



Sept. - Oct. 2004

News

AEROSPACE EDUCATION

Inspiring Students to Excel



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If you have news, events, or ideas we might consider for the newsletter, please submit them electronically to jstone@cap.gov.

AEM MEMBERSHIP OFFERS MANY BENEFITS

Many useful benefits can be gained by becoming an Aerospace Education Member (AEM). You may recognize most of them if you are an AEM, but you may not know of some. Maybe a friend would like to share in the wonderful benefits you are receiving by belonging to Civil Air Patrol. These benefits include:

- AE News (bimonthly newsletter)
- E-News (monthly, subscribe on website)
- Participate in the award winning Aerospace Education Excellence Award Program
- Free or low-cost continuing education credit (Example: Earn 10 contact hours or 1 hour of college credit for participating in the AEX program)
- Free national standards-based aerospace educational materials developed especially for AEMs
- Low-cost aerospace textbooks:

6-module set ideal for use in middle school programs and *Aerospace: The Journey of Flight* textbook for use in high school programs

- Scholarships for teachers interested in aerospace and aviation careers
- Purchase low cost aerospace educational materials through CAPMart
- Eligible for up to \$250.00 in grant money through CAP and the Aerospace Education Foundation
- Eligible for CAP Affinity Visa. Each time the card is used, CAP receives a royalty from MBNA.
-and much more.

Share the AEM experience with a friend! AEM application online at: www.cap.gov. See Aerospace Education home page #2.

LATEST ON THE QUEST FOR THE X-PRIZE!

On June 21, 2004, the American SpaceShipOne Team, led by Burt Rutan, succeeded as being the first privately financed, manned ship to travel to space. This accomplishment is a milestone in the plan to win the \$10 million ANSARI X-PRIZE competition. The team that wins the ANSARI X-PRIZE is expected to create a safe, reusable, cost effective spaceship able to carry three individuals to an altitude of 100 km (62 miles), bring them safely back to Earth and make the flight again in the same spaceship within two weeks.

The Scaled Composites' SpaceShipOne flight in June was



American SpaceShipOne

not a qualifying flight for the ANSARI X-PRIZE because it carried only one person. However, this flight did help prepare the team for subsequent flight attempts later this year. To find out the latest on the race for the ANSARI X-PRIZE competition, go to www.xprize.org.

Midwest Products and CAP - Committed to Excellence

Written by Mary Kaitlin Dozier
 Summer Intern
 National Headquarters Civil Air Patrol

Safety, ethics, integrity and respect are standards shared by Midwest Products Co., Inc. and Civil Air Patrol (CAP). CAP and Midwest Products have worked together for a number of years to educate students about aerospace in new and interesting ways. CAP provides the classroom with educational literature while Midwest Products manufactures kits for hands-on projects. In the past, CAP and Midwest Products have participated together in various teacher events, such as Civil Air Patrol's National Conference on Aviation and Space Education (NCASE) and Experimental Aircraft Association's (EAA) AirVenture. In March of 2004, NCASE was held in Atlanta, Georgia. Midwest Products conducted a break-out session that instructed teachers on a balsa airplane activity to use in their classrooms.

Midwest Products began as Midwest Model Supply, a hobby store in Chicago. In the 1940s, Midwest Products was founded because of the rate of growth of the manufacturing division of Midwest Model Supply. In 1960, Midwest Products, now located in Indiana, became an individual business. Today, Midwest Products continues to supply CAP and many other businesses and educators with quality materials for educational and enjoyable projects. Midwest Products provides kits for items such as wooden airplanes, gliders, racecars, and other buildable objects. Their catalogue includes kits and supplies for many different aerospace activities, as well as materials to assist with home-schooling. The company also spends a lot of time and energy on volunteer work-



Midwest Products sponsors workshops that help educators and students learn more about aerospace education.

shops for organizations such as Boy Scouts, Girl Scouts, and 4-H, and they hold numerous teacher workshops. In these workshops, students can learn about aerospace with intriguing hands-on programs, and teachers are given tips on how to make learning about aerospace fun and creative in their own classrooms. Teachers and students alike praise Midwest Products for the workshops that make aerospace education exciting.

CAP and Midwest Products are combining their efforts to continually research different ways to present aerospace throughout the U.S. CAP literature is displayed in Midwest Products' catalogue, and Midwest Products has educational activities at CAP-sponsored events. Together, they are providing knowledge about aerospace to a wide variety of people and are dedicated

to guiding today's youth to be tomorrow's aerospace leaders.

Regarding the CAP partnership, Sue Burney (President Midwest Products) stated, "We are honored to work with the Civil Air Patrol. Together, through aviation, it is our mission to teach and guide our young people so they can experience the pride of accomplishment and the thrill of success."

Editor's Note:

Mary Kaitlin Dozier is a fifteen year old sophomore from the state of Kansas who desires to be a journalist.

We wish to thank her for her hard work this summer. She assisted in everything from preparing materials for the AEO School to writing this article. We truly enjoyed having her as part of our AE staff.

IN THE AEM SPOTLIGHT...CINDY CORLETT

Have you ever created your own "rock" and roll CD cover, mined for chocolate chips, created a mineral mobile, designed and taught science lessons to second graders, created a "pizza" earth, traded dinosaur cards, or written a volcanic resume? The students in Cindy Corlett's classes do all of these things and much more with amazing results! Her science classes are filled with "hands-on and minds-on" opportunities for learning and having fun in the process.

Teachers at every level of her education inspired Cindy Corlett to become a middle school science teacher. After 14 years of teaching, she is inspired by the energy that her students bring to class and still finds each day an exciting adventure!

Cindy joined the Civil Air Patrol three years ago after learning about aerospace education opportunities at a Colorado Gifted and Talented Workshop. Since her introduction to Civil Air Patrol Aerospace Educator Membership, Cindy has provided aerospace activities and resources for her students. She has since taken her students to the "Wings Over the Rockies" aerospace museum, sponsored team wide Air Shows, participated in the "Student Signatures in Space" program, co-created an interdisciplinary unit on the 100th Anniversary of (heavier than air, sustained) Flight, sponsored team-wide rocket launches, and more. One of her students, Frank Scharnell, was selected as the Rocky Mountain Section of The American Institute of Aeronautics and Astronautics (AIAA) 6-8th grade division winner of the Wright Brothers First in Flight art contest.

In October of 2003, Corlett was honored with being selected as a National Milken Family Foundation



Educational Award Winner for her outstanding contribution to the education of children. Dubbed the "Oscars of Teaching" by Teacher Magazine the Milken National Educator Awards were created in 1985 to reward, retain, and attract the highest caliber professionals to our nation's schools. The annual award is given to approximately 100 teachers nationally.

Cindy is a Nationally Board Certified Teacher in the area of Early Adolescent Science. She also received the Vincent J. Marteka Jr. Award for science teaching from the National Middle Level Science Teachers Association and the Weekly Reader Corporation.

Earning an undergraduate degree in Science Education from the University of Northern Iowa,

Corlett later earned her Master's Degree in Curriculum and Instruction from Concordia University in River Forest, Illinois.

She has been published many times in *Science Scope*, a journal for middle level science teachers. She has also received several science and technology grants to supplement activities and supply materials for her classroom and school. Cindy often presents on a variety of teaching topics at local, state, and national conferences.

Cindy Corlett currently teaches 8th grade science at Sierra Middle School in Parker, Colorado. She credits many of her accomplishments to the support from her wonderful husband, John, and her two beautiful daughters, Megan and Molly.

IN THE AEO SPOTLIGHT... Major Cynthia Whisennand

Major Cynthia Whisennand is the Director of Aerospace Education for Texas Wing Civil Air Patrol. Prior to becoming the DAE, she was the Aerospace Education Officer (AEO) for the Dallas Composite Squadron and AEO for Headquarters Group 4, Texas Wing.

Major Whisennand joined CAP in 1997. Her CAP awards include the Yeager Award, Master Rating in Aerospace Education, Garber Award, Senior Emergency Services Rating, Air Search and Rescue Ribbon with two bronze clasps and fourteen Search and Rescue finds. With Major Whisennand's assistance, the Texas Wing earned a First Place for Southwest Region and Third Place nationally for the CAP Aerospace Education Mission Award.

Cynthia earned a BA in Elementary Education from Southern Methodist University and a Master of Library Science from the University of North Texas. She has over 23 years teaching experience at both elementary and high school levels. Currently, she is the school librarian for MacArthur High School, Irving ISD, Irving, Texas.

Major Whisennand attended Space Academy in Huntsville, AL, in 1988, NASA Educational Workshops for Elementary School Teachers (NEWEST) in 1994 at Stennis Space Center, MS, and the CAP National Aerospace Education Officers Academy in 2001. She has been responsible for AE presentations for Cadet Encampments, Aerospace Education Officer Workshops, Boy Scouts of America, Girl Scouts of America, and schools. In December 2003, she worked with The Science Place in Dallas, TX, to promote the Centennial of Flight through the "Microsoft Wright Flyer Simulator"



and "At the Controls: The Smithsonian Looks at Cockpits".

In addition to volunteering her time for CAP, Cynthia has been active as a Boy Scouts of America Leader, Young Astronaut Leader and Coordinator, Girl Scouts of America Leader, and an amateur radio operator.

Cynthia is married to Lt Col Dietrich Whisennand, CAP and has one son, C/1LT Matthew Whisennand. The Whisennands have built a full size, portable simulator of the Space Shuttle for launch, landing and on-orbit simulations. They have used the simulator for summer camps, schools, Scouts, church and CAP missions. On-orbit missions are tailored for the specific mission plan and time available. Cynthia and her husband were just named Solar System Ambassadors for 2004. Recently, Cynthia was a staff member at the CAP National Aerospace Education Academy in Oshkosh, WI (see story that follows).

2004 National Aerospace Education Academy

By Cadet 1st Lt. William Boyd III
Rhea County Composite Squadron,
Tennessee Wing

WISCONSIN -- Twenty-two cadets from across the country attended



the second annual 2004 National Aerospace Education Academy held in Oshkosh, WI. June 13-20.

Cadets attending the week-long event experienced building airplanes, touring a DC-3 conversion factory, and building and launching model rockets. They also attended workshops and seminars in aerospace science and its applications, led by activity director Maj. Phil Holbrook of the Kentucky Wing Headquarters Squadron.

The students began each day with a mile run, as well as a flag ceremony, followed later by model rocketry workshops allowing them to earn their model rocketry badges. One morning the cadets attended a robotics and Mars exploration class led by 1st Lt Tim Skloss with Wisconsin Wing's Waukesha Composite Squadron.

The class also included a demonstration by the Wisconsin state champion Lego robotics team. The students also participated in a hot air balloon familiarization course led by the Academy's Dean of Academics, Lt Col Mike McArdle.

Students spent the afternoons participating in a variety of activities including aircraft building projects led by Experimental Aircraft Association instructors. The cadets constructed sections of fabric, sheet metal, and composite aircraft, as well as wing ribs. They were also

(continued on Page 7)

AEO/AEM NEWS AND VIEWS



Aerospace Education Foundation Grants

The Aerospace Education Foundation (AEF) of the Air Force Association continues to provide outstanding support to Civil Air Patrol's aerospace education mission. We share the common belief in the importance of aerospace education to our country and AEF backs up that belief by providing grants to CAP units and educators who promote aerospace education. AEF has provided over \$110,000 to CAP to help fund our aerospace programs. AEF grants must be used for aerospace-related activities and cannot be used for flying instruction, honor guard, color guard or buying uniforms. A grant request cannot exceed \$250.

Our last CAP Unit Grant cycle ended June 30, 2004. The winners are listed at the end of this article. Our next cycle is for educators (aerospace education members/school teachers) and will end September 30, 2004. Applications are due before this deadline. Please visit our website, download and complete the application form, and send it to us.

As a reminder to the recent CAP Unit winners, please fill out the feedback form that was sent to you and return it to CAP/LMA. We will send the feedback to AEF to show them how the grant was used. We believe this is a small way of saying thank you to AEF.

Here are the Summer 2004 grant winners:

- 169th Composite Sq - CT
- 184th Composite Sq - IN
- Arvada Cadet Sq - CO
- Bartow-Etowah Composite Sq - GA

- Clay County Flight - AL
- Columbus Composite Sq - GA
- Coral Springs Cadet Sq - FL
- Florida Wing Group 3- FL
- Florida Schools Group 800 - FL
- Jesse Jones Composite Sq - PA
- Lee County Middle School Cadet Sq - FL
- Nassau Cadet Sq - NY
- Octave Chanute Composite Sq - IL
- Reading Composite Sq - PA
- Stillwater Composite Sq - OK
- Tallahassee Composite Sq - FL
- Thomas McGuire Composite Sq - NJ
- Topsail Composite Sq - NC
- Travis Composite Sq - CA
- West Richmond Cadet Sq - VA

Aerospace Education Officer's School

The 3rd annual AEO School was held in Pensacola, Florida, June 24-26, 2004. Twenty-six DAEs and AEOs gathered in Pensacola and discussed the latest developments and projects in aerospace education, as well as, the internal and external programs and responsibilities of CAP's aerospace education personnel. Heavy emphasis was placed on reports and procedures, especially plans of action, activity reports, compliance inspections, and awards. The Aerospace Education Membership program was discussed in detail and there was enough time for a few educational hands-on activities. The last day of the school was spent touring the Naval Museum at Pensacola and visiting STARBASE.

Students' critiques were very complimentary of the school's content and highly recommend that we continue this school every year. Many of CAP's current DAEs have attended this school. This year's class also included many AEOs. We expect that trend to continue and want to make sure that every-

one knows this school is for both DAEs and AEOs.



Brewer Award Winners are: (top left) C/1LT Elizabeth M. Dumont; (top right) Ken W. Hyde (*The Wright Experience*), and (bottom) Maj John J. DeGiantomasso.

The Frank G. Brewer - Civil Air Patrol Memorial Aerospace Awards

Established on December 31, 1959, the Frank G. Brewer - Civil Air Patrol Memorial Aerospace Awards recognize individuals and organizations that have made outstanding contributions to the advancement of youth in aerospace activities.

The awards serve as a memorial to Mr. Frank G. Brewer, Sr., for his lifelong interest in aviation, youth, and education. Recognitions are given in four categories at both regional and national levels. Three of the four categories were awarded this year. The winners are:

- Category I - Civil Air Patrol Cadet Member - C/1LT Elizabeth M. Dumont
- Category II - Civil Air Patrol Senior Member - Maj John J. DiGiantomasso
- Category III - Individual or Organization outside of Civil Air Patrol - Ken W. Hyde and *The Wright Experience*

We congratulate these outstanding people.

(AEO/AEM News and Views Cont'd on page7)



REGION TO REGION

NORTHEAST REGION

September 17-19

The Osterburg Fall Fly-In will be held at Ickes Airport in Osterburg, PA. For more information, contact Don Ickes at 814-276-3353.

MIDDLE EAST REGION

September 18-19

8th Annual Virginia State EAA Fly-in will be held at Dinwiddie County Airport (PTB). This is a super family event and Virginia's largest fly-in. For more info visit www.vaeaa.org or call 804-358-4333.

September 24-26

NAS Oceana Air Show will be held at Naval Air Station Oceana in Virginia Beach, VA. For more details, go to <http://www.neptuneairshow.com/>

October 9

Airfest 2004 will be held at the Culpeper Regional Airport in Brandy Station, VA, from 10:00 a.m. - 4:00 p.m. For more information, call Tanya Woodward at (540) 825-8280 or visit www.culpepercounty.gov.

October 10

Sally Ride Science Festival will be held at North Carolina State University in Raleigh, NC. For additional information on this and other Sally Ride workshops for girls and adults, go to <http://www.sallyridefestivals.com/>.

November 6

United States Air Force Thunderbirds are scheduled to appear in Camden, SC. For more information, go to <http://www.airforce.com/thunderbirds/scheduletext.htm>.

November 7

United States Air Force Thunderbirds are scheduled to appear at Seymour Johnson AFB in

NC. For more information, go to <http://www.airforce.com/thunderbirds/scheduletext.htm>

GREAT LAKES REGION

September 12

Sally Ride Science Festival will be held at the University of Michigan in Ann Arbor, MI. For additional information on this and other Sally Ride workshops for girls and adults, go to <http://www.sallyridefestivals.com/>.

September 17-18

Women in Aviation will hold its Midwest Regional Conference at the Sparinghill Suites Chicago O'Hare in Chicago, IL. For additional information, go to www.wai.org/events or call 386-226-7996.

October 23

Metropolitan Detroit Science Teachers Association's Conference will be held at Lawrence Tech University in Southfield, MI. To find out more, contact Mike Mansour at mmansour001@comcast.net or log on to <http://www.mdsta.org/>.

November 4-6

NSTA Regional Convention will be held in Indianapolis, IN. For more information, go to <https://ecommerce.nsta.org/2004IND/>.

SOUTHEAST REGION

October 9-10

SunCoast Air Fest 2004 will be held at Albert Whitted Airport in St. Petersburg, FL. For more information, go to http://www.suncoastairfest.com/suncoast_airfest_web_site_002.htm.

October 20

The American Society for Engineering Education's 2004 International Conference will take place in Savannah, GA. For more information, email Joseph Hughes at joe.hughes@ece.gatech.edu.

October 29-30

An Aviation/Aerospace Workshop will be held at Hurlburt Field in the Fort Walton Beach, FL, area. For more information, contact Jeri Martin at martinj@mail.santarosa.k12.fl.us.

November 12-13

The Women in Aviation International (WAI) Southeast Regional Conference will be held in Atlanta, GA. For more information, go to www.wai.org/events or call 386-226-7996.

NORTH CENTRAL REGION

November 3-4

The Iowa Aviation Conference will be held at the University Park Holiday Inn in West Des Moines, IA. For more information, go to <http://www.iowaairports.org/conference/index.htm>.

November 11-14

The 2004 SpaceTech Experience will be held at the Cosmosphere Space Center in Hutchinson, KS, and is open to all youth ages 11-19 years of age. For more information, go to www.oznet.ksu.edu/space_tech.

SOUTHWEST REGION

October 16-17

United States Air Force Thunderbirds are scheduled to appear in Houston, TX. For more information, go to <http://www.airforce.com/thunderbirds/scheduletext.htm>.

October 23-24

United States Air Force Thunderbirds are scheduled to appear in El Paso, TX. For more information, go to <http://www.airforce.com/thunderbirds/scheduletext.htm>.

Southwest Region (cont'd.)

October 30-31

United States Air Force Thunderbirds are scheduled to appear in Lafayette, LA. For more information, go to <http://www.airforce.com/thunderbirds/scheduletext.htm>.

November 14

14th Annual End of Season Fly Day - Lone Star Flight Museum will be held in Galveston, TX. For more information, email larry@lsfm.org.

March 10-12, 2005

The 16th Annual International Women in Aviation Conference will be held in Dallas, TX. For registration and other information, go to www.wai.org/events or call 386-226-7996.

ROCKY MOUNTAIN REGION

October 27

The National School Boards Association's T+L2 Conference will be held at the Colorado Convention Center in Denver, CO. Emphasis

will be on improving student achievement through the innovative use of technology. For more information, go to <http://www.nsba.org/T+L/>

November 7-10

STEMS: Science Teaching Enhanced with Museums and Surveys, Geological Society of America (GSA) meeting session will take place at the Colorado Convention Center in Denver, CO. For more information, go to <http://www.geosociety.org/meetings/2004/>.

PACIFIC REGION

September 16-19

The Reno Air Races will be held at Stead Airfield in Reno, NV. For more information, go to www.air-race.org.

October 12-14

National Business Aviation Association (NBAA) Annual meeting and convention will be held in the Las Vegas Hilton in Las Vegas, NV. For additional information, go to <http://>

www.nbaa.org/public/cs/amc/2004/
October 17

Sally Ride Science Festival will be held at Stanford University, CA. For additional information on this and other Sally Ride workshops for girls and adults, go to <http://www.sallyridefestivals.com/>.

October 24-26

The 16th Annual International Aviation Womens Association (IAWA) Conference will be held at Mark Hopkins Intercontinental in San Francisco, CA. For more on this conference, go to

<http://www.iawa.org/pages/conference/>
November 18-20

NSTA Regional Conference will be held in Seattle, WA. For more information, go to

<http://ecommerce.nsta.org/2004SEA/>
November 20

Sally Ride Science Festival will be held at the University of California in Irvine, CA. For additional information on this and other Sally Ride workshops for girls and adults, go to <http://www.sallyridefestivals.com/>.

(2004 Nat'l Aerospace Ed. Acad. cont'd from page 4)

privileged to receive tours at multiple facilities, including the Kermit Weeks Flight Research Center, the Fox Valley Technical College Aviation Program, and Basler Aviation -- a DC-3 conversion factory.

Other afternoon activities included powered orientation flights flown by National Flight Academy pilots, the EAA Air Academy's challenge course, and tours of the EAA museum and restoration facility.

Evening events included local field trips such as swimming in Lake Winnebago, visits to Culver's -- a local diner famous for its frozen custard, and of course the occasional visit to Ardy's and Ed's -- renowned for their homemade root beer.

The academy ended with a graduation ceremony highlighted by a presentation made by Paul

Poberezny, founder of the Experimental Aircraft Association. Mr. Poberezny, one of aviation's most respected leaders, concluded an inspirational week for this year's students.



(AEO/AEM News and Views continued from page 5)

Mission Awards

The Aerospace Education Mission Awards recognize the most outstanding wing aerospace education programs in the nation and in each of the regions.

The Aerospace Education **National Mission Award winners** for 2003 are:

- First Place – Florida
- Second Place – Michigan
- Third Place – Texas

The Regional Award winners are:

- Great Lakes Region - Michigan
- Middle East Region – Virginia
- Northeast Region - Maine
- North Central Region – Minnesota
- Pacific Region – Nevada
- Rocky Mountain Region – Colorado
- Southeast Region – Florida
- Southwest Region – Texas

Congratulations to all who submitted and to the winners!

CURRICULUM CORNER - MODEL AIRPLANE WEIGHTS

This activity came from NASAexplores. To see complete instructions, go to www.nasaexplores.com.

Objective: Students will build three similar planes with different types of wood and compare the weights.

Grade Level: 9-12

National Science Standards:

Content Standard A: Science as Inquiry

- Abilities necessary to do scientific inquiry
- Understanding about scientific inquiry

Content Standard B: Physical Science

- Structure and properties of matter

Content Standard E: Science and Technology

- Abilities of technological design
- Unifying Concepts and Processes
- Form and function

National Mathematics Standards:

Measurement Standard

- Apply appropriate techniques, tools, and formulas to determine measurements.

Problem Solving Standard

- Solve problems that arise in mathematics and in other contexts.

Materials:

Student sheets, popsicle sticks, toothpicks, strips of balsa, particle board or other wood, glue, cellophane or tissue paper, scales, and scissors.

Background Information:

Weight is a force. A force is a vector quantity having both a magnitude and a direction towards the center of the earth. The magnitude of this force depends on the mass of all of the parts of the airplane itself, plus the amount of fuel, plus any payload on board (people, baggage, freight, etc.). The weight is distributed throughout the airplane, but we can often think of it as collected and acting through a single point called the center of gravity. In flight, the airplane rotates about the center of gravity, but the direction of the weight force always remains toward the center of the Earth. During a flight, the aircraft burns up its fuel, so the weight of the airplane constantly changes. Also, the dis-

tribution of the weight and the center of gravity can change, so the pilot must constantly adjust the controls to keep the airplane balanced.

Flying involves two major problems: overcoming the weight of an object by some opposing force and controlling the object in flight. Both of these problems are related to the object's weight and the location of the center of gravity.

This activity will have students building three versions of the same plane. They will measure the weight of each plane to see which one would be the hardest to get off the ground. Their planes will not be expected to fly, but they should look as though they could. The key for this lesson is the weight of the planes, not their flight quality.

Procedure:

1. Distribute materials and data sheets to each team of students.
2. Have each group design an airplane based on the fact that the design needs to be general enough so that it can be built three times using different types of wood.
3. Have students actually build the plane in class. Emphasize the need to get most of the gluing done today, so it can dry overnight.
4. Have students weigh each plane and record values.
5. Have students answer the following questions:
 - Which plane was the heaviest? Why do you think this was so?
 - Which plane was the lightest? Why do you think this was so?
 - Multiply the number of sticks used for each plane by the weight of one stick. Does this number equal the total weight? Explain.

Type of Wood	Weight of plane	Number of Pieces	Weight per piece
Popsicle stick			
Toothpick			
Balsa or Other Wood			

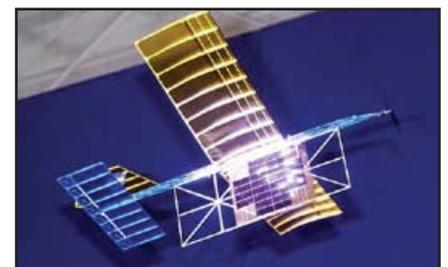
Student Data Sheet

Name: _____

1. Brainstorm with your group on how to build your airplane. The design needs to be general enough that you can build it three times using each of the different types of wood.
2. Draw a picture of your popsicle stick plane as it should look when built.
3. Draw a picture of your toothpick plane as it should look when built.
4. Draw a picture of your other wood (balsa, particle board, etc.) plane as it should look when built.
5. Construct all three planes using the wood and glue.
6. Use the cellophane or tissue paper to wrap the wings and fuselage of the plane. This will simulate the skin of the plane.
7. Complete as much of the gluing as possible today so that the glue can dry overnight.
8. When the planes are completely dry, measure their weights and record them in the chart.
9. Measure the weight of one toothpick and one popsicle stick. Record these values in the chart. Also, include the number of sticks used for each plane. If the other wood was cut into similar pieces, do this for it as well.

Extensions:

- Require each group to test its plane. This means allowing them more time to actually make their plane flight-worthy.
- Have students research the difference in plane weight based on the type of propulsion used.



NASA laser plane 1