under-structure prior to installing the outside embossed paper wrap.

fully cut and located (see Figure 7). The outside wrap was out of thicker, embossed paper that had crisp surface detail (see Figure 8). Correctly locating this piece to get a seamless connection was the most difficult part of the project for me, and two wraps were ruined before an acceptable fit was achieved (See Figure 8). I will admit that I did not use the spray adhesive that was recommended in the instructions to help locate the outer wrap. If I built this again I would more closely follow the manufacturer's instructions on this step.

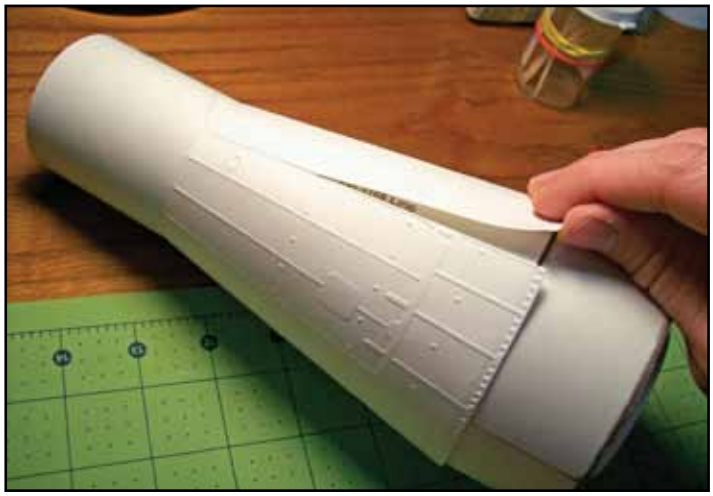

Figure 8: The embossed wrap took considerable effort to be placed properly on the transition.

Next, the main booster base section was built and assembly included using paper templates to mark the locations of the fins (See Figure 9). The resin fins required some repair work, since they had holes where air pockets formed. To try and get the fins as perfect as possible, the kit parts were glued to very thin a

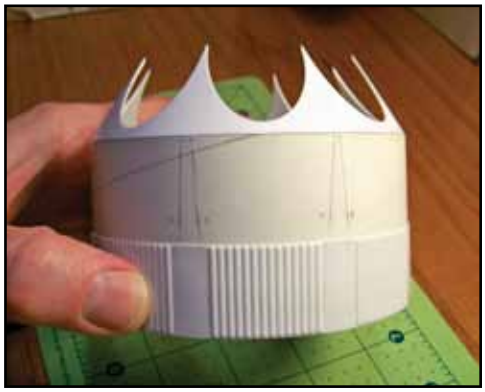

Figure 9: Fin locations marked on the base section.

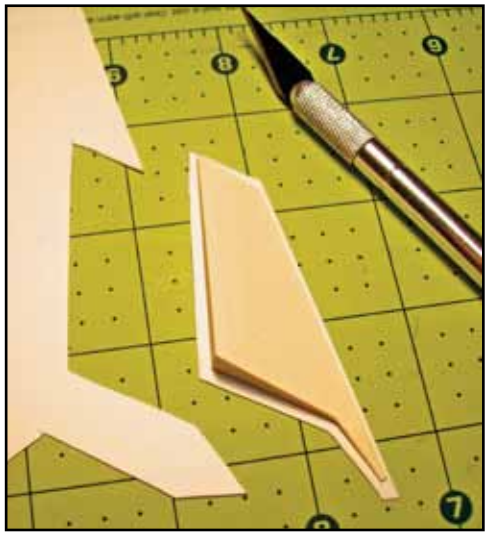

Figure 10: The resin fins were laminated with sheet styrene.

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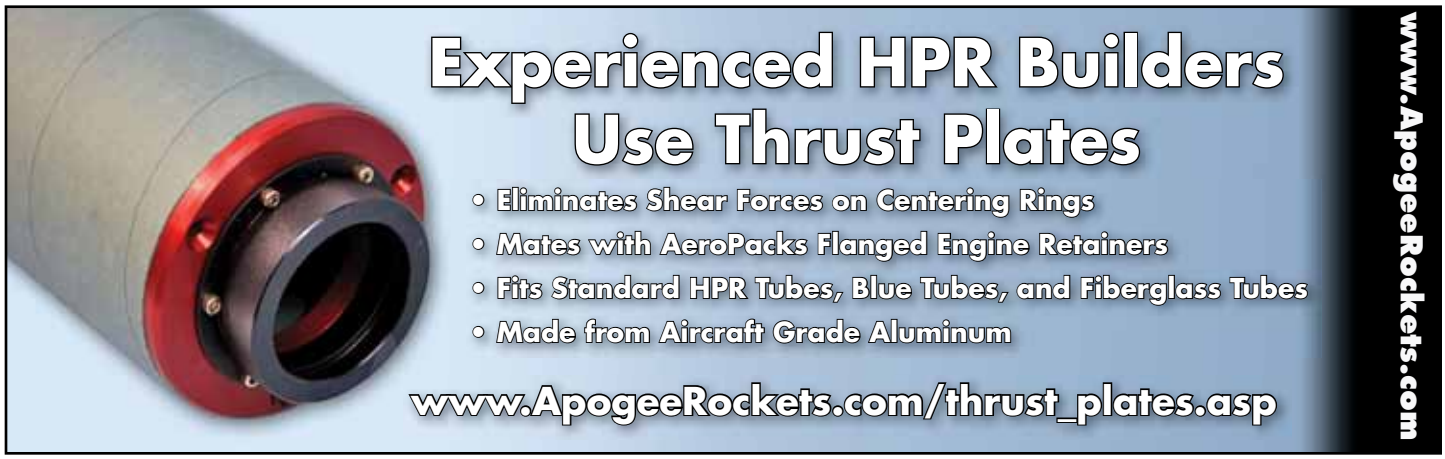

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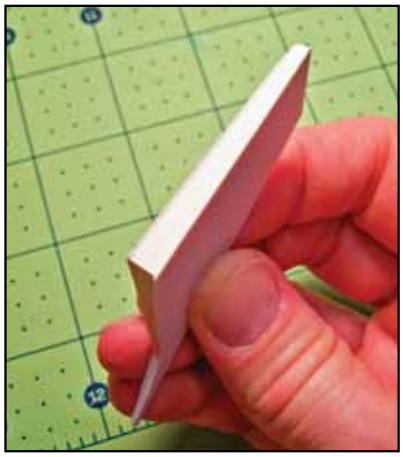

Figure 11: Completed fin, sanded smooth.

styrene sheet that was cut to a rough shape (see Figure 10). The styrene was glued to the fins and sanded to the correct dimensions (see Figure 011). Improving the kit's other resin parts only required adding primer paint and sanding (see Figure 12).

Since the model was to be permanently mounted to a metal rod that was part of a wooden base (see Figure 13), the rocket's booster adapter base was modified to accept the metal rod. This was done by gluing a section of the kit's lifting lug in the center of the booster adapter base and surrounding it with thick styrene blocks for reinforcement.

Figure 12: The other resin parts were painted with primer and sanded smooth.

Figure 13: A wooden base was made to hold the rocket.

The Von Braun Painting Dilemma

All of the rockets Dr. Werner Von Braun helped develop carried an attractive (and complex) black and white paint scheme. He like the way it looked, even though the paint increased the liftoff weight. The Apollo Saturn 1B paint pattern is one of the more difficult patterns to reproduce and caused multiple headaches on this project.

Starting with the fin section, the assembly was painted with multiple thin coats of flat white. Each coat was given ample time to dry and then buffed with a very soft, worn cloth. White is one of the more difficult colors to apply, since it takes a lot of paint to cover any dark marks on what

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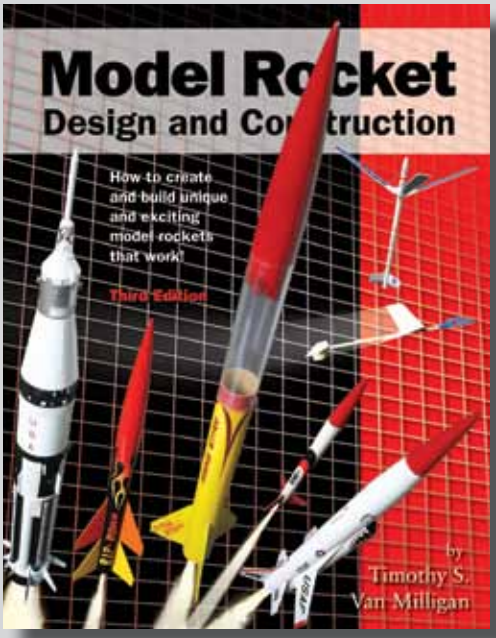

Model Rocket Design and Construction

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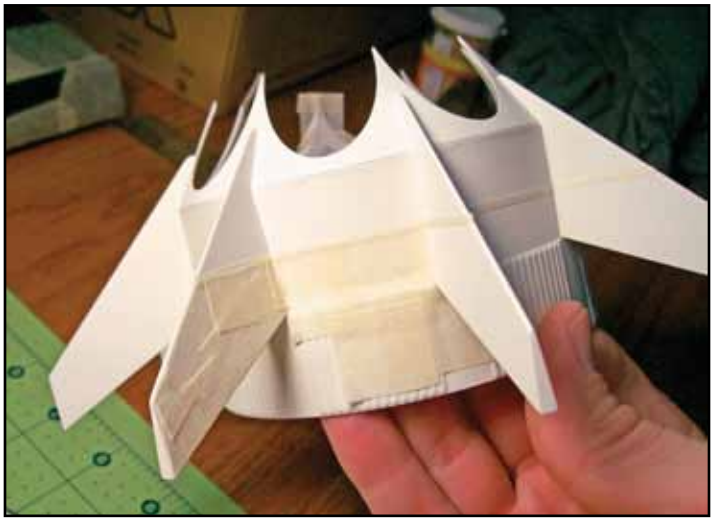

Figure 14: Multiple layers of white paint were applied before the model was masked off with tape.

Figure 15: The tedious task of masking resulted in a great looking part.

is being painted. The temptation is there to apply one or two thick coats all at once, but this is a huge mistake. The thickness has to be built up in many layers and buffed out between every coat. I probably applied 8-10 coats of paint to each white section of the rocket. A coat of Future Floor Wax was added as a gloss coat to make masking easier. The tedious task of masking around the fins was done using 1/16" wide strips of masking tape laid down at the black and white separation point (see Figure 14). A round, wooden toothpick was used to press the tape against the model and eliminate any raised edges. A small metal ruler was constantly checked against the masking tape to verify the straightness and alignment. Doing all of these things helped produce a super sharp demarcation line (see Figure 15). A good deal of sanding along the inside of the transition shroud top was required to make sure the paint finish on the booster body tubes was not marred when the fin section was slid in place over them (see Figure 16).

The SIV-B stage was painted flat white but no Future

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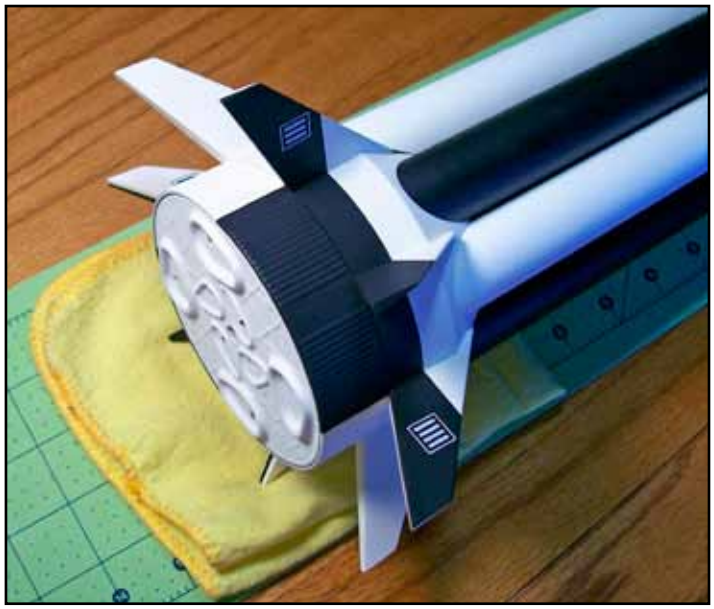

Figure 16: Some sanding was necessary on the transition to prevent it from scraping the paint off the tubes.

Floor Wax was added, since the masking requirements were not as demanding as on the fin assembly. When dry, the same masking method detailed above was used again. The only difference was having the extra difficulty of trying to mask a straight line over the corrugations. They certainly added a new "wrinkle" to the process (ha! ha!). In a couple of areas small strips of black decal film were applied at the black and white separation point to correct minor misalignment. Lastly, all of the raised details were masked off and painted flat white (see Figure 17).

Final Assembly

The kit decals were used and went on well, but heavy amounts of Micro-Sol decal setting solution were used to get them conform to the painted surfaces. Almost every bit of the decal carrier film was cut away before each decal was applied. This meant all the letters were applied individually. A small metal ruler was used to confirm their proper spacing and alignment. It was a lot more work but eliminated any decal "silvering", or the possibility that the carrier film would turn yellow over time. The engine nozzles were assembled, painted with

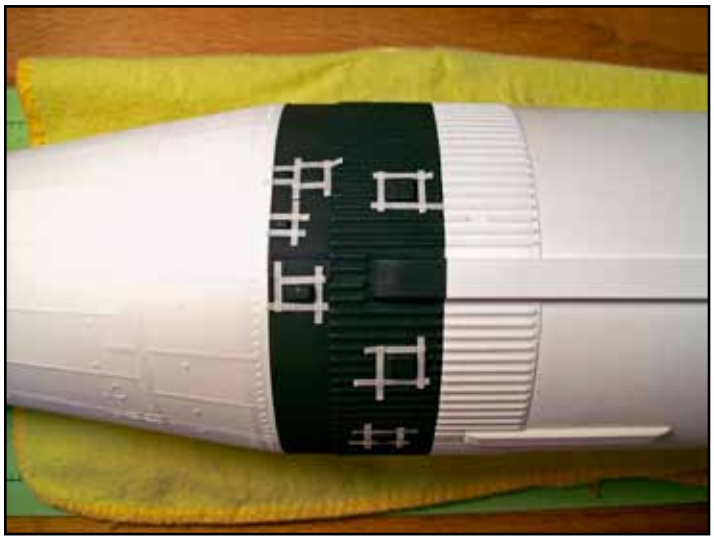

Figure 17: The raised antennas were masked off and painted white after the black paint was applied.

Figure 18: The nozzles were painted dull aluminum, and the inside flat black.

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Figure 19: The service module was detailed with sheet styrene.

Alcad dull aluminum and glued to the bottom of the booster adapter base (see Figure 18).

The Command Module (CM) and the Apollo Capsule were last sections built. The kit included a paper wrap for the CM with raised detail, but it was not used. Instead a very thin piece of styrene plastic was glued around the CM to cover the tube seam line. After the seam line was sanded out it was masked off and painted Model Master aluminum. White decal film from my spares box was added to represent the various radiator panels (see Figure 19).

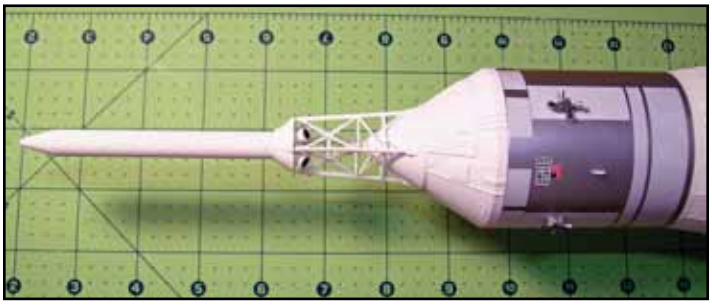

Figure 20: The escape tower is a work of art.

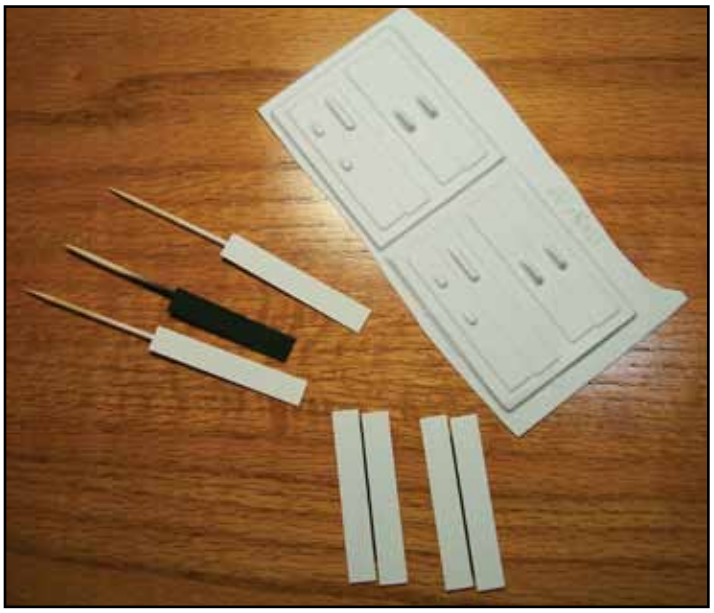

Figure 21: The antenna panels were replaced with sheet styrene.

The capsule and escape rocket parts are the best I have ever seen in ANY kit and went together perfectly (see Figure 20). Additional detailing included gluing on a few small photo-etch parts (again from my spares box).

The last parts added to the kit were the antenna pan-

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Figure 22: After the antenna panels were added, the rocket was complete.

els. I cut the raised areas off the kit vac-form parts and glued them to thin pieces of styrene that served as the base (see Figure 21). Once these were glued to the rocket tubes the project was done!

Conclusion

This was a fun (yes, fun) kit build because it was different from my normal "all plastic projects". It is also an eye-catcher standing over 38" tall. I have been waiting for a large, accurate and well detailed Apollo Saturn 1B for a long time and thanks to Apogee Components I finally have it!

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Rockets of The World: A Modeler's Guide, Peter Alway (1993).

Material Sources

Styrene - Evergreen Scale models, Inc., Woodinville, WA 98072

About the Author:

Phillip Gore lives in Trussville, AL and works as a Cost Estimator for ProcessBarron, Inc. He has been married for twenty-two years and has an 18 year son and 15 year old daughter. Phillip began building plastic models when he was five, and continued to build them until starting high school. At that point "girls and cars" took over and the desire to model did not surface again until about ten years later. Over the past ten years he has had more than twenty modeling articles published by several modeling magazines. His modeling interests include WWII aircraft, naval ships, sci-fi rockets and NASA spacecraft.