

**Girls Exploring Science, Engineering & Technology Event
March 03, 2005**



***Girls Exploring Science,
Engineering & Technology
Event
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hosted by
The Society of Women Engineers (SWE) Rocky Mountain Section
Lockheed Martin
Junior Achievement of Rocky Mountain, Inc.
and
Agilent Technologies

Summary of Success
Final Report
July 18, 2005



Girls Exploring Science, Engineering & Technology Event Final Report

FACT SHEET

WHAT:

The third annual *Girls Exploring Science, Engineering & Technology* event, designed to stimulate and encourage girls in 6th and 7th grade to pursue careers in science, engineering and technology, included motivational speakers, hands-on workshops, volunteer mentors and educational exhibits and was hosted by Lockheed Martin, Junior Achievement, Agilent Technologies, and the Society of Women Engineers – Rocky Mountain Section.

WHEN: Thursday, March 03, 2005 from 9:00 a.m. to 1:00 p.m.

WHERE: The Adam's Mark Hotel in downtown Denver

WHY:

We want to encourage girls to pursue careers or interests in math, science, engineering, computers and technology because:

- Only 4% of Colorado girls specify engineering as a career interest on SAT tests
- A scant 1% of girls in Colorado indicate an interest in a computer science career
- Women make up 46% of the Colorado labor force but only 26% in technical fields
- Less than 10% of American engineers are women

WHO:

- 818 middle school girls (45% of the 1,800 registrations received)
- Over 99 adult chaperones (parents and teachers) and 150 volunteers attended
- 33 schools represented from 19 different school districts
- Denver Public Schools students made up 49% of total and Weld County Schools 17%
- Over 46% minority participants
- Exhibit Booths showcased 12 exhibitors from higher education, community/professional organizations and governmental/educational entities

HOW:

- 18 organizations and individuals contributed \$44,000 to cover direct expenses
- The Adam's Mark Hotel and other companies provided in-kind services valued at over \$30,000
- Sponsors included:
 - ? Lockheed Martin ? Agilent Technologies ? SWE-RMS
 - ? Junior Achievement of Rocky Mountain, Inc. ? Adam's Mark
 - ? Raytheon ? Ch2MHill ? Holme Roberts & Owen ? Hewlett Packard
 - ? IBM Women in Technology ? Merrick & Company Women Engineers
 - ? American Council of Engineering Companies (ACEC) of Colorado
 - ? Ball Aerospace ? Colorado School of Mines ? Coors ? First Bank
 - ? Jacobs Engineering ? Key Bank ? Leonard Rice Engineers
 - ? Rockwell Automation Denver Branch ? Rocky Mountain Recycling
 - ? Scanlon Consulting Services, Inc. ? Suncor ? US Bank
 - ? Washington Group International, Inc. ? Wells Fargo

IMPACT:

- In post-program survey (88% return rate), 83% of girls stated the event was fun
- Over 86% stated that they learned more about engineering/technology fields
- Over 63% indicated an increased level of interest in science, engineering, or technology careers

MEDIA COVERAGE:

- Channel 9 and Denver Post News Coverage

AWARDS:

- 2003 Corning and Exxon Mobil Career Guidance Program Awards
- 2004 Society of Women Engineers Corning Career Guidance Incentive Grant Honorable Mention

Quotes from Attendees ...



"This conference really encouraged me to try to think about what opportunities we have in life. After this day, I got really more into life with science and technology." - **Ilor, Skinner MS Student**

"I enjoyed all the activities you had and this program really put the engineering world in perspective for me. You made me realize how little women were a part of this, and how we should join together and make our mark in the engineering business." - **Sarah, Skinner MS Student**

"We loved the event. Well worth it for us, even if the drive was long. The girls are already telling their friends about it. I heard one of my students say that she always thought she would be a teacher, but after yesterday she will explore the idea of veterinary medicine or forensics! I think that is fantastic! Thanks so much!
Joni Wilson - Canon City MS Teacher

"I just wanted you to know that the girls had a wonderful time. They can't stop talking about the things that were presented. Thank you, as an educator, for providing an avenue for girls to try things that bring what we try to do in the classroom to life. Please convey my gratitude to all that helped put this event on, how much they had an impact on our girls.

Bill Leaming - Horizon MS Teacher

"...Accenture very much enjoyed volunteering for the GESET event this year. We all had a great time and found the event worthwhile. I thought you guys did a great job organizing the event." - **Lauren Bock, Accenture Resources**

"If it is true that it takes a community to raise a child, then it follows that it takes a like-minded group of school-community partners to raise an educated child...and to change status quo." - **John Appelhans, Skinner Middle School Counselor**

EXECUTIVE SUMMARY

SUMMARY OF SUCCESS

The third annual *Girls Exploring Science, Engineering & Technology (GESET)* event was a huge success. Highlights are summarized below. Planning details and statistics are included in this report.

Over 1,800 registrations were received for 825 available spaces for middle school girls. Confirmed registrations totaled 818 middle school girls. In addition, there were over 99 chaperones in attendance with the girls. These statistics are what both amaze and sadden us. We had to turn away almost twice as many girls as we could accommodate due to lack of funding.

Fundraising efforts by the planning committee raised \$44,000 from 18 organizations and individuals. Expenses totaled \$42,680. Approximately \$2,500 of funding was received after the registration deadline, thus registration was capped based on funding available at that time. Remaining funds will be held over for the 2006 event. Several companies, including the Adam's Mark Hotel and Agilent Technologies, provided in-kind services valued at over \$30,000.

The complete list of hosts, sponsors, and in-kind contributors includes: Lockheed Martin; Agilent Technologies; the Adam's Mark Hotel; Raytheon; Ch2MHill; Holme Roberts & Owen; Hewlett Packard; Merrick & Company Women Engineers; IBM Women in Technology Program; American Council of Engineering Companies (ACEC) of Colorado; Ball Aerospace; Colorado School of Mines; Coors; First Bank; Jacobs Engineering; Junior Achievement; Key Bank; Leonard Rice Engineers; Rockwell Automation Denver Branch; Scanlon Consulting Services, Inc.; Society of Women Engineers – Rocky Mountain Section; Suncor; U.S. Bank; Washington Group International, Inc.; Wells Fargo.

Over 150 volunteers provided invaluable support to the event mostly as mentors, and as coordinators and support staff. The planning committee consisted of 15 individuals from the hosting organizations.

Twelve exhibitors shared information about programs or resources for girls. The exhibitors included: Girls Inc.; Colorado School of Mines Women in Science, Engineering and Mathematics; Denver Public Schools; DeVry University Summer Scholars Program; Girl Scouts - Mile Hi Council; National Society of Black Engineers Alum, Denver Future City Competition; Project Lead the Way Kennedy High School; University of Colorado at Denver; University of Colorado at Boulder Women in Engineering Program; University of Denver Making of an Engineer Program; Women's Bureau/USDOL.

A survey was provided at the conclusion of the event. Over 88% of the girls turned in a completed survey in addition to 56% of the chaperones and volunteers. Over 83% of the girls agreed that the event was fun and over 86% said they learned more about engineering and technology careers due to the event activities. More than 63% of the girls indicated that this event has increased their interest in pursuing a career in engineering or technology. Practically all of the adult respondents (99%) agreed that the event was valuable for the students. Over 72% of the adults agreed that as a result of the event, students will be more likely to enter science, engineering or technology classes in high school.

This annual event is repeated each February-March to support National Engineers Week and the *Introduce a Girl to Engineering* Program. The hosts have already agreed to again co-host the event in 2006, as well as setting higher goals for fundraising and attendance.

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In comparison with the 2004 event, in 2005 we:

- ✓ Increased funding by 12% (\$44,000 vs. \$38,700) and increased in-kind donations by 33% (\$30,000 vs. \$20,000).
- ✓ Decreased registration requests by 22% due to eliminating 8th graders (1,800 vs. 2,200) and held attendees constant (816 vs. 818).
- ✓ Increased chaperones by 16% and held volunteers constant.
- ✓ Decreased the number of exhibitors by 29%.
- ✓ Received event coverage on the Channel 9 evening news and the Denver Post newspaper.
- ✓ Again received an award for the quality of the event – the 2004 Society of Women Engineers Corning Career Guidance Incentive Grant Honorable Mention

THE ISSUE

Girls of today are presented with gender biases and stereotypes that sometimes steer them away from careers or interest in the fields of math, science, engineering, computers and technology. We are working to change those perceptions. A coalition of organizations and businesses has come together to provide a space for girls to explore, to question, to do, and to learn. The girls walk out of this event inspired by the wonders of technology, and inspired by the incredible people who hold positions in those fields today. The girls learn about careers that support the very communities in which they live and improve our quality of life.

Participants in the workshops experienced hands-on lessons in everything from forensic science and simulations for living and working in space, to creating websites and constructing and programming computer robots made of LEGOS. (A complete list of workshops is included at the end of this report.)

Consider today's imperative:

The U.S is in the middle of an undergraduate enrollment surge; however rates of enrollment in emerging economies and populations are growing even faster at startling rates. For example, in China, rates are expanding at ten times those in the U.S. and 2/3 of Chinese students earn math, science and engineering degrees compares to about 1/3 of American students. (Source: Business-Higher Education Forum)

Over the decade ending in 2008, jobs requiring science, engineering, and technical training will increase by over 50%, representing a rate four times faster than overall job growth – as predicted by the U.S. Department of Labor. By 2008, approximately six million job openings will exist for scientists, engineers and technicians.

With women representing only 9% of American engineers, there is a significant opportunity – an actual necessity to expand, as well as diversify, the talent pool. This event represents a commitment on the part of the volunteers and team to take action that directly impacts increasing the student pipeline in science, engineering, and math.

“Having coordinated this event three times now, it still amazes me how energizing it is to work with these girls,” said Sandra Scanlon, Event Chair, Society of Women Engineers, Rocky Mountain Section. “They are so eager to learn about the opportunities available to them. It is equally satisfying to work side-by-side with tireless educators to get the message out that math and science are important for numerous careers facing future generations.”

For additional discussion and statistics on this issue, please see GESET Summary of Success Final Reports from 2003 and 2004.

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EVENT DETAILS

There were three components to the event: The **Welcoming and Opening Remarks** set the stage for what the girls could expect to accomplish and enjoy throughout the day. Three **Interactive Workshops** focused on hands-on activities and demonstrations of various areas of science, engineering and technology. Lastly, at **Lunch** everyone convened for closing remarks and door prizes. Each student received a T-shirt and a tote-bag full of information on careers in science, engineering and technology; information on necessary courses to take in high school; scholarship and career guidance information from local minority and engineering organizations; as well as pens and other give-aways.

EVENT MISSION

To combine female 6th & 7th grade students, parents, teachers, and counselors with science, engineering and technology professionals in order to create a unique learning experience for all involved and to get pre-college students excited about math, science, engineering and technology.

EVENT OBJECTIVES

- Introduce female middle school students (middle school as defined by each school district) to real world aspects of science, engineering and technology and to the many diverse fields available.
- Give female middle school students, their parents, teachers, and counselors a chance to interact with engineering and technical professionals to show engineering and technology is fun.
- Introduce networking and mentoring basics to female middle school students.
- Introduce students, parents, teachers, and counselors to the local organizations within the science, engineering and technology community and the programs and resources available.
- Provide an opportunity for local companies, their employees, and the community to come together and support students to succeed in math and science.

IMPACTS / EXPECTED RESULTS

The overall goal of the event was to introduce science, engineering and technology careers to girls who may not otherwise be exposed to role models in these careers. Additionally, the importance of math and science were explained and presented as “cool” subjects in school.

The whole event served as a source of information on science, engineering and technology for a group of students who may not have much contact with engineers or scientists, and in particular women in those fields. This will also give us a chance to expose teachers and counselors to the fact that women can become engineers and scientists, and hold jobs in technology fields. Interacting with industry can provide them with information on what courses students need to take in order to pursue a science, engineering or technology education.

SPONSOR OBJECTIVES

- Stress the importance of math and science classes in middle and high school, in order to prepare for a college major that can lead to a well-paying job.
- Give the students and professionals a chance to learn and practice mentoring, which will hopefully encourage engineers, especially women, to attain high levels of professional achievement and to become role models.
- Feed the science, engineering and technology employment pipeline.

Sponsorships were solicited from 2004 event supporters and local companies. Our senior level sponsors were: Lockheed Martin; Agilent Technologies; the Adam’s Mark Hotel; and Raytheon. Our junior level sponsor was Ch2MHill. Sophomore sponsors included: Holme Roberts & Owen; Hewlett Packard; Merrick & Company Women Engineers; and IBM Women in Technology Program. Our freshman sponsors were: American Council of Engineering Companies (ACEC) of Colorado; Ball Aerospace; Colorado School of Mines; Coors; First Bank; Jacobs Engineering; Key Bank; Leonard Rice Engineers; Rockwell Automation Denver Branch; Scanlon Consulting Services, Inc.; Suncor; U.S. Bank; Washington Group International, Inc.; Wells Fargo.

ATTENDEE SURVEYS

From the student and adult surveys, it is evident that the sponsor objectives were met. Complete reports analyzing the student and adult surveys are available separately from this report. The summaries from each of those reports are repeated below.

The Alliance for Technology, Learning, and Society (ATLAS) Evaluation and Research Group at the University of Colorado at Boulder helped to refine our surveys from last year. In addition, they administered the surveys and tabulated the results, which are included in their comprehensive reports. The major findings and recommendations will be very helpful to improve this event and provide even more targeted workshops and information to encourage girls to explore science, engineering and technology careers as well to enroll in more math and science classes.

The ATLAS Evaluation and Research Group at the University of Colorado at Boulder conducts research on increasing under-represented groups in IT disciplines. The ATLAS Evaluation and Research Group, coordinated the surveys and analysis for the *Girls Exploring Science, Engineering & Technology* event. They are the recipients of two National Science Foundation grants to study 1) curricular programs of study in higher education, in particular, the nature of learning environments in different curricular programs and 2) the types of messages and methods that can successfully persuade middle school girls to participate in computing programs of study.

The ATLAS Evaluation and Research Group at the University of Colorado at Boulder provides multidisciplinary curricular, research, and outreach programs that integrate information technology with a wide variety of disciplines and people, both inside and outside the university. They also founded the National Center for Women and Information Technology, in collaboration with the Anita Borg Institute (formerly Institute of Women in Technology), a number of universities, corporations, and the Girl Scouts of the USA (among others). (<http://www.ncwit.org>) The Society of Women Engineers has a memorandum of understanding with the Girl Scouts of the USA to support outreach activities geared towards math, science, and engineering.

STUDENT ATTENDEE SURVEYS

Based on the survey data, it appears that the 2005 Girls Exploring Science, Engineering and Technology (GESET) event was generally successful in achieving its primary goals, including engaging 6th and 7th grade girls in science, engineering and technology content areas; helping them learn what high school courses they need to take to enter science, engineering and technology career fields; and in getting them interested in pursuing careers in science, engineering and technology. Below is a summary of the major findings from 2005 GESET girls' survey, and recommendations and ideas for GESET 2006.

Major Findings

- Eighty-three percent of the girls reported that the 2005 GESET event was either *Somewhat* or *A lot* of fun.
- Sixty-one percent of the girls either *Agree* or *Agree strongly* that they learned what high school classes they should take to enter the fields of science, engineering and technology at the 2005 GESET event. Twenty percent of the girls, however, either *Disagree* or *Disagree strongly* that they learned what high school classes they should take at the 2005 GESET event.
- Eighty-six percent of the girls reported that they learned either *Somewhat* or *A lot* about careers in science, engineering and technology at the 2005 GESET event.
- Sixty-three percent of the girls reported being either *Interested* or *Very interested* in having a career in science, engineering, or technology as a result of attending the 2005 GESET event.
- Forty-seven percent of the girls reported that they liked the *Workshops* the best and just less than one-fifth reported that they liked *Learning about technology* the best.

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- Seventy-one percent of the girls reported that they didn't like *Not being with friends* and *Not having more choices about the workshops*.
- The top three best workshops were *Forensic Science with a Feminine Touch*, *Robotics* and *Animal Behavior 101*. The top three least favorite workshops were *Fire Science and Forensics*, *Satellite Command and Control* and *Wind Engineering and You*.
- Fifty-one percent of the girls reported that the *best* workshops were ones that were hands-on, fun, interesting, and/or exciting. Fifty-four percent of the girls reported their *least* favorite workshops as ones that were not hands-on, boring, not interesting, and/or not exciting.

Recommendations for GESET 2006

- Continue to diversify student enrollment. Progress was made regarding this recommendation between the 2004 and 2005 GESET events. In order to reflect the diversity of the host school district(s), however, event organizers should continue to actively recruit and enroll non-white students, especially Black/African-American and Latina/Hispanic students.
- Continue to inform girls about high school courses they need to take to participate in science, engineering and technology career fields. Explicitly include information about high school preparatory courses in each workshop, or developing a separate workshop covering this topic, will ensure that *all* girls are exposed to this important information before reaching high school.
- Give girls more choices. Although this may be difficult, or even impossible, given the existing enrollment process and the registered students/workshops ratio, it may result in girls being more engaged and comfortable in the workshops they do attend.
- Continue to develop/include workshops that involve girls in hands-on, engaging activities. While this won't ensure that girls will be interested in all the workshop topics, it will help them see science, engineering and technology as fields that are active, exciting and can be approached in novel ways. When coupled with giving the girls more choices in the workshops they attend and who they attend them with, this could significantly influence the 2006 event's impact on girls' attitudes about, and future engagement in, science, engineering and technology.

ADULT ATTENDEE SURVEYS

From an adult perspective, the 2005 GESET event was generally successful in achieving its primary goals, including engaging 6th & 7th grade girls in science, engineering and technology content areas; helping them learn what high school courses they need to take to enter science, engineering and technology career fields; and in getting them interested in pursuing careers in science, engineering and technology. It is less clear, however, whether the event was successful in helping adults learn strategies for persuading girls to enroll in science, engineering, and technology classes. Below is a summary of the major findings from 2005 GESET adults' survey, and recommendations and ideas for GESET 2006.

Major Findings

- Ninety-six percent of adults either *Agree Strongly* or *Agree* that the workshops represented the diversity of science, engineering and technology careers.
- Ninety-eight percent of adults either *Agree Strongly* or *Agree* that the event was worth their time as a chaperone or volunteer.
- Fifty-five percent of adults either *Agree Strongly* or *Agree* that, during the day, they learned strategies for persuading girls to enroll in science, engineering and technology classes.
- Ninety-one percent of adults reported that they GESET 2005 was valuable enough that they would participate again next year.

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- Ninety-nine percent of adults either *Agree Strongly* or *Agree* that GESET 2005 was valuable to student participants.
- Fifty-two percent of adults either *Agree Strongly* or *Agree* that students learned more about what types of high school classes they should take to enter into the fields of science, engineering, and technology.
- Seventy percent of adults either *Agree Strongly* or *Agree* that during the day, girls learned strategies they can really use for participating in science, engineering, and technology classes.
- Seventy-two percent of adults either *Agree Strongly* or *Agree* that, as a result of the event, students will be more likely to enter science, engineering, or technology classes in high school.
- Twenty-four percent of adults reported that *Peer attitudes/pressure* and *Cultural/societal attitudes/pressure* present the greatest barriers to girls choosing to take science, math and technology classes.
- Seventy-six percent of adults reported that they would be interested in taking workshops/professional development related to recruiting girls into science, math and/or technology classes and other related topics.

Recommendations for GESET 2006

- Continue to inform girls about high school courses they need to take to participate in science, engineering and technology career fields.
- Continue to inform girls about strategies for participating in science, engineering and technology classes.
- Offer professional development courses that teach adults strategies for persuading girls to enroll in science, engineering and technology classes.
- Develop workshops that deal with the barriers girls face in choosing to take science, math and technology classes.
- Continue planning more hands-on workshops.
- Improve certain organizational aspects of GESET 2006.

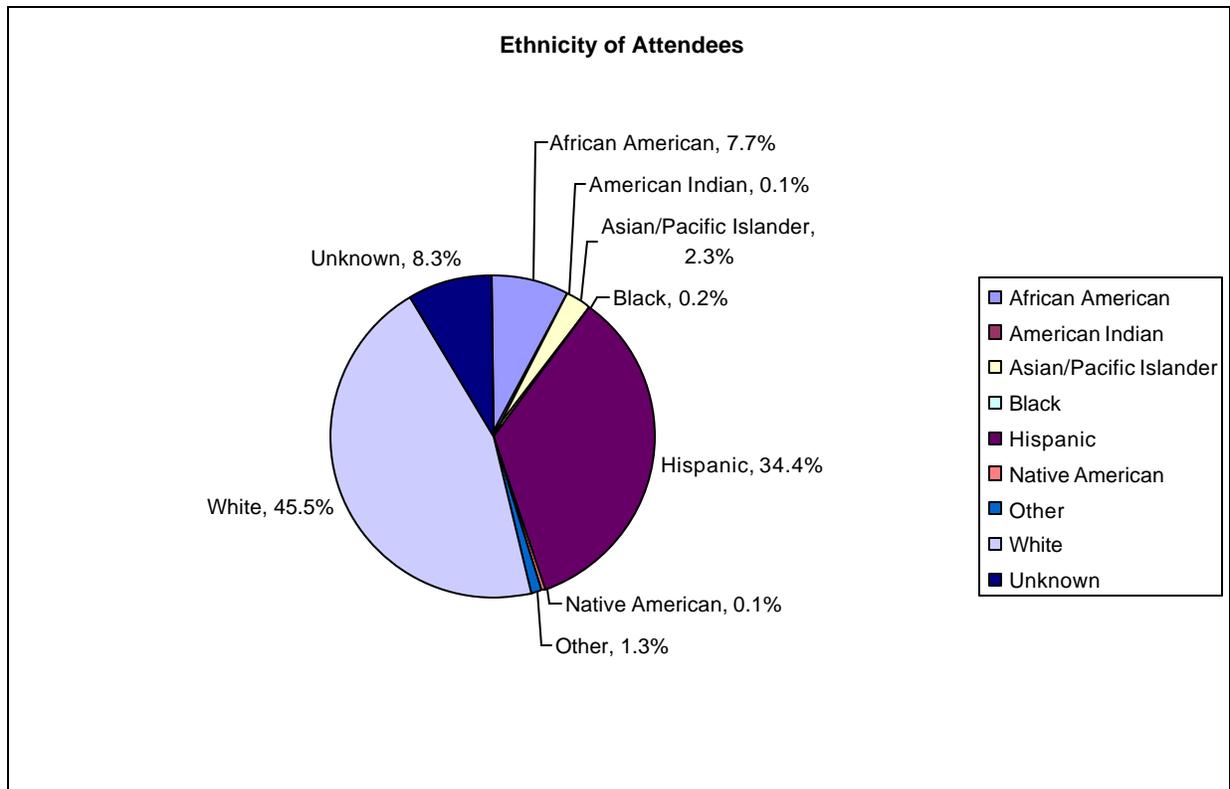
REGISTRATIONS

Registration in 2005 continued to use the on-line registration system implemented in 2004. Registrations were recorded on a first-come first-served basis through the on-line system. Schools that attended the event in 2004 were placed on a wait list to allow first timers to attend the event.

Approximately 1,800 registrations were received for this event, the majority of which were newcomers. This is an overwhelming amount of desire for an event such as this. For the third year in a row, we had to turn away more attendees than we could accommodate due to lack of funding. Approximately \$2,500 of funding was received after the registration deadline, thus registration was capped based on funding available at that time. We also had to limit the number of chaperones and volunteers to stay within budget.

Of the 818 girls who attended, over 46% specified a demographic other than white. This information was voluntary, and as such we did not receive demographic information from 8% of attendees.

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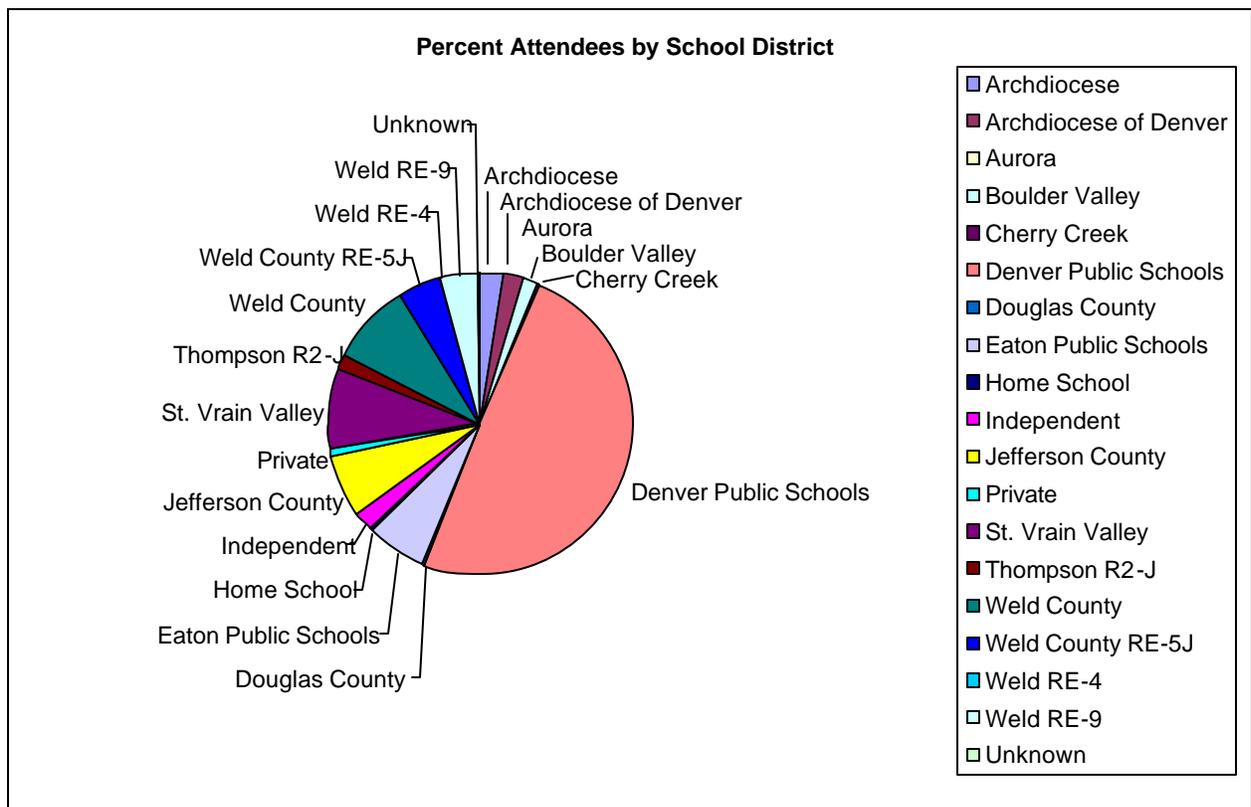


Compared to the Race/Ethnicity of Colorado school children, Latina/Hispanic girls were slightly under-represented while African-American girls were over-represented. Compared to the demographic makeup of Denver Public Schools, white girls were over-represented, while Latina/Hispanic and African-American girls were under-represented.

By comparison, in 2004 we had over 45% specify a demographic other than white and demographics for 1% of the 2004 attendees were unknown.

Of the 818 student attendees representing more than 33 different schools, over 49% were from students in the Denver Public School (DPS) system. Weld County Schools represented over 17% of the attendees. The remaining 17 school districts or groups that attended each had between 1 and 9%. Of those attending, over 50% were 7th graders and 43% were in 6th grade, with the remaining 7% in 8th grade or not specified. By comparison, in 2004, we had 816 girls from over 49 schools with 85 chaperones.

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FUNDING AND BUDGET

In comparison with the 2004 event, in 2005 we:

- ✓ Increased funding by 12% (\$44,000 vs. \$38,700)
- ✓ Increased in-kind donations by 33% (\$30,000 vs. \$20,000)
- ✓ Decreased registration requests by 22% (1,800 vs. 2,200)
- ✓ Held attendees virtually constant (818 vs. 816)
- ✓ Increased chaperones by 16% (99 vs. 85)
- ✓ Held volunteers constant (150 vs. 150)
- ✓ Decreased the number of exhibitors by 29% (12 vs. 17)
- ✓ Received event coverage on the Channel 9 evening news and in the Denver Post newspaper
- ✓ Received the 2004 Society of Women Engineers Career Guidance Incentive Honorable Mention

We do not charge any admission to this event. We rely solely on sponsors, in-kind donations, and volunteers.

We were able to secure donated plastic tote bags therefore, allowing us to eliminate bags from the budget. We will continue to seek sponsorship for this item in the future.

Once again, the Adam's Mark graciously provided coffee for the volunteers, and in response to comments from the 2004 adult surveys indicating the chaperones would like coffee as well – the Adams Mark provided for them as well. This is a perk we feel will need to be budgeted for in the future as a way of thanking the numerous volunteers and chaperones for their time and efforts.

Lastly, we obtained additional LEGO Mindstorm™ robotic kits from The Women's Foundation as a donation this year, thereby eliminating a struggle similar to 2004 to borrow enough kits for one workshop.

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If event space allows, we can offer two concurrent LEGO robotics workshops with the thirteen kits we now own.

PROGRAM SCHEDULE Thursday, March 03, 2005

- 8:45 a.m. – 9:20 a.m. Registration/Information for all participants (with light breakfast).
- 9:20 a.m. – 9:35 a.m. Welcome/Opening Remarks.
- 9:45 a.m. – 12:20 p.m. Workshops including hands-on demonstrations and activities.
 - 9:45 a.m. – 10:30 a.m. Various 45 minute workshops within each Area of Interest.
 - 10:40 a.m. – 11:25 a.m. Various 45 minute workshops within each Area of Interest.
 - 11:35 a.m. – 12:20 p.m. Various 45 minute workshops within each Area of Interest.
- 12:30 p.m. – 1:10 p.m. Lunch/Survey/Essay Contest Awards/Closing Remarks/Door Prizes.

Our opening speaker was Vanessa Williams, Workforce Diversity Manager for Lockheed Martin Space Systems Company. Vanessa has responsibility for implementing the corporate diversity strategy, programs, and policies that support and enhance the organization's focus on the recruitment, development and retention of top talent for a diverse workforce. Vanessa's remarks were very encouraging and provided a great kickoff for the 2005 event.

This year's event also featured lunch speakers. Carolyn Candee, representing our Junior Achievement host, spoke to the girls to thank them for their participation and encouraged them to embrace their interest in math and science. Also, Jean Mooney, representing our Agilent Technologies host, said a few positive words of endorsement of the GESET event and drew for our survey response door prizes.

As part of the survey response, almost one-quarter of adults identified "Peer attitudes/pressure" and "Cultural/societal attitudes/pressure" as the greatest barriers to girls choosing to take science, math and technology classes. Other barriers identified by adults included being "Scared of taking classes in these areas" and a "Lack of encouragement from friends/family/teachers". Therefore, the survey evaluation and research group recommends inviting a keynote speaker that identifies and works to dispel the barriers to girls choosing to take science, math and technology classes. This recommendation will be taken into consideration during 2006 event planning.

EXHIBITS

In order to provide an avenue for the chaperones to learn about local organizations within the science, engineering and technology community, an exhibit area was again provided. There were 12 exhibitors this year, including the following organizations: Girls Inc.; Colorado School of Mines Women in Science, Engineering and Mathematics; Denver Public Schools; DeVry University Summer Scholars Program; Girl Scouts - Mile Hi Council; National Society of Black Engineers Alum, Denver Future City Competition; Project Lead the Way Kennedy High School; University of Colorado at Denver; University of Colorado at Boulder Women in Engineering Program; University of Denver Making of an Engineer Program; Women's Bureau/USDOL.

HANDOUTS / GIVEAWAYS

Each attendee received a T-shirt when they arrived, sponsored by Lockheed Martin. The girls wore their T-shirts all day, which was a powerful visual when they were all together in the ballroom. The following items were sent home with each attendee: a 26-page "Explore Engineering Activity Book" complete with answers (this activity book was created by a SWE-RMS member and printed by Raytheon); "Three Cheers to Engineers," a popular student brochure reprinted from Girls' Life magazine, provided by Agilent; brochures listing what courses to take in high school; descriptions of various engineering disciplines; websites listing career guidance and scholarship information; and various trinkets (notepad, pens, pencil, highlighters) from sponsors; and a SWE Facts brochure. The chaperones each received the same items, as well as participant certificates for each girl from Lockheed Martin; "Is Engineering for You" brochure and "Engineer Girl" website flyer, both printed by Rockwell Automation.

To encourage the girls (and adults) to complete the post-event surveys, door prizes were offered. The door prize drawing was held at the end of the event and included: four daily passes to Elitches Gardens and a Barnes & Noble gift certificate sponsored by Leonard Rice Engineers; four box seat tickets to

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Champions on Ice sponsored by Lockheed Martin; various Mary Kay items sponsored by Sandra Scanlon; a stuffed bear, Ty bunny, 3 CD holders, 2 briefcases, and a tee shirt sponsored by Colorado School of Mines; Denver Zoo passes sponsored by the Denver Zoo; and 4 SWE baseball caps sponsored by SWE-RMS.

VOLUNTEERS

Our volunteer coordinator this year was also last year's volunteer coordinator and the volunteer coordinator for the 2001 SWE National Conference. She used her skills from managing hundreds of volunteers to develop a more detailed process to coordinate the 150 GESET volunteers.

The goal for the event was to provide one mentor (or guide) for every 10 girls. Volunteer support is an opportunity for the sponsoring companies to flourish. The majority of our volunteers come from the major sponsors. We had enough volunteers come forward that we were able to achieve our desired 10:1 ratio. Usually, events or organizations struggle to recruit enough volunteers. Our success with volunteers is one more indicator of the power of this event and the desire by individuals and companies to encourage more girls to pursue math and science and ultimately feed the employment pipeline.

The majority of our volunteers came from Lockheed Martin, with 53 volunteers and Agilent, with 30 volunteers. Accenture provided 15 volunteers and this was the first year Accenture participated in the event. The following companies also provided volunteers the day of the event: ATLAS Program CU Boulder, Ball Aerospace, Ch2MHill, Coors, Denver Public Schools, Hire Potential, Hewlett Packard, Holme Roberts & Owen, IBM, JE Dunn, Junior Achievement, Leonard Rice Engineers, Merrick, Qwest, Raytheon, Scanlon Consulting Services, University of Colorado at Denver, University of Wyoming, Washington Group. Many individuals who volunteered did not specify whether their company was sponsoring their participation or whether they took the day off as personal time, and therefore we did not account for their participation by company. Workshop presenters volunteered their time for the event and are listed separately in the workshops descriptions below.

WORKSHOPS

The following workshop descriptions were provided to the students:

Animal Behavior 101

Jennifer Lemmond, Outreach Specialist and Molly Maloy, School Programs Specialist at the Denver Zoo

Understanding animal behavior is key to providing animals with an enriching and stimulating life in zoos and aquariums. Participants will be introduced to animal behavior through the use of live animals, observation of animal training techniques and will learn what it takes to be an animal trainer by "training" each other.

Jennifer Lemmond graduated from Colorado State University with a Bachelors Degree in Biological Sciences. While at CST she volunteered with the Rocky Mountain Raptor Program rehabilitating and educating the public about injured birds of prey. After graduation she spent several years as part of the education department at Sea World Adventure Park Orlando teaching children and adults about marine life. As the Ocean in Motion Coordinator at the Virginia Marine Science Museum she delivered educational programs throughout the state of Virginia utilizing a theatrical play and traveling aquarium. She has been with the Denver Zoo since June 2002 developing and delivering educational programming to all age groups.

Molly Maloy graduated from Frostburg State University with a Bachelors degree in History and a Masters degree in Environmental Education. Molly became the school programs instructor at the Maryland Science Center. She then became an intern at the Baltimore Zoo where she did everything from teaching summer camps to cleaning cages. This soon led to a full job as the zoo's Keeper Encounter Coordinator overseeing all of the keeper talks in addition to overseeing the raptor program. In 1999, Molly left the Baltimore Zoo to take a job as an animal trainer with the Denver Zoo's Wildlife Show. She became lead trainer in 2002 and then became the School Programs Specialist in 2005. Molly will be leaving the zoo in the spring to take a job in Africa for 6 months working in a lodge in Zambia.

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Around the World in Seconds

Nicole Kanizay, Jennifer Schneider, Laurie Alzheimer, engineers at Lockheed Martin, Denver

How does information get spread from one part of the world to another? SPACE is the answer! Earth orbiting satellites help us to determine what is happening on our earth as well as help us to convey information. Participants will view a space video, simulate an interactive satellite system and build a satellite model.

Nicole Kanizay, Laurie Alzheimer, and Jenn Schneider are all recent college graduates from universities in Colorado with degrees in fields such as aerospace engineering, chemical engineering, and computer science. All three ladies grew up interested in science and math and now with their degrees are able to apply their interests to the exciting world of space.

Catch a Thief

Volunteers from Agilent Technologies, Longmont

Students are encouraged to use their investigative and problem solving skills to solve a crime. Using paper chromatography the students reveal the underlying composition of the four suspect's pens, and utilizing the same scientific process on the ransom note, they identify the criminal. At the end of the session a second crime is provided as a take-home activity.

Mini Chemistry Workshops

Shannon Burglin-Greivel, Research Scientist at School of Mines, Golden

Students will participate in one of three workshops:

- (1) Environmental Chemistry: Rain, Rain Go Away – with simple materials, students will simulate the products found in the Denver-metro environment. A larger, pre-created, city contained in a bubble along with a sealed bottle of nitric gas will be used to further demonstrate occurrences within our environment as chemical reactions are discussed.
- (2) Food Chemistry: You are what you eat, the FUNdamentals of Food Science - students will: monitor the temperature change and create a graph of the energy generated in the burning of a peanut, observe the effects of ethylene gas on the ripening of fruits along with observing an ice-cube in a microwave, and combine ingredients and observe the power of liquid nitrogen to create ice-cream.
- (3) Chemical Reactions: Electrons, Ions, & Polymers – Oh My! - students will shake and observe an oxidation reaction in a bottle, set-up a miniature electrolysis apparatus in pairs to conduct an experiment, observe a photolysis reaction, and if time permits, make a polymer.

While in high school, Shannon worked as an engineering inspector for the Department of Transportation in Alaska. She moved to Colorado to study at the School of Mines, was a teaching assistant for several organic chemistry courses, and conducted research pertaining to the development of a new analytical tool for the concentration and identification of microorganisms. This research, on the electrode position of microorganisms in solution for analysis via Pyrolysis-Mass Spectrometry, lead to graduate studies and post-graduate work in chemistry. She conducted fundamental research which elucidated the mechanisms associated with the degradation of TNT, pesticides and bacteria in the environment. Shannon has also taught science and mathematics at both the high school and college level. Currently, she works on experimental design problems for research groups trying to determine mechanisms or develop analytical tools.

Power of the Sun – Quiz Boards Powered by Solar Cells

Katie Brown, Project Leader II and Linda Lung, Education Program Manager at the National Renewable Energy Laboratory, Golden

The sun's energy can be made directly into electricity using photovoltaic cells or solar cells. Solar cells make electricity without moving, making noise, or polluting. They are used to power calculators, lights and even provide electricity to homes. Participants will be constructing a photovoltaic-powered circuit board to understand simple circuits and photovoltaic cells.

Katie Brown has a bachelor's degree in Engineering Physics and a master's degree in Engineering and Technology Management from the Colorado School of Mines. Currently, she is a Project Leader II at

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NREL with extensive experience in analysis and research. She has taught at the School of Mines and was a Project Manager in Thailand in 2003 for Engineers Without Borders.

For twelve year, Linda Lung has managed the Department of Energy's (DOE) Office of Science, undergraduate internship programs, high school and middle school science bowls, teacher professional development programs and solar and hydrogen model car competitions. She has an extensive background in the planning and implementation of student and teacher programs. As a founding DOE science education staff member, she helped in the development of the science education programs including working with education leaders in Colorado on the development of education science content standards and partnerships. Linda's background includes a wide range of work in course development, instructional design and hands-on training in the telecommunication industry for seventeen years. She has a Bachelor of Arts degree in Social Work and Psychology from Colorado State University.

Cloud Seeding and Hurricanes

Shannon Willoughby, Ph.D., Colorado School of Mines and the Magnetics Group at the National Institute of Standards & Technology, Golden and Boulder

Participants will explore the concept of pressure and its effects on weather, discuss the swirling of the atmosphere caused by the turning of the earth, make barometers and learn the importance of their scale, explore hurricane basics and attempts to alter the weather through cloud seeding.

Shannon Willoughby received her PhD in theoretical physics from Tulane University in 2003. While in New Orleans, she was a Big Brothers/Big Sisters volunteer. She currently teaches physics and chemistry classes at the Colorado School of Mines. Additionally, she is a member of the Magnetics Group of the Electromagnetics Division of the National Institute of Standards & Technology in Boulder.

Electronic Matching Game

Agilent Technologies Volunteers, Longmont

Building this electronic game enhances the student's knowledge of circuits and electrical flows. Each has the opportunity to construct their own game, which serves as an electronic checker for matching correct questions and answers. The students can create their own sets of Q&A for challenging family and friends.

Fire Science and Forensics

Mary Donlon, Lt. Debra Peterson, J.D. Lanz and Lt. Darwin Nieman, Denver Fire Department

Participants will observe demonstrations, learn about the hazards of structural fires and the unique problems of chemical fire reactions.

Forensic Science with a Feminine Touch

Jacqui Battles, Amy Beatty, Carrie Thor, Agents from the Colorado Bureau of Investigation, Lakewood

You are the Crime Scene Investigator (CSI). A crime has been committed and you have to decide what evidence to gather from the mock crime scene. How observant are you? Could that glass fragment be important? What about the cigarette butt in the ashtray? See how many items of evidence you can list and compare your list to that of the CBI Laboratory Agent. You have a DNA sample collected from the crime scene, now learn how to determine which suspect left it there. "Blank" paper is found at the scene - could it have writing on it? Learn about "invisible" inks and handwriting impressions.

Jacqueline Battles, a Laboratory Agent in Denver, has worked for the Bureau for more than 25 years and analyzes case submissions in the areas of Chemistry and Trace - Glass, Paint, Gunshot Residue, and Physical Match. Prior to working for CBI, Jacqui worked for an analytical laboratory in Chicago and a metallurgy laboratory at the University of Denver.

Amy Beatty is a Laboratory Agent in the Chemistry Section of the Denver Laboratory. Amy analyzes substances for the presence or absence of drugs as well as submissions from clandestine drug laboratories. Prior to joining the CBI, Amy worked for 4 years as a forensic chemist at the Georgia Bureau of Investigation.

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Carrie Thor, a Laboratory Agent in Denver, has been with the Bureau since 1996. Carrie has worked in the DNA Database section analyzing samples received from individuals convicted of major crimes in the state of Colorado. These analyzed samples are uploaded into a National Database called CODIS. Since January 2005 Carrie performs analysis in both Serology and DNA cases.

Gumdrop Domes & Melting Peanuts

Deb Lasich, Executive Director, Women in Science, Engineering and Mathematics (WISEM) Program, Tricia Douthit-Paulson, Associate Director, Admissions Office; both are from the Colorado School of Mines, Golden

If you like to solve problems, you could be an engineer! Engineers solve problems using math, science, and technology. Students will have the opportunity to try out two different kinds of engineering. In the first activity, participants will experience what it's like to be a civil engineer by figuring out how to build a dome structure using only gumdrops and toothpicks. The second activity will show how science engineers help save the planet by developing materials that are environmentally friendly.

Deb Lasich is the Executive Director of the Women in Science, Engineering, and Mathematics Program at the Colorado School of Mines (CSM). She also teaches at the University of Denver and consults in the areas of leadership, professional development, and gender issues. Deb has a Masters of Community and Regional Planning from the University of Nebraska-Lincoln and a B.S. degree in sociology from Kearney State College.

Tricia Douthit-Paulson was a Kansas farm girl when she became interested in engineering. She's the Associate Director of Admission at CSM where she also received a B.S. degree in Metallurgical and Materials Science Engineering and is finishing a Masters of Science degree in the Advanced Processing and Products Research Center. She received the FIERF Forging Achievement Award and a National Science Foundation Summer Research Grant.

Invisible Forces

Agilent Technologies Volunteers, Longmont

Participants will perform several experiments with magnets, learn about their invisible forces, and watch the creation of a magnetic force when electricity is passed through a wire. These concepts will be used to build their own electric motors.

Learning to Program with Lego Robots

Stacey Fornstrom and Eva Horan, Teachers at Thomas Jefferson High School and Cary Knott, Teacher at North High School in Denver

Robots aren't just evil chunks of metal that lurk in bad sci-fi movies! Learn how to build and program a robot to obey your every command. Your robot will do what you tell it to do – learn why that isn't always what you WANTED it to do!

With a combined industry experience of more than 18 years and teaching for almost 30 years, these instructors are dynamic teachers with a great deal of real world experience. Ask any questions of the Computer Magnet program in Denver Public schools and what it takes to become an engineer!

Beginning Photoshop

Dan Cornell, Teacher at Smoky Hill High School, Cherry Creek

The mobile Mac Lab and 25 Smoky Hill High School girls will mentor an equal number of girls to gain hands on experience with a Photoshop program.

For the Love of Polymers – The Make-Ups and the Break-Ups

Sarah Urfer, Instructor, Science from CU, Boulder

Students will explore polymers through a set of demonstrations and hands-on activities. They will learn what types of materials are polymers, how these materials impact their everyday lives, make a polymer and explore some tests used in recycling plastics.

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Sarah Urfer is a senior at the University of Colorado at Boulder. She is president of the CU Chemistry Club and an instructor for Science From CU, an outreach program of the University of Colorado. In working with Science From CU, Sarah developed their new Polymers presentation. Sarah has been working in the community to help educate and inspire a younger generation's interest in science for the last 3.5 years. She plans to continue working in science, pursuing a master's degree starting next year.

Robotics

Sharon Unkart, Teacher Professional Development Coordinator, Denver Museum of Nature & Science

Robotics begins with a short introduction to past missions in space exploration and brief descriptions of the robotics involved. The students are then tasked with choosing a destination, describing a mission, and constructing a robot using kits created by Robotix to fulfill said mission.

Sharon Unkart is the Museum's Teacher Professional Development Coordinator. She has a B.S. in Environmental Science from Metropolitan State College of Denver and an M.A. in Curriculum and Instruction from the University of Colorado at Denver. Sharon has 12 years of experience teaching Environmental Science, Earth Science, Land Use, and Biology in both formal and informal venues. She is responsible for the coordination, implementation, and promotion of the teacher professional development opportunities at the Museum.

Rocket Science 101

Barbara Kontogiannis, Production Support Engineering Manager, Lockheed Martin Space System Company, Denver

Students will learn how rockets are produced in a rocket factory in Denver and then transported to and launched from Cape Canaveral, Florida. They will discuss how large rockets are, how much they can lift, explore the various stages of rockets, types of satellites and the orbits in which they can be placed. Paper rockets will be built using paper, straws, and tape. Rockets will be launched to see whose travels the furthest.

Barb earned her Bachelor of Science degree in Mechanical Engineering from Stanford University in 1988, and a Master of Science in Aeronautics and Astronautics from Stanford in 1989. She started her career as a propulsion development engineer. Barb is a member of the American Institute of Aeronautics and Astronautics (AIAA) and the Society of Women Engineers (SWE).

Satellite Command and Control

Carolyn Kurtz, Software Development Manager for the Advanced EHF Program, Lockheed Martin Integrated Systems & Solutions, Colorado Springs

The primary functions required to manage and control satellite activities: command processing, telemetry processing, and satellite tracking and maneuver planning processing will be demonstrated by simulating a signal going from the Mission Control Complex (MCC) through the Remote Tracking Station (RTS) to the satellite. Two teams will be used to demonstrate component redundancy.

Carolyn Kurtz has worked for Lockheed Martin for more than 22 years. Her career began in Denver in 1978 when she joined a launch integration team as a mission analyst. Over the years, she has been a member of advanced development, flight operations, and satellite simulation software development teams. Carolyn spent more than six years in Schenectady, New York preparing safety analysis reports for shipping radioactive waste. Returning to Denver in 1996, she rejoined the satellite simulation software team, and became the manager in July 1998. Carolyn assumed her current position as the Advanced EHF Software Development Manager in November 2004.

Scavenger Hunt

E. Barry Benoit, Systems Engineer (retired), Denver and Angie Blackwell, Senior IT Manager, Junior Achievement, Denver

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Students will search for various computer components such as motors, switches and chips as they take apart and look inside electrical and electronics equipment.

Barry Benoit is a graduate of San Jose State University with a B.S. degree in electrical engineering. He worked 40 years for high tech companies in Silicon Valley, Arizona and Colorado having designed radar subsystems for military aircraft and controls for X-ray machines. Now retired, he is renovating a 1930's home in east Denver and pursuing a patent for piano tuning software he wrote.

Angie Blackwell graduated from Colorado College with a degree in History and East Asian Studies. She was first employed in law enforcement in Cheyenne and later as an emergency dispatcher in Westminster, Colorado. She's been fascinated with computers since she was in middle school and has done additional computer coursework at Front Range Community College. At Junior Achievement, she maintains a network and supports 20+ users in several locations. She also manages the organization's website, monthly e-newsletter to 6,000 supporters, and a database of 30,000 constituents.

Shades of Blue

Valerie Scott, First Officer, United Airlines, Denver

What is it like to soar high above the clouds and travel all over the world as an international airline pilot? Valerie Scott, First Officer for United Airlines, discusses what it is like to be a female airline pilot, how she became one, and what it is like to travel all over the world. A video and hands-on interactive demonstration on how the science of flight works includes a model airplane/glider to assemble during the workshop.

Valerie has a B.S. degree from Southern Illinois University (Carbondale, Illinois). To help fund her education, she worked full-time as an Emergency Medical Technician on the county ambulance service in Carbondale. Having cared for numerous patients during helicopter trauma transfers, her interest grew in flying and she began taking lessons. By graduation, she held private, commercial, instrument, multi-engine and flight instructor ratings. Valerie instructed and flew corporate aircraft, while attending graduate school in Occupational Education. She was awarded a scholarship to obtain her commercial helicopter rating, and eventually was hired into the commercial airline industry by Trans World Express, St. Louis and United Express, Denver before hiring on with United Airlines. Her profession extends to other areas of the flight industry where she is also an accident investigator for the Air line Pilots Association (ALPA).

The Visible Human Project – Exploring the Future of Virtual Anatomy

Michelle Bagur, Center for Human Simulation, University of Colorado, Denver

This workshop includes a short video on the history of the Visible Human Project which describes the latest innovations with surgical simulators, interactive programs for learning and teaching anatomy, and future possibilities. Participants will then dissect through a virtual cadaver on a computer, as well as create anatomical animations.

Michelle Bagur received a B.S. degree in Computer Science from the University of Texas at Dallas and a Master's degree in Integrated Science at the University of Colorado at Denver focusing on Computer Science and Biology. She began programming in the games industry in Dallas and now works as a programmer for the Center for Human Simulation.

Water Conduits

Patsy Sullivan, P.E., Senior Project Engineer, Martin/Martin Inc., Lakewood

Learn where our water comes from, how it gets to your house and what makes it safe to drink. See how gravity affects water. Piece together a water system. Operate a pump and a gravity system. Learn about water engineering careers.

Ms. Sullivan is an Environmental Engineer with 12 years experience in water distribution and treatment, wastewater collection and treatment, water and wastewater pumping and site development. She holds a Bachelor of Science in Civil Engineering (BSCE) from the University of Illinois at Champaign-Urbana and is a registered Professional Engineer in the State of Colorado. Originally from Chicago, she moved to

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Denver in 1997. Having always been told that she was good in math and science, she chose engineering as her major in college. Since she was a baby she has been fascinated with water.

Weather and Climate

Teresa Eastburn, Educational Designer and Yaga Beres, Postdoctoral Scientist, National Center for Atmospheric Research, Boulder

The workshop will build upon students' familiarity with color to expand their knowledge of light, especially as it relates to the study of weather and climate. Through hands-on activities, participants will view weather, climate, and technological innovations through the lens of the electromagnetic spectrum. Students will build a spectroscope and use it to analyze the source of various light sources (mercury, sodium, neon...).

For the past four years, Teri Eastburn has been responsible for the development and implementation of the day-to-day educational programs offered at the National Center for Atmospheric Research (NCAR) for pre K through college students and those who visit from informal clubs and organizations. Prior to coming to work at NCAR, Teri was an educator in both California and the Boulder Valley School District in Colorado. She has a degree in developmental psychology with an emphasis in cognition from the University of California, Santa Barbara, an MA in human development, and certificates in multimedia design and Cultural Language Academic Development (CLAD).

Yaga Beres is a postdoctoral scientist at NCAR. She has a Bachelor of Science degree in mathematics and a Ph.D. in atmospheric science from the University of Washington. When asked what she likes about her job as an atmospheric scientist she responds, "I very much enjoy the independence and freedom to work on whatever I wish to. Research is a lot like solving puzzles and I love puzzles and figuring out how things work."

Web Design: It's Not Rocket Science

Marjorie Alexander, Principal, Two Hundred

Participants will discuss what a website is and an overview of the technology that allows a website to appear on one's computer. Students will build a simple website using Netscape Composer.

Marjorie Alexander has been building websites since 1993. Educated as an Industrial Designer, Marjorie got excited about the Internet when her husband showed her how to "dial into" the library from their home, 11 years ago. Marjorie was thrilled about the technology and started teaching herself web development. She believes that "everything you want to know about the web, is on the web" and has built a solid career as a self-taught web developer working for Denver's engineering, architecture and construction industry.

Wind Engineering and You

Trudy Forsyth, Senior Project Leader II, National Wind Technology Center, NREL, Golden

The workshop includes a top-level view of wind energy in the world, followed by hands-on work with a small wind turbine model and a discussion of the value of wind energy in the world's future.

Trudy Forsyth has worked in the wind technology field for ten years as the leader of the small wind turbine team. She has worked with U.S. industry to design, build and test new advanced small wind turbines, wrote a new international standard for small wind turbine design and safety, tested small wind turbines against these International Electrotechnical Commission (IEC) standards, and verified existing commercial small turbines with field test data. She is part of the Wind Powering America team working to find ways to address barriers to small wind implementation across the US.

Ms. Forsyth has a bachelors and masters degree in Mechanical Engineering from the University of Colorado-Denver. Prior to her career in wind turbine technology, she worked for an aerospace company for 10 years in a variety of engineering capacities.

Simulations for Living and Working in Space

Carol O'Leary, Center Director, Challenger Learning Center of Colorado, Colorado Springs

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Astronauts are faced with many challenges for which they must problem-solve to complete their work in space. Working in the hostile environment of outer space, protective equipment must be worn including specialized gloves. Students will experience the challenges of working in a foreign environment by creating and testing protective garments to achieve a specialized mission.

Carol O'Leary presently serves as the Vice President of the Colorado Consortium for Earth and Space Science Education and the Center Director of the Challenger Learning Center of Colorado Springs. She moved Colorado Springs in 1997 and served as the Vice President for Education of the Space Foundation for three years. She was also involved in the creation and implementation of a secondary school pre-engineering program called Project Lead The Way, bringing it from New York to Colorado to distribute it along the Front Range schools districts.

Prior to moving to Colorado Springs, Carol was the Liaison for K-12 Outreach Programs at Rochester Institute of Technology, a private engineering university in Rochester, New York. There she developed electronic and face-to-face programs to recruit and retain K-12 students in mathematics, science, technology and engineering fields. Her training as a science teacher led her to positions in a K-12 hands-on science center, teaching science lab at an elementary school for the deaf, and to build and direct the Challenger Learning Center of Greater Rochester.

Beginning her professional career in the Washington DC area, Carol worked for both the U.S. Fish and Wildlife Service and the U.S. Food and Drug Administration in wildlife and veterinarian research. Carol holds a Bachelors of Science Degree in animal physiology from the University of Maryland and a Masters degree in science education from the State University of NY at Brockport.

Appendix A

“Girls Exploring Science, Engineering & Technology” Event March 03, 2005

Sponsorship Levels:

Senior Sponsors \$10,000 or more:

Sponsors in this level will receive all level benefits listed below plus the following:

- The sponsor's banner hung in the ballroom near podium/stage for the event.
- An opportunity to extend a personal welcome to the guests on behalf of the sponsor during breakfast or lunch.
- An essay contest award presented in the name of the highest sponsor or sponsor chosen by the committee. The sponsor may participate in the selection of the winning essay and present the winner with an award at the event.
- Two tickets to Women's Foundation of Colorado Annual Luncheon Event.

Junior Sponsors \$5,000 to \$9,999:

Sponsors in this level will receive all level benefits listed below plus the following:

- The sponsor's banner hung in the ballroom for the event.
- An invitation to the SWE Rocky Mountain Section Awards and Recognition Banquet in June 2005 where sponsor will be recognized for supporting GESET. For more details regarding the 2005 SWE Awards and Recognition Banquet, visit the SWE website at www.swe-rms.org

Sophomore Sponsors \$2,500 to \$4,999:

Sponsors in this level will receive all level benefits listed below plus the following:

- Sponsor level listing provided to all media covering the event.
- Podium recognition of sponsorship level.
- The sponsor's banner hung in the ballroom for the event.

Freshman Sponsors \$2,499 or Less:

Sponsors in this level will receive the following:

- Sponsor level listing in all advertising, program materials, posters, reports, website, etc.
- Sponsor level listing on table tents to go on all the tables in the ballroom for breakfast and lunch.
- A final report covering the event, including letter of appreciation, statistics and picture.

Specific Sponsorship Opportunities:

As a sole sponsor of one of the following, the sponsor will have signage at the event indicating as such. Any printed materials, advertising, etc. will list this sponsorship as well. Sponsorship of the following will be acknowledged at the appropriate sponsorship level.

- Breakfast sponsor
- Lunch Sponsor – In addition to sponsoring lunch, the sponsor may provide company logo stickers that can be placed on the boxed lunches or the sponsor may provide nylon lunch bags, which have the company logo and event name screened on them.
- A/V Equipment Sponsor
- Computer Sponsor (Computers are used in numerous workshops on-site)
- Tote Bag Sponsor - The bags (plastic or otherwise) may have company logo
- T-shirts for the attendees and volunteers
- Registration Area, including coffee service for volunteers and chaperones.
- On-Line registration (in kind services), initial programming, support and web server hosting.
- Copying and Postage (in kind services) for registration packets to middle schools.
- Workshop Presenter, including all materials and handouts.
- Exhibits Participant

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Student Sponsorship Opportunities:

Provide funding for a school to bring students to the event. Funding covers bus transportation and substitute teacher costs. Most schools offer this event as a field trip and as such, costs associated with attending the field trip must come out of the schools field trip budgets. Many schools can only afford two field trips per year per class. {Registration is free to attendees}

Sponsor one or more students at \$25 each, which will offset the costs of hosting the event. {Registration is free to attendees}

Other In-Kind Sponsorship Opportunities:

Provide 1,200 giveaways, one for each attendee and volunteer, with company name/logo.

Provide a career guidance handout to go in the bags for the attendees to take home. The handout could have company info and logo, job line/website, and highlight philanthropic activities the company has sponsored in the local community or career guidance activities the company has sponsored or participated in locally.

Allow employees to volunteer the day of the event. Volunteers may wear company logo attire at the event. Volunteers will receive a certificate for volunteering at the event.