

ACTIVITY 6.02
WE HAVE LIFT OFF



Sikorsky

A United Technologies Company

5th ANNUAL
HELICOPTER
2050
CHALLENGE

Name _____

Date _____

ACTIVITY OBJECTIVE: In this activity, kids demonstrate and observe the key aerodynamic principles of thrust (the force that moves an aircraft or other object through the air) and lift (the force that overcomes the weight of an aircraft so it can rise in the air) by creating and operating a simple and safe “potato rocket launcher” that uses the power of compressed air to propel small pieces of potato into “space” (actually a short distance into the air). We like to call these potato projectiles “spud-niks” in honor of both the potato’s nickname (spud) and the first space satellite, Sputnik.

TIME REQUIRED: 15 minutes

MATERIALS NEEDED:

- 4-foot length of $\frac{3}{4}$ ”-diameter electrical conduit (Electrical Metal Tubing, or EMT) for each launcher
- 4-foot length of wooden dowel (just under $\frac{3}{4}$ ” in diameter, so that it barely slides inside the tubing) for each launcher
- bag of potatoes



WHAT TO DO:

You can choose to conduct this outdoor activity using just one launcher, with participants taking turns “launching” their spud-niks into the air; or you can divide the group into teams of two and distribute enough lengths of tubing (conduit) and dowels for each team to operate its own launcher.

Either way, have kids load their launchers by holding a potato against one end of the length of tubing and whacking it a few times with the palm of the hand, jamming a cylinder of spud into the opening. After the tubing has cut clear through the spud, they can pull the potato up and off the tube, leaving a nice plug of spud in the “launcher”. Repeating this procedure on the other end will leave the launcher fully loaded.

For each launch, have a kid force a dowel a few inches into one end of the tube, placing the other end of the dowel against the ground. Making sure that they keep their feet clear of the dowel, have each “launch captain” pull the tube down toward the ground quickly; the upward action of the dowel forces compressed air against the plug of spud, producing thrust that pushes it out of the tube and launching the spud-nik into the sky.



EXTENSION:

If you have the time and outdoor space required (as well as the resources to provide each team with a launcher of their own), you might use the potato rocket launcher as the basis of a “Spud-nik Derby” competition in which two-person teams of kids compete to see whose spud-niks can fly the highest and the farthest. Teams can even personalize and decorate their launchers if they wish.

