Mars on the mind

High school students design launch facility for competition

Interest in the Red Planet was at a fever pitch at JSC over the weekend of Feb. 22-24, as JSC hosted its Fourth Annual Mars Settlement Design Competition. The competition — a highlight of JSC's annual Engineers Week activities — is an exciting industry simulation game for high school students set in an imaginary mid-21st Century scenario. The competition emulates the experience of working as a member of an aerospace company team, developing a design and operating proposal for a large human settlement on Mars.

Representing 53 high schools and 35 school districts, 142 excited students from the Houston and southeast Texas area attended this year. Thirteen area teachers served as chaperones for the weekend. JSC, The Boeing Company, Clear Creek ISD and the Houston Section of the American Institute of Aeronautics and Astronautics were the major sponsors of the competition. In addition, eight local companies provided financial support, and almost 100 civil servants and contractors served as volunteers in many different capacities.

Sponsored at JSC by Dr. Bonnie Dunbar, Assistant Director for University Research and Affairs, and by Michael Kincaid, Chief of the Education and Student Programs Branch, the competition has grown significantly in each of its four years.

"In the next few decades humans will travel to Mars, and it's rewarding to be able to bring the excitement and challenge of planning such a mission to local students, who may, indeed, be part of the real future activity," said IMPASS contractor Norman Chaffee, Competition Coordinator.

In the game scenario, students are divided into four competing "companies" and are allowed to select their own company name and to self-organize.

After two orientation and technical background training sessions, the student companies are given a formal "Request for Proposal" for a human base on Mars. They have 24 hours to develop a 50-page written proposal and a 45-minute oral presentation.

This year's scenario was set in the 2050s. The companies were required to design a base for 15,500 permanent residents, located on the upper slopes of a large Martian volcano, and to construct and operate a 100-kilometer electromagnetic mass driver device to launch Martian assets into orbit without polluting the atmosphere with conventional rocket exhaust.

Each student company was provided with a NASA/contractor CEO to help guide their efforts. The competition work occurred in team areas set among the large mockups in Building 9 and in the Gilruth Center. The students slept at the Gilruth Center and dined in JSC facilities during the weekend. A team of 12 JSC/contractor judges reviewed the four written proposals and heard the oral presentations in the Teague Auditorium on Sunday morning. The judges selected the team from Vulture Aviation as the winning student company.

"Thank you for exposing my son to something so exciting and inspiring," Margaret McPhail of the EVA Project Office wrote to organizers. Her son, Christopher, attended the competition with other students from Pearland High School. "He had a wonderful time and thought it was a great adventure." ❖

NASA JSC 2002e08023 Photo by James Blair

Students participating in the Mars Settlement Design Competition work on their proposal. Sponsored at JSC by Dr. Bonnie Dunbar, Assistant Director for University Research and Affairs, and by Michael Kincaid, Chief of the Education and Student Programs Branch, the competition has grown significantly in each of its four years.

NASA JSC 2002e00540 Photo by James Blair

Pictured above are this year's participants in the Mars Settlement Design Competition, which was held at JSC. Representing 53 high schools and 35 school districts, 142 students from the Houston and southeast Texas area attended the two-day event.

JSC engineers celebrate E-Week

By Kendra Ceule

Ask a kindergartner what she wants to be when she grows up, and chances are she won't say "an aerospace engineer."

But if you ask Karon Woods, that's only because kids don't know what engineers do. Woods, the Safety Lead for Mission Planning at JSC, does her part to raise awareness for the engineering profession by participating in National Engineers Week.

"At the beginning of the presentation, we ask kids what an engineer is. Nobody has a clue," she said of her recent visit to a Pearland elementary school. "By the end, everybody wants to be an engineer."

That's just the kind of result that engineers nationwide strive for during Engineers Week, or E-Week, which is usually held the week of George Washington's birthday. Washington is considered the United States' first engineer for his dedication to technology and education.

The National Society of Professional Engineers founded E-Week in 1951, and JSC has been participating for 11 years. There are a number of ways for engineers to get involved.

One E-Week standard is the Discover "E" program, which brings engineers to classrooms to educate K-12 students about the profession. Woods has been visiting classes during E-Week for seven years. This year, she gave presentations to kindergartners, as well as first-, second- and fourth-graders.

Rather than lecture about her job, she chose to do interactive projects with the students. For example, the kindergarten project helped the kids understand how engineers might plan for a mission to Mars — by likening it to a trip to Grandma's house.

"We listed all the things we might need for a long trip to Grandma's, like sleeping bags and food," Woods said.

A project for another class allowed fourth graders to build and launch rockets — but not until everyone had on their safety goggles. "That way, they learn that NASA is very concerned with safety," she said.

It's not just longtime NASA engineers who participate in the school outreach: A group of 23 NASA co-op students also took their message on the road.

The co-ops visited Fairmont Junior High School and gave presentations in six different classes, speaking about what they do at NASA and which courses had helped them get there.

Wendy Stone, who organized the co-op group, said that the students' interest "hit an absolute high" when a co-op explained her work with robotics. In telling kids what engineers do, Stone said the experience might have helped recruit a future class of NASA employees.

"The kids in school now are the ones that will carry NASA and other space-related agencies into the next several decades," she said. "It's very important that they build their interest and knowledge now so they can make this agency even better in the future."

Anne Roemer, Education Program Manager at JSC, coordinates the Center's involvement with E-Week. She estimates that 6,000 Houston area students were reached through this year's Discover "E" program. Classroom students weren't the only ones who got to enjoy E-Week.

Two JSC engineers spoke about their profession to an audience of 425 home-schooled kids at Space Center Houston. Albert Rodriguez and Liz Bauer, who both work in the Biomedical Systems Division, started by dispelling the "Top Five Myths About Engineers" while wearing "geeky" coke-bottle glasses.

Among the myths were the ideas that engineers are all geniuses and are all males. "It's actually a very diverse profession," Rodriguez said. "On our teams, we work with men, women, and people of different ages and ethnicities. It makes for a creative team."

Rodriguez and Bauer were also encouraging about the engineering job market. "There aren't enough engineers to go around," Bauer said.

Rodriguez encouraged kids in the audience to take "as much science and math as you can get your hands on."

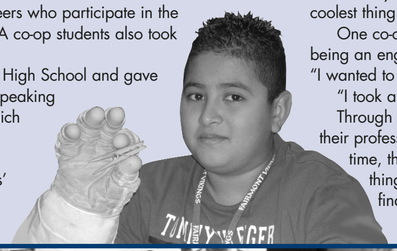
Another JSC E-Week activity was the Webcasting Series, now in its second year. In the series, NASA engineers discuss their careers and education with kids all over the country via the Internet. Viewers can e-mail questions to the engineers during the hour-long broadcast.

One Webcast session featured three engineering co-ops, who explained their work at NASA. They also answered questions about everything from their desire to be astronauts one day to the coolest thing they've done at JSC.

One co-op participant, Fernando Zumbado, said that he likes being an engineer because he's always been interested in science. "I wanted to know how things worked," he said.

"I took apart my family's TV — that got me in trouble."

Through E-Week, NASA engineers have the chance to highlight their professions and encourage tomorrow's engineers. At the same time, they realize that the job is not for everyone. "The important thing," Webcast participant Louis Malone II said, "is really to find out what you want to do and pursue it." ❖



NASA JSC 2002e05982 Photo by James Blair

Activities were varied for E-Week. Above, NASA engineers Elizabeth Baumer and Albert Rodriguez took time out of their day to speak to students at Space Center Houston. Also, engineering Co-ops recently visited Fairmont Junior High-Deer Park ISD during E-Week. The Co-ops discussed their roles as JSC employees and their responsibilities at work. At the top, John Flores, a 7th grade Technology Education student in Jim Glock's class, shows off a clothespin he holds with a spacesuit glove during the Co-ops' visit.