

## Electrical Lights

### Activity Objectives

- To apply principles of circuitry to the wiring of a model aircraft
- To become familiar with the clearance lights and lighting patterns used on aircraft

### Materials

- ✓ Model plane (preferably built by the student)
- ✓ Several feet of light wire (18 gage or less)
- ✓ Small flashlight bulbs (at least three per plane, some students may use as many as seven)
- ✓ Thin paint in red and green (used to paint the bulbs)
- ✓ Toggle switches (optional)
- ✓ Two 1-1/2 volt dry cells per student
- ✓ Aircraft lighting specifications (available from aircraft dealer/company) or a picture of an aircraft showing the lights

### Instructions

1. Have students investigate aircraft lighting patterns.
2. Have students draw a wiring diagram of the system they propose to use.
3. Have the students install the external lights on their scale model. These may include the wing clearance lights, the taillight, fuselage light or rotating beacon (a flashing light can be used here) and landing lights.
4. Have the students arrange their wiring so that all of the wires are inside the aircraft and not exposed.
5. Have the students prepare to discuss the position and purpose of each of the lights used in their system.

### Extension

Depending on the equipment you may have in your classroom, have the students compute the ohms and amperage of their circuits comparing the value of parallel vs. series circuits. If the

students use a flashing bulb to represent the rotating beacon, they may investigate the properties of “bi-metal” strips.

Note: a number of tiny bulbs are now on the market, which will enhance the aesthetic quality of the finished product.