Cloning the Estes #0821 EAC Firecat

By John Brohm NAR #78048 **July 30, 2025**

Introduction

In the November 1972 issue of the Model Rocket News (Vol 12, No. 4), Estes introduced the model rocketry world to its new Estes Aerospace Club (EAC). Among the many benefits the new club offered, EAC members would receive advanced notice of new kits and products, as well as exclusive product offers. One such exclusive offer was for the Firecat, a new limited run kit announced on Page 6 in the inaugural issue of the EAC's newsletter, later called SPECTRA.

The EAC Firecat was a BT-50-sized model inspired by remotely piloted drone technology. In fact, the kit face card characterized the model as a "Reconnaissance Drone".

Figure 1: Estes EAC Firecat #0821

It's unknown whether a specific RPV prototype was the Muse for the kit. At the time of the kit's creation the US Armed Forces employed an array of RPVs, each serving missions ranging from high-speed gunnery target training to remote reconnaissance. Given the Firecat's configuration it's tempting to think that a contemporary prototype like the Beechcraft MQM-107 Streaker might have had some influence on the kit's design:

Photo 1: Beechcraft MQM-107E

U.S. Air Force photo by Master Sgt. Michael Ammons

However, given the passage of time it's a question we're unlikely to resolve.

The Firecat was available only for a brief period - likely less than two years – from its launch in mid-1974 until the kit supply was exhausted following the April 1975 notice of its discounted pricing. In addition to providing modelers with a fun and challenging build the kit served a practical commercial purpose – it repurposed surplus parts Estes had developed in support of Damon Corporation's earlier 1971 acquisition (and merging with Estes) of Vashon Industries and its liquid Freon-powered model line.

Estes introduced its rebranded Vashon line in its 1972 Model Rocketry Catalog as "Estes Cold Propellant Rockets". In 1973, Estes introduced its own addition to this line, called "Cold Power Convertibles", a line of six kits that could be flown with the Vashon cold propellant motor but could also be converted to fly on Estes' regular solid propellant motors. Within this line of convertible kits was kit #1104 Honest John, a convertible that would last only one catalog year – by 1974, the Convertible Honest John had vanished from the product line.

Vanished, but not forgotten - it was from the Convertible Honest John that the EAC Firecat acquired its balsa and paper parts, its decal sheet borrowed from the Estes K-48/1248 Bandit.

Photo 2: Estes #1104 Convertible Honest John

https://www.spacemodeling.org/jimz/est0821.htm

One could speculate that the Convertible Honest John's short catalog life was due to its redundancy with the earlier and, at the time, still produced Estes K-27/1227 Honest John. While the two kits shared nothing other than the airframe (BT-50W), once constructed, they were basically the same. And both could fly on regular Estes solid propellant motors. Or, perhaps by 1974 Estes was already seeing a sun-setting future for freon-powered model rockets, and began the process of paring the product line. In any event, in 1974 the Convertible Honest John was removed from the product catalog and its remaining paper and balsa parts were reallocated to the EAC-exclusive Firecat.

While somewhat diminutive in size the EAC Firecat was and is an exciting model – the thing looks fast and aggressive just sitting still, qualities that make it a fairly popular cloning subject as various build experiences on both YORF and TRF attest. As for me, the EAC Firecat has finally arrived at the front of my cloning queue and so, in this article, I'd like to share with you the results of my cloning efforts and the cloning choices I made.

The Parts

The Firecat was based on a BT-50W (9.50" long) airframe and a standard/typical Estes BT-20J motor mount assembly. But unique to the EAC Firecat were three parts taken from the discontinued Convertible Honest John:

- the nose cone, Estes parts designation BNC-50BD.

- the ramjet tube, located on the underside of the model. This special tube was used in the Convertible Honest John as the piston tube for ejecting the model's parachute. This part was assigned the parts designation BT-48BE.

- The die-cut fin sheet, made of 3/32" thick balsa.

Let's review these parts.

The BNC-50BD nose cone was a fair representation of a prototypical Honest John nose, and the Estes 1974 Parts Catalog listed its exposed length as 5 inches. While eRockets offers a replica of the BNC-50BD, their version measures 4.5 inches. Alternatively, one could use Balsa Machining's BMS50HJ - another BT-50-sized Honest John-style nose cone - but this part has an exposed length of 6-3/16 inches. For my clone, I chose the eRockets BNC-50BD.

Photo 3: BNC-50BD at top; BMS50HJ at bottom

The ramjet tube (BT-48BE) was 2.5" long, had an OD of 0.928", and an ID of 0.902" for a wall thickness of 0.013". That part is no longer commercially available, nor is it available in any late model kits that we're aware of. If one is not too concerned with clone fidelity then a 2.5" length of BT-50 (OD = 0.976") could be substituted and most likely no one would be the wiser. However, eRockets does produce a very close alternative to the original part, the eRocket's SEM-ST-8F28. This part is 2.75" long and has an OD of 0.921", for an OD difference of only 0.007". I chose this part for my clone, with the tube trimmed to the required 2.5" length.

The Convertible Honest John fin set was provided as a 3/32" thick die-cut sheet; a laser-cut version is available from eRockets as P/N SEM-FES-0821. Per the EAC Firecat kit instructions, two of the four fins must be modified to create the horizontal planes and winglets that form part of the wing assemblies.

Finally, as mentioned earlier, the kit markings were borrowed from the Estes K-48/1248 Bandit decal sheet. Apart from the variance with some of the fonts, an exact replica of this decal sheet is available from CMR while eRockets offers the Semroc version. In my case I was able to track down exact matches for the fonts used on the Bandit sheet (apart from the big number "3") so I ended up reproducing the markings in MicroSoft Word and in TurboCad. This topic is covered more fully in the Decals & Finish section of this note.

The Build

The parts were prepared in our usual fashion, with all tube seams filled with Bondo Glazing & Spot Putty, and the balsa sheet parts prefinished with K&S Silkspan and three coats of uncut Randolph Non-Tautening Nitrate dope. The nose was finished with Brodak Sanding Sealer. The following photo shows the pre-finished parts, ready for assembly.

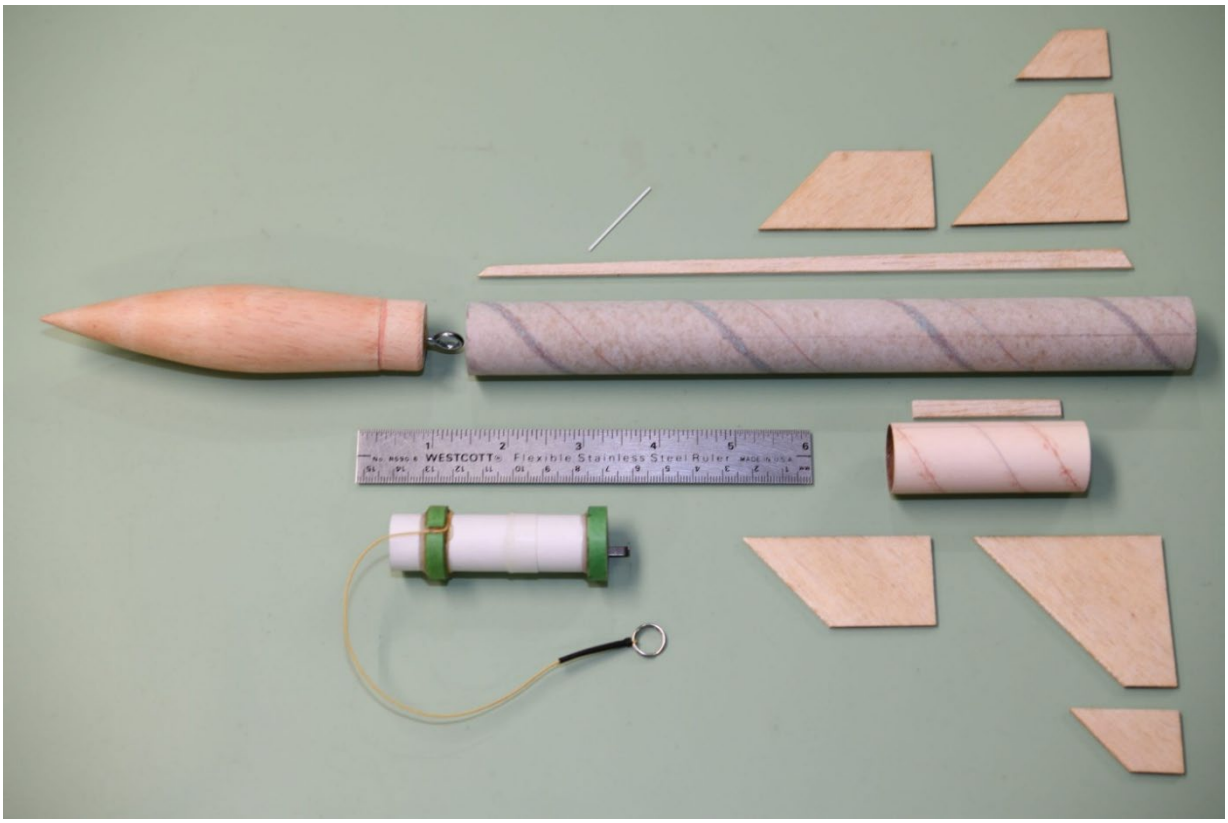

Photo 4: Firecat Parts Layout

The model was then assembled with Sig's Sig-Bond aliphatic glue.

Once the motor mount was installed it was time to mount the wing assemblies. For these I decided to let Gravity do the work, so I crafted an assembly cradle to support the wings in the correct attitude and location while the glue was drying.

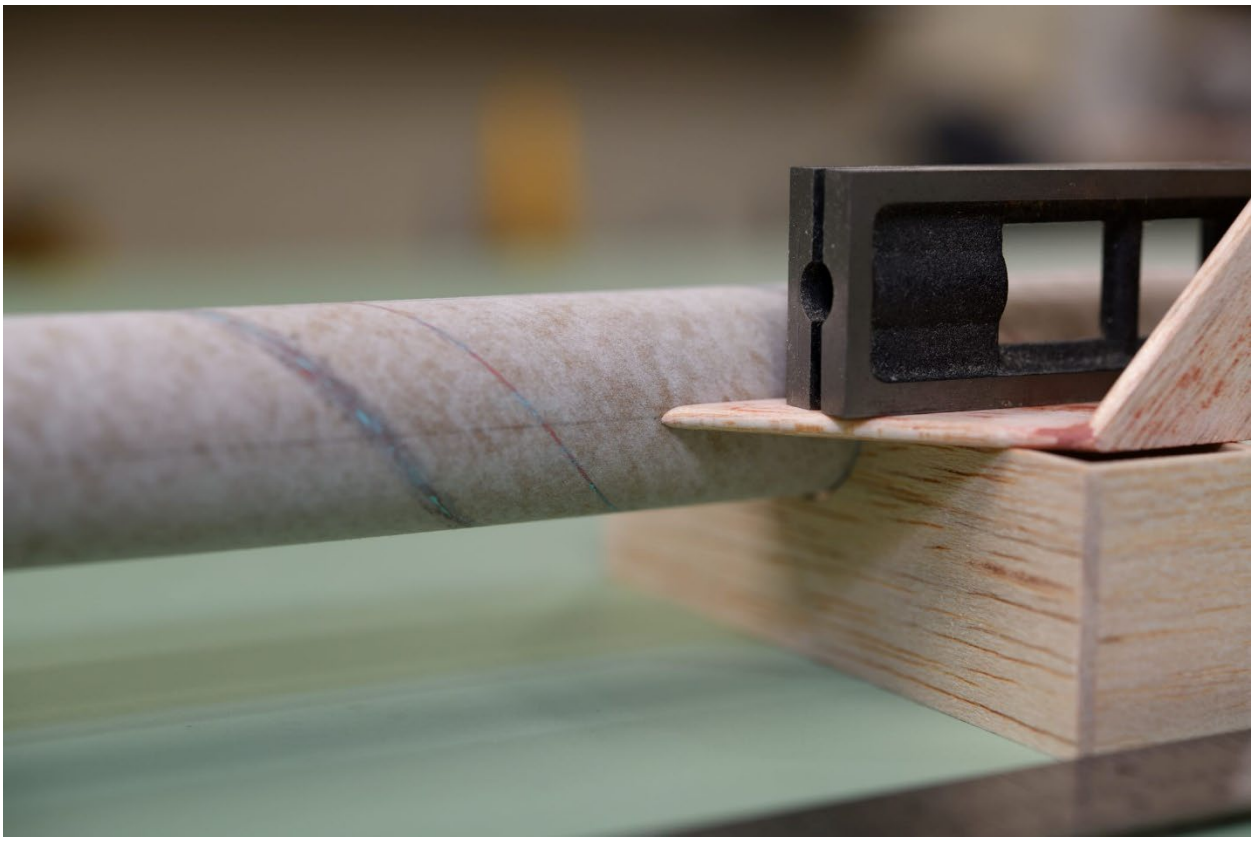

Photo 5: Wing Assembly Mounting

The dorsal raceway strip was added, as was the underlying ramjet tube. As other builders have noted, the kit instructions mistakenly call for the launch lug to be placed in a location that would cause the launch rod to conflict with the Honest John nose; to resolve this issue I did as others have done and placed the launch lug inside the ramjet tube. This placement eliminates the interference problem with the nose.

To reduce the risk of the shock cord screw eye pulling from the balsa nose following a sharp ejection, a ½" length of ¼" dowel was epoxied into the base of the nose, into which the screw eye was inserted.

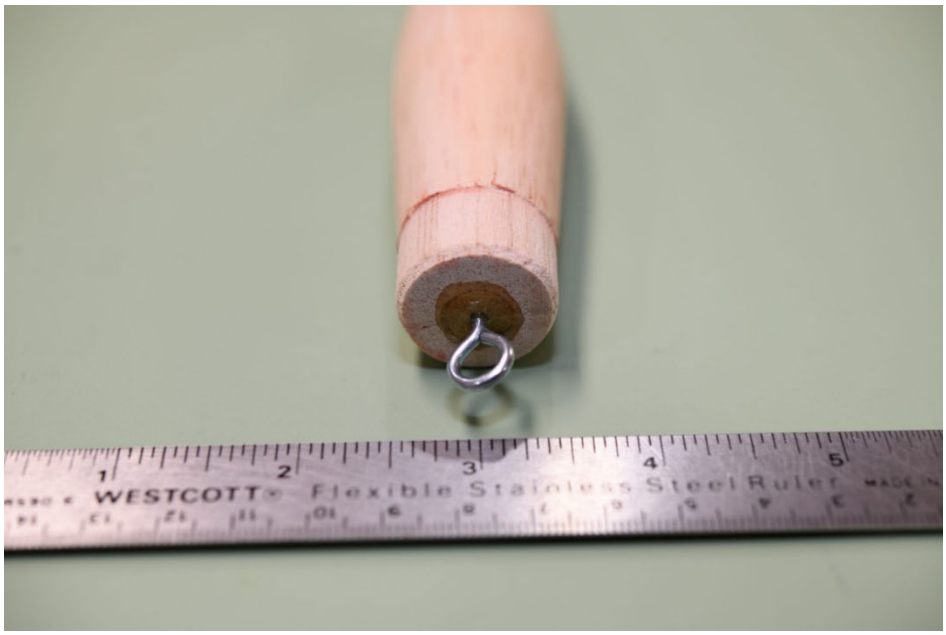

Photo 6: Nose Cone Shock Cord Anchor

The last item to address was the drone antenna, located on the dorsal raceway. The instructions call for a 1-1/4" long toothpick to represent this feature, but I opted for a 1" length of 0.047" diameter Styrene rod instead. I also chose to make the antenna removeable for flight.

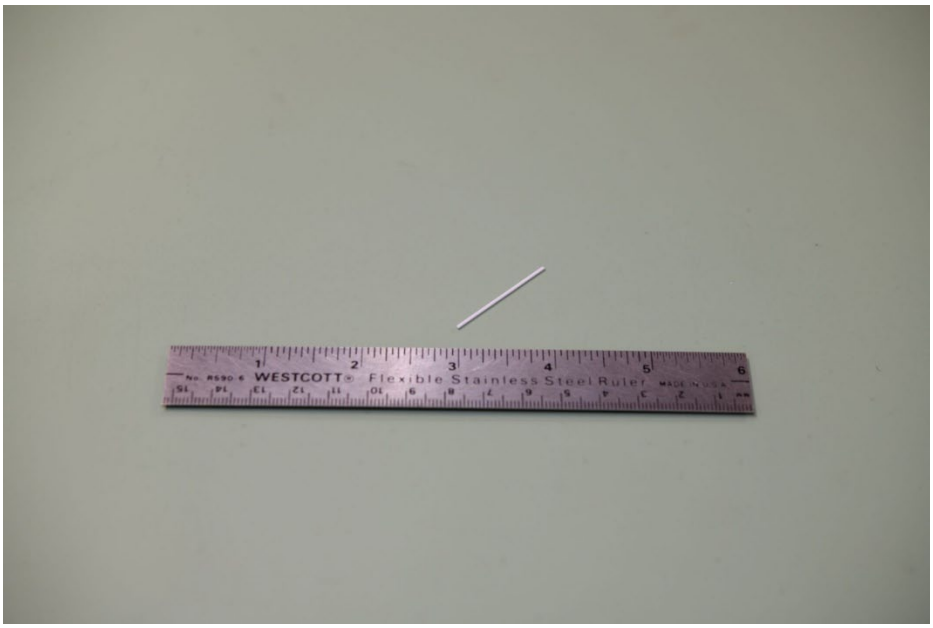

Photo 7: Vehicle Antenna

With this the model was ready for the Paint Shop.

Paint

As our earlier Photo 1 shows, some RPVs were noted for their high visibility paint schemes, especially those units assigned to gunnery target training. Often the livery was augmented with graphics, as seen in the following photo:

Photo 8: Ryan Aeronautical BQM-34A Firebee

Model by John Miller

Generally, I hew towards finishing a model the way it's illustrated on the kit face card but since my online search turned up so many colorful RPV examples I thought I'd take some liberty with the Firecat's livery. While I was disinclined to attempt something as ambitious as a shark's mouth, I did choose to borrow a couple of color cues from the Ryan Firebee pictured above for the Firecat's flight surfaces. So, with paint strategy set the paint prep got underway.

The model was given several coats of Rustoleum #2081830 Automotive Light Gray primer; remaining surface blemishes were resolved with 3M's #05096 Acryl-Green glazing putty. Satisfied with the final primed surface the model was then sprayed with GSI's Mr. Finishing Surfacer #1500 White, in preparation for the color coats.

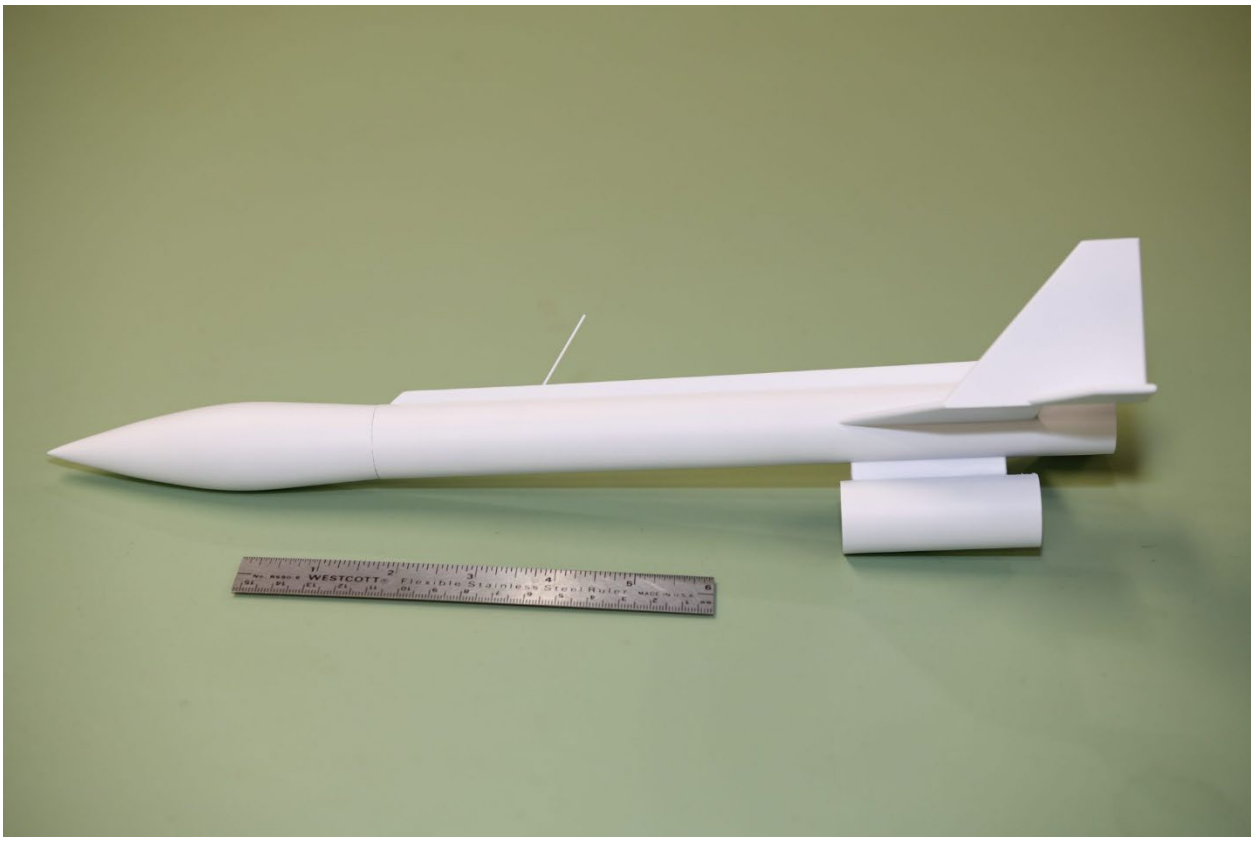

Photo 9: Primed and Ready for Color

The model was then airbrushed with GSI's Mr. Color #1 White.

As our earlier Figure 1 shows, the kit's face card suggests a "red-ish" color for the model's underside, and in fact the kit instructions Step 19 specifically declares this color as "Flat Red".

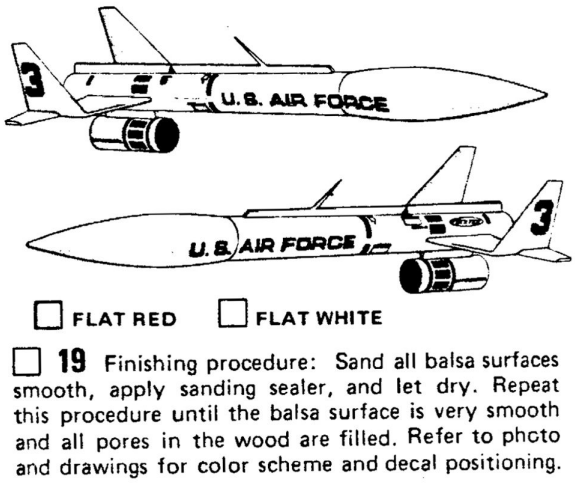

Figure 2: EAC Firecat Step 19

But the prototype drone shown in our earlier Photo 1 is decidedly orange-red, as were most of the target drones that surfaced in my online search. Most prototypes appeared to have been painted with a high-vis orange of some kind – fluorescent or Day-Glo orange, various shades of bright orange, still others with an orange-red resembling International Orange. As well, many of the RPVs were finished with a satin to glossy finish. So, I decided I'd go in this direction.

My paint search returned two viable lacquer choices, both airbrush-ready right out of the bottle. Photo 10 shows the products.

Photo 10: Orange-Red Lacquer Choices

The one on the left is Mr. Paint's MRP-002 Insignia Red (Artic Camo) while the one on the right is Tru-Color's TCP-1210 FS12197 International Orange. Mr. Paint is manufactured in Slovakia but is available in the US at several online sources; Tru-Color is produced right here in the USA. For this build, I opted for the Tru-Color International Orange. But before this could be airbrushed, I first had to decide how best to realize the ramjet roll pattern.

Ideally, the roll pattern would be an opaque decal, something with a white background deep enough to preclude any discoloration from the bright underlying paint. Unfortunately, I was unable to find a printer settings mix on my LaserJet that would produce an acceptable result on white decal film. So clear decal film it would have to be. But that meant a white section would have to be masked on the ramjet tube before airbrushing the International Orange. But what size?

As provided on the K-48 sheet, the Bandit roll pattern is sized to wrap around a BT-55 tube; here, it will be applied to a smaller BT-48 (Semroc ST-8F28) tube that also has a physical appliance (the ramjet tube support pylon) stuck on it. Doing the math and subtracting the thickness of the 3/32" pylon returns a roll pattern circumferential length of 2.80". As a crosscheck, I wrapped a strip of paper around the ramjet tube and marked where the paper met the joint on each side of the ramjet pylon. When compared to the pattern on the K-48 Bandit decal sheet the circumferential length turns out to be ten roll pattern bars almost exactly. Again, just to emphasize the point, this result correlates to the BT-48/SEM-ST-8F28 ramjet tube; the result will be different should a different tube (e.g.: BT-50) be substituted for the ramjet.

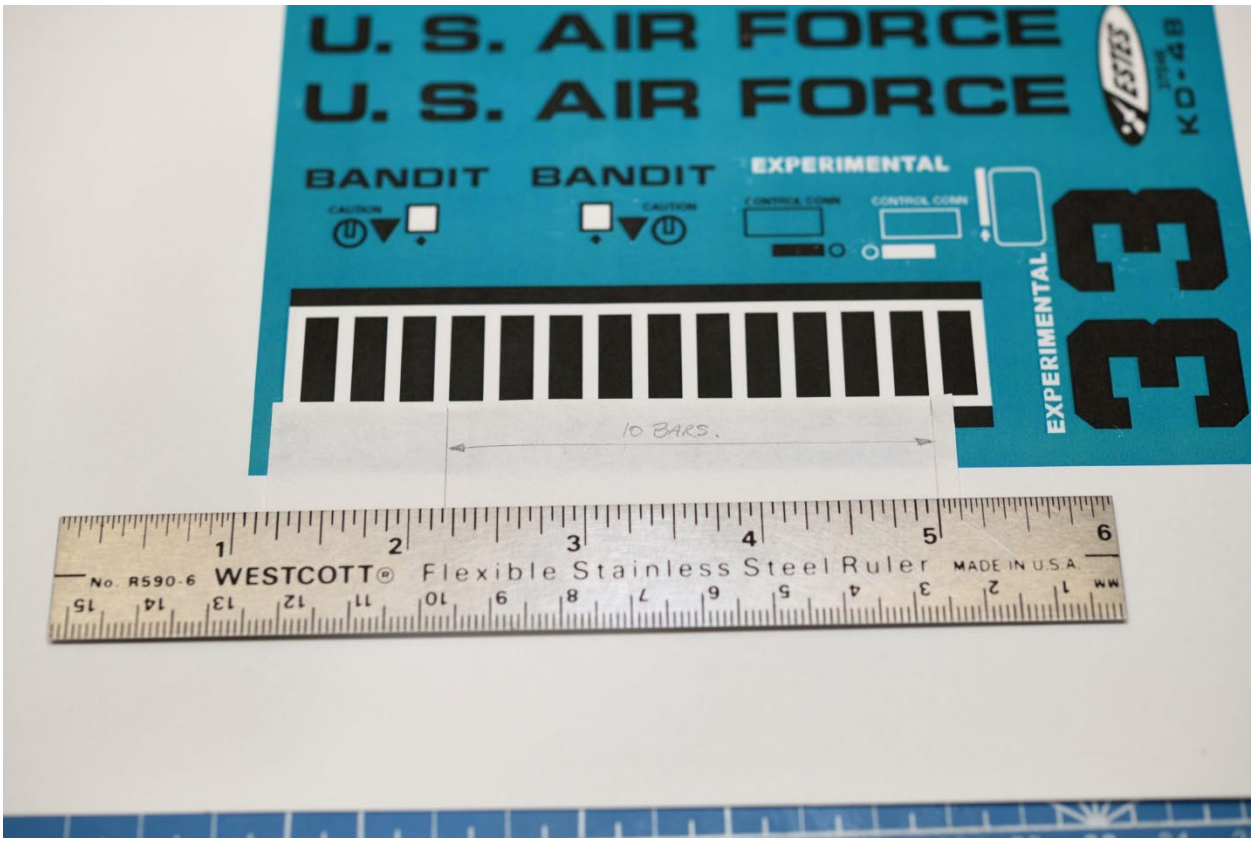

Photo 11: Ramjet Roll Pattern Length (BT-48)

Armed with this info, and with some careful measurements taken from the K-48 Bandit decal sheet, I worked up a reproduction roll pattern in TurboCAD. Figure 3 illustrates the result.

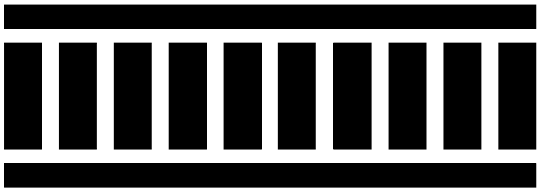

Figure 3: EAC Firecat Ramjet Roll Pattern (for BT-48)

A precise mask was cut to size from a Tamiya masking sheet and placed on the ramjet tube; airbrushing followed thereafter.

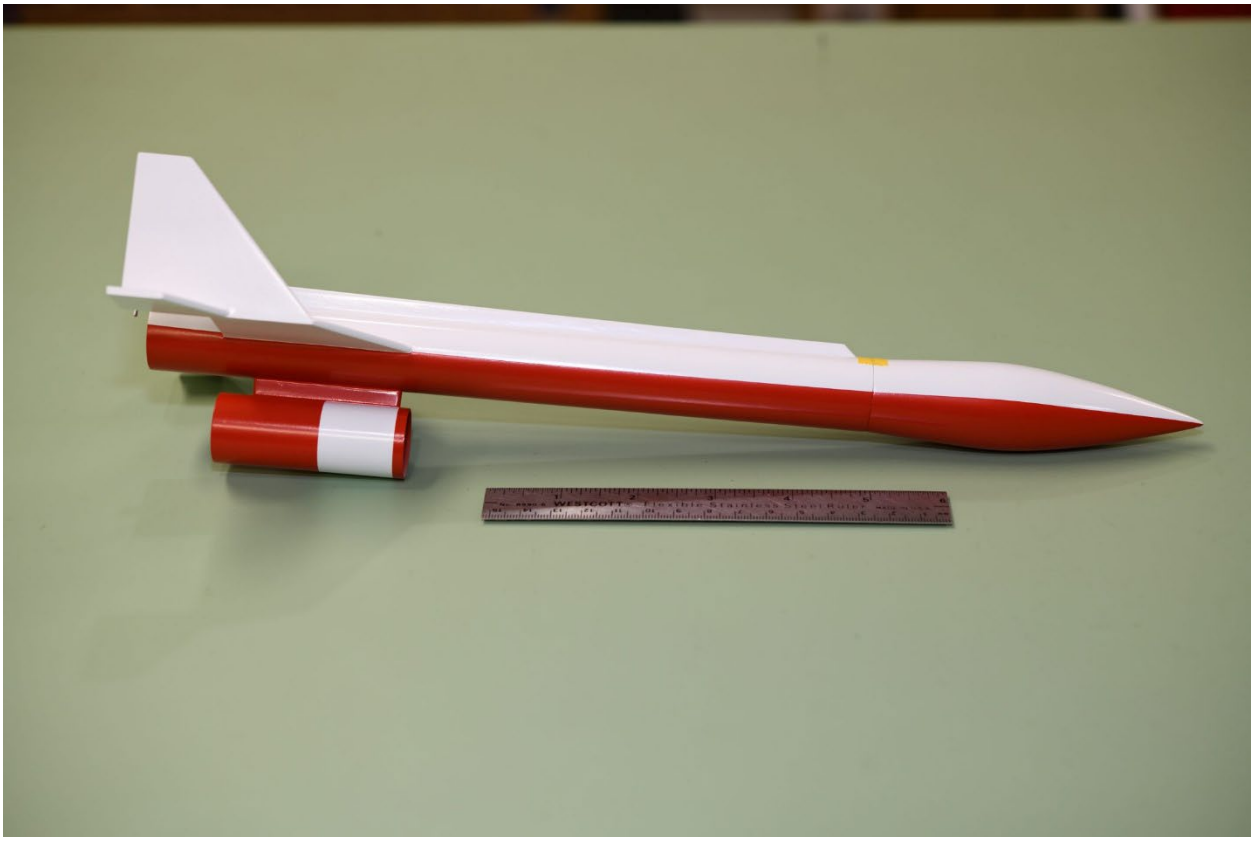

Photo 12: Painted Underside

Once the underside had cured the model was re-masked so that the rudder tips and winglets could be airbrushed with GSI's Mr. Color #329 FS13538 Yellow. Once dry, the model was re-masked again so that the wing assemblies could be airbrushed with GSI's Mr. Color #2 Black. But before spraying the black I first cut and placed a Tamiya mask for the big number "3" found on the outboard side of the rudders/vertical fins. With the black spray complete, removing the masking revealed the painted-but-as-of-yet unmarked model.

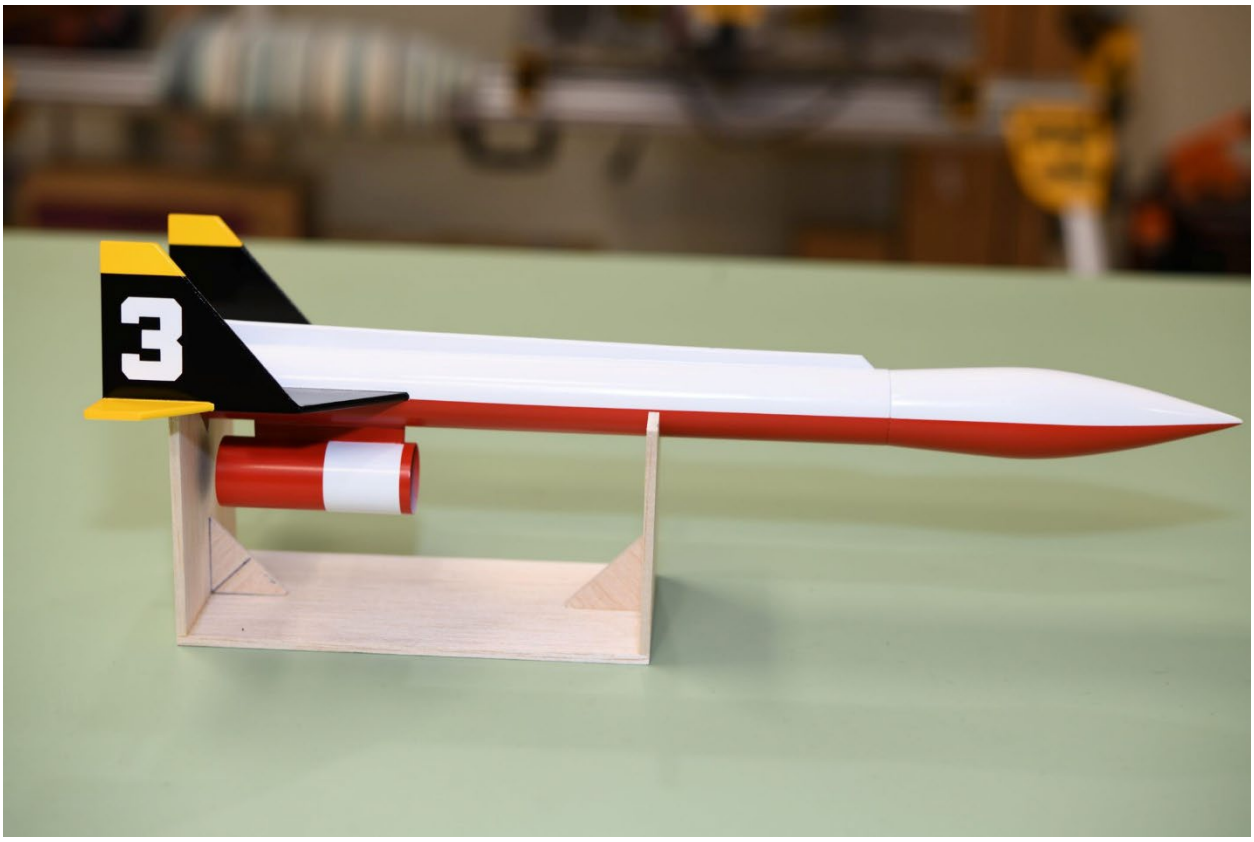

Photo 13: Paint Complete

We're on the home stretch now - time for the markings.

Decals and Finish

As noted earlier, the kit borrowed the decal sheet from Estes' #1248 Bandit. Since we're waiting on the paint to dry, let's take a moment to compare the available aftermarket decal offerings to the original Bandit sheet.

Rummaging about in my spare decals file I found a reproduction Bandit sheet produced by Phred while he still owned Excelsior Decals (pre-Gordon). Crisply printed and still in excellent shape after all these years, these markings could be used to finish the model. However, a close comparison revealed the font used for the "U.S. Air Force" decal was not an exact match to that found on the Estes Bandit sheet.

The Bandit sheet offered by Semroc (eRockets) does appear to provide an exact match for the Air Force font, however the righthand "**CONTROL CONN**" hatch marking (the white one) isn't provided on that sheet. The sheet offered by CMR Products (formerly Tango Papa) does an excellent job with the various hatch and symbol markings (in both black and white), but the Air Force decal font is not a close match. Apart from these minor fidelity issues each of these decal products are crisp, well-produced, and would finish the model very nicely.

That said, I thought I'd see if I could track down text fonts that would match those used on the Estes Bandit sheet and take a stab at making my own markings.

An extensive sifting of the internet netted the following matches (at least to my eyes):

- "**U.S. AIR FORCE**": Microgramma Pro Medium Extended
- "**EXPERIMENTAL**": LCt50 Regular
- "**CONTROL CONN**": Giuconda Extra Bold Regular

I had to experiment with the point size and kerning in each case to arrive at markings that matched the size and layout found on the Estes Bandit sheet.

For the vertical fin's big number "3", my online search for a matching font came up empty. It may be that this marking was unique to Estes - perhaps it was drafted, or hand-adapted from a root font, by their graphics department (note that the same number "3" marking was/is also used on the K-55/#1255 Goblin). For my clone I redrew the number "3" in TurboCAD, taking careful measurements of the mark directly from the Bandit sheet. This image was then vectorized and used to cut the paint mask mentioned at the end of the earlier Paint section.

Figure 4: The Estes "3"

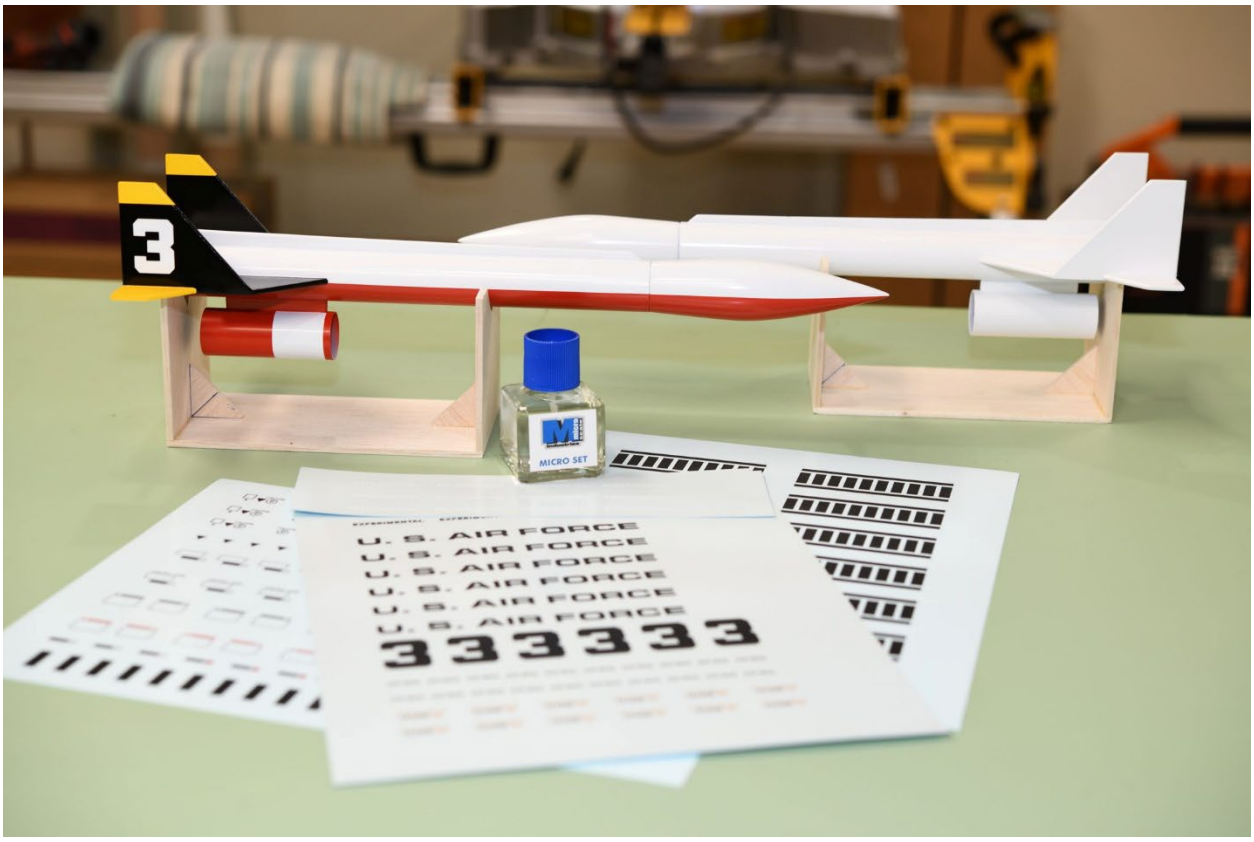

Photo 14: Decals and Markings

The ramjet roll pattern, text and colored markings were printed on Bare Metal Foil's Expert's Choice clear laser decal film with an HP LaserJet printer; the white markings were printed on the same paper type with an ALPS MD-5000 dry ink printer. No overcoat was sprayed on the markings before placement, and each was placed on the model with MicroScale's Micro Set decal setting solution.

Looking back at our earlier Figure 2, the sharp-eyed reader will have noticed the Estes logo from the K-48 Bandit sheet placed on the top port side of the aft end of the model. That indeed seems to be an appropriate place to locate a manufacturer's mark, but rather than using the Estes logo I wanted to go with something reflective of the Firecat's lineage. So, for this I worked up a Vashon Industries mark. These additional markings were likewise placed with Micro Set.

Photo 15: Manufacturer's Mark

Once the decals were dry the model was wiped down to remove any remaining decal setting solution residue, taking care not to scratch or scrub the markings, and was then airbrushed with GSI's GX100 Super Clear III. The antenna, trimmed in red, was inserted into its raceway mounting hole. With this detail set in place the Firecat was complete.

Photo 16: The Estes #0821 EAC Firecat

And there you have it; an Estes EAC Firecat, fresh from the factory and ready for its first mission.

The EAC Firecat proved to be as advertised – a fun and challenging build – and an opportunity to revisit some old model rocket history. I hope you found this article of interest, and as always, best of luck with your cloning efforts!