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TO: South Dakota Aeronautics Commission

FROM: Jack Dokken, Program Manager
Office of Air, Rail, and Transit

DATE: April 18, 2017

SUBJECT: Discovery Center Aviation Day funding request

The Pierre Discovery Center built a small wind tube for Aviation Day, held January 25th. The wind tube was built to demonstrate airflow over various objects. While this wind tube was a fairly simple one, the Center intends to build a more elaborate one for next year's Aviation Day.

Pierre Discovery Center is asking for a donation of \$500 to cover the cost of building a permanent wind tube. The letter from the Discovery Center is attached.

Dr. Rhea Waldman
Education Director
SD Discovery Center | 805 W Sioux Ave | Pierre, SD 57501
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South Dakota Aeronautics Commission

Office of Aeronautics
Department of Transportation
700 E. Broadway Ave
Pierre, SD 57501

January 5, 2017

Wind tube proposal for SD Discovery Center

The SD Discovery Center is planning to build a vertical wind tube for our annual Aviation Day, which will be incorporated into our standing exhibit after the event. A wind tube is a vertical wind tunnel that allows visitors to explore moving air with paper airplanes, or other everyday objects (see example picture). It can be built with simple materials such as a clear plastic tube on top of a drum fan. This activity allows for the air flow to be constrained enough to be predictable in the ways in which it affects materials. The response of paper airplanes and other common objects to turbulent air flow can be explored in the wind tube. This is a playful and inventive way for our visitors to explore airflow, drag, symmetry, turbulence, air resistance, and gravity. By making observations about the ways in which an object behaves in the air tube, new designs can be realized, constructed, and immediately tested. Although everyone is exploring similar scientific concepts, the experiments vary widely because of all the possible ways of changing the variables, such as weight, shape, and surface area of the objects.

An example of a wind tube comes from the Tinkering Studio at the Exploratorium (The Museum of Science, Art and Human perception, San Francisco, CA). Their freely available building instructions for a simple wind tube can be found in the attached document "Wind_Tubes.PDF".

We anticipate the material and building cost to be around \$500.00 and would be grateful for a contribution from the SD Aeronautics Commission.

Thank you for your consideration.

Sincerely,

Dr. Rhea Waldman





Wind Tubes

Wind tubes are a playful and inventive way to explore the effect that moving air has on objects, including constructions made from everyday materials. It's fun to make things that fly out of or float in the tubes, and to adjust them to change the way they fly.



“This was an extremely friendly activity. You don’t have to build something to start; you can just grab an object and test it out.”

Workshop Participant



PIE Institute shares a playful and inventive approach to teaching science, art, and technology.

