

## activity three

### *The SR-71 as a Simple, Fun, Foam Flying Machine*

#### OBJECTIVE

To give the senior member an easy, yet fun activity that can be built for about 30 cents and will give the entire squadron an evening of fun. It is also a test of some most unusual flying skills.

#### BACKGROUND

Activity Two gave a good background on the incredible Blackbird so let's get on with the construction of this remarkable flying "sorta scale" aerospace craft.

#### NATIONAL SCIENCE STANDARDS

##### Content Standard B: Physical Science

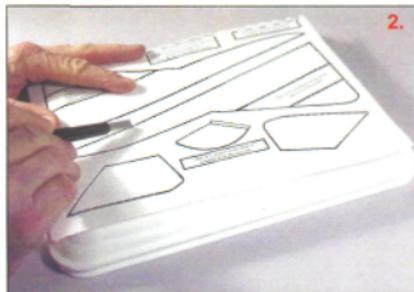
- Motions and forces

##### Unifying Concepts and Processes

- Evidence, models, and explanation

#### MATERIALS

The builder will need a piece of pipe foam tubing that is designed to insulate a 3/4 inch copper tube. It has been found that the fuselage, if cut to 14 inches, will fly the best with most of the weight in the rear. For template purposes, the builder will use a meat tray that is larger than a sheet of paper. This meat tray will become the wings and fins. Pointed drinking cups were used to make the nacelle inlet cones and the launch mechanism is made from a #64 rubber band and two nylon cable ties.



#### PROCEDURE



1. The foam tubing is cut to a length of 14 inches. This seems to be the length that flies the best.

2. The template is used to cut out the meat tray foam parts. Do that now (see page 21 for template).

*The wings and fins template is placed down on the foam meat tray as shown. It has been found over the years, that spraying the backside of the template with a low-tack glue, like "Elmer's" Spray glue, makes it easier to trace and cut. Just be careful when cutting the foam tray - we recommend either a snap-knife (shown) or an X-Acto knife with a #11 blade.*

3. A piece of sandpaper glued to a flat surface, like a paint stirring stick, works well to dress the edges of the foam pieces.
4. The inner wing is glued using a hobby hot glue gun.

**5. NOTE: DON'T USE THE HOBBY HOT GLUE ON THE BLACK FOAM TUBING. IT WILL BURN RIGHT THROUGH IT. THE WHITE FOAM MEAT TRAY TAKES THE HEAT MUCH BETTER.**

6. Now cut out the nacelles. These should be about 6 inches long or the same length as a pop can.



7. The nacelles are then glued to the outward edge of the inner wing panel.

8. The small wing tips are now glued to the outside edge of the nacelles.



*Hot glue works on white Styrofoam® but not well on black foam tubing. Note this glue gun is about out of glue. This would be a good time to reload with a new glue "slug."*

9. The fins are glued into position at this point. Note that they slant inward.

10. Okay, it's time to install the "powerplant." Using a cable tie, wrap it through a #64 rubber band. Cinch it down to about a one inch diameter and cut off the remaining "tail."



*This seems to work well...put a cable tie through the rubber band and cinch it down to about an inch diameter. Cut off the tail and insert it into the open end of the foam tube.*

11. Stick the cable tie and rubber band into the open end of the fuselage. Leave about 1.5 inches of rubber band sticking out.

12. Take another cable tie and wrap it around the nose...back about 3/8ths of an inch.



*The outside cable tie is mounted about 3/8ths inch back from the opening. This will then be cinched down very tight to keep the rubber band and inner cable tie from coming out during launch.*

13. With a strong tug, cinch this outer cable tie down hard. This will keep your inner rubber band and cable tie from slipping through.

14. Trim the tail off the fuselage tie and IT IS A SAFE PROCEDURE TO PUT A BLOB OF HOT GLUE

WHERE YOU TRIMMED THE TAIL OFF THE TIE. NYLON CAN BE SHARP AND IT'S BEST TO COVER THIS UP WITH THE HOT GLUE.



*After cutting the "tail" off of the cable tie, it is a good idea to put a blob of hot glue on the cut off point. Nylon can be sharp and it can cut!*

15. If you wish to install the pointed nacelle tips, use the ends of two drinking cups and hot glue into the nacelles. If you can't find the pointy cups, simply make cones by folding paper.



*The nacelle points can be made from drinking cups.*



*Here they've been installed with hot glue.*

## THE SR-71 CONSTRUCTION ILLUSTRATION.

This illustration shows how all of the pieces are to be placed. Use this as a guide along with the how-to sequence of images.

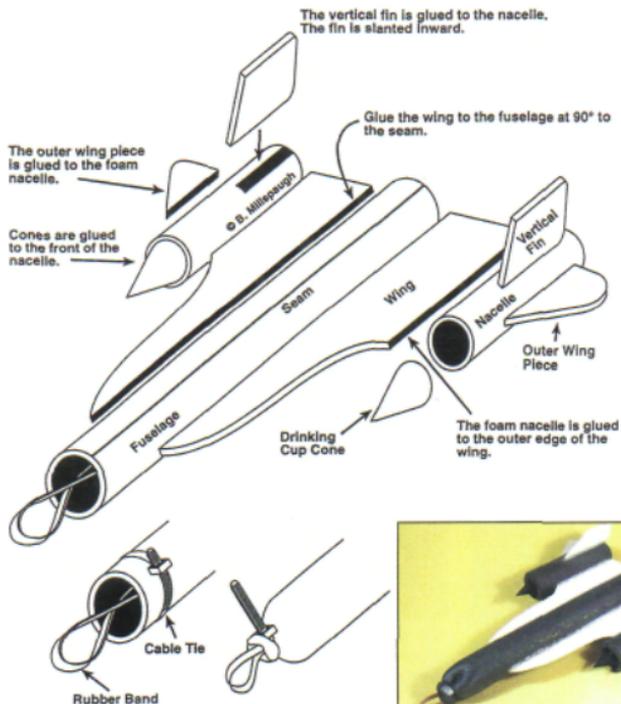
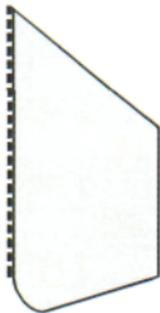


Illustration by Seth Stewart 2000

### TO FLY THE SR-71

- Put one thumb into the "tailpipe" and hold firmly.
- Put the other thumb into the rubber band. Stretch the rubber band to about 4-6 inches.
- When you launch the SR-71, pitch outward in a slight arc.



### SR-71 TEMPLATE

The dashed lines indicate where hot glue is applied

