

March 12, 1999

SPACE CENTER Roundup

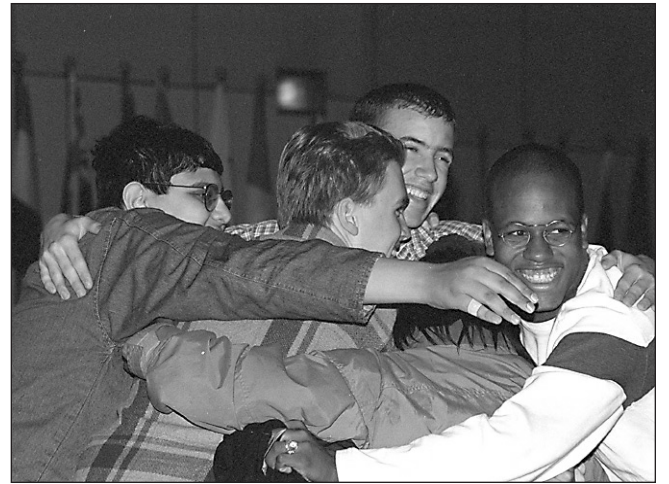
VOL. 38, NO. 4 LYNDON B. JOHNSON SPACE CENTER, HOUSTON, TEXAS



JSC Photos by James Blair S99-02568



S99-02570



S99-02584

JSC hosts first annual Mars Design Competition

About 80 Houston area high school students took up residence at the Johnson Space Center the weekend of February 19-21, designing living and working quarters for a human settlement on Mars. They participated in the Space Settlement Design Competition, a program that began in 1984 to introduce students to the skills they will need when they join industry. The competition was the first of its kind to be held at JSC.

electrical power and water, design computer and robotics systems, specify allocation of interior space, show examples of community design, and provide estimated costs and schedules for completion of the project. To assist them, each team was provided with a manager from industry to act as the company chief executive officer.

"This project enables high school students to find out what it's like to work in the space industry, solve problems and function as a team," said Donna Fender, program manager, JSC TransHab Project Office, and CEO of the Vereinigten Flugfahrten team. "My job here is not to tell the students how to do the job but to coach them and ensure that they are headed in the right direction. I keep trying to suggest the use of an inflatable module, but I'm trying my best not to influence them too much."

"We have a very intelligent group of students here," added David Schurr, assistant to the program manager for technical development in JSC's Space Station Program Office and CEO of the Rockdonnell team.

"They are tackling something that, given sixty days, a major aerospace company would have a tough time handling, and the students are being asked to complete it in twelve hours. It's quite an undertaking."

The students divided themselves into teams and decided what their roles would be. Working with others whom they had not met before, they learned important lessons in engineering, proposal writing, presentation skills and teamwork. All were excited to be involved in the competition.

"I'm trying to get into the Air Force Academy, the Science and Engineering College, so I thought it would be really interesting to participate in this competition," said Brett Bohn, Friendswood High School student. "Building a whole civilization on another planet is a challenge, and it's exciting to think that our ideas may contribute to what might actually happen."

Following their 35-minute presentations in the morning of the final day of the competition, the team members took a tour of JSC. The winning team, Vereinigten Flugfahrten, was announced during an awards ceremony in the afternoon.

NASA/JSC, The Boeing Co., the Clear Lake Area Economic Development Foundation's Team NASA, Clear Creek Independent School District, and the American Institute of Aeronautics and Astronautics Houston and Orange County, Calif., sections organized and hosted the competition. ■

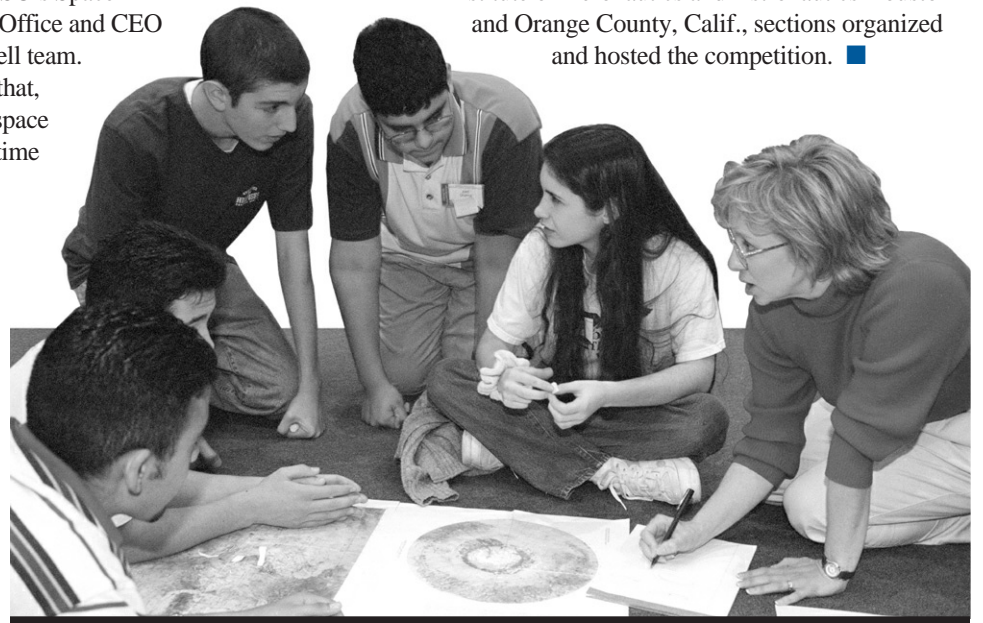


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Organized into four "company" teams (Rockdonnell, Vulture Aviation, Vereinigten Flugfahrten and Grumbo Aerospace), the students worked against a deadline to design, develop and present their concept of a human community on Mars to a panel of judges. They had to design an overall structure, define sources of construction materials, specify vehicles used for transportation, determine sources of



S99-02567



S99-02573

SPACE SETTLEMENT DESIGN COMPETITION – Pictured left to right, top to bottom: Jon Zelon, volunteer CEO of Vulture Aviation, discusses Mars design plans with members of his team. Zelon strategizes with high school students Tania Hernandez, Reagan, and Diana Perry, Pearland. Vereinigten Flugfahrten team celebrates its victory. Rockdonnell team members Kenneth Smith, David Schurr, CEO, and Aimee Wu review their proposal. Miao Tian, Alief Elsik High School student, draws Mars community habitat for the Rockdonnell team. Donna Fender and members of the Vereinigten Flugfahrten team study map of Mars.



Program propels small businesses to the TOP.

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Trail riders clip-clop through JSC.

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Actor Tom Hanks takes tour of Star City.

Page 6

March is Women's History Month *Focus on Women*



JSC Photos by Robert Markowitz S99-03240
Lauri Hansen



Nanette Cerna

S99-03242



Gloria Araiza-Young

S99-03243



Carla Guidry

S99-03241



Laura Pepper

S99-03239

By Deborah Acosta Conder

For five women at JSC, the work day is exciting and fulfilling, with meetings to attend, programs and projects to manage, decisions to make and deadlines to meet. And at the end of a busy day, there are families who need attention and other activities to be involved in. It's all a matter of balance, commitment and a job you love. Just ask Lauri Hansen, Gloria Araiza-Young, Carla Guidry, Laura Pepper and Nanette Cerna.

The JSC Cooperative Education Program provided an entry point for these five outstanding JSC women during the 1980s. What else do they have in common? All are hard working and dedicated to their careers and to the nation's space program. All seem to have found a balance between a rewarding career, an active family life and other outside interests.

These women shared their career highlights at JSC since graduating from the Cooperative Education Program. These women chose NASA because of the exciting environment and the opportunity to make a difference.

Hansen, deputy for Systems Engineering, says, "Nowhere else was the work as exciting. Also, I felt that working at NASA provided an opportunity to have some real impact in aerospace." Prior to moving to the Engineering Directorate, she was the deputy vehicle manager for

the International Space Station. A 1985 graduate of the University of Michigan, she wants to be involved in the program management of a Mars mission, a goal she hopes to achieve before she retires.

"I basically grew up with NASA because my father worked here, so I never really considered another career," says Cerna, in response to why she chose a career at JSC.

Currently a payload integration manager for the Space Shuttle Program, Cerna has most enjoyed being a subsystem manager for orbiter because of interfaces of different disciplines at different levels. She also was a test manager at the Thermochemical Test Area and enjoyed that role because of the "hands-on" work.

For Araiza-Young, a 1982 mathematics graduate from Texas Woman's University, the most exciting work accomplishments have been as part of the Mission Control Center Flight Control Team as a certified ascent, orbit, and entry flight controller. Araiza-Young, who is currently working as a technical assistant for Shuttle Integration, hopes to continue to use her integration and operational skills in upcoming NASA initiatives.

Guidry, a mathematician, has worked on the Single System Trainer both as a software simulation engineer and by developing a complicated math model for the Stabilized Payload Deployment System. Guidry also worked in the Mission Operations Directorate as a payload integration engineer before becoming a technical manager's

representative for her division in the Space and Life Sciences Directorate.

"The ISS Acquisition Office is a great place to be right now because we can see the work we've done to

support the program coming to fruition as the ISS is assembled," says Pepper, an acquisition team lead for the ISS. Pepper, a contracting officer, is looking forward to some of the new initiatives that will affect how NASA does business, such as commercialization.

In addition to their full careers, these women are involved in a variety of outside interests. They not only spend time with their own children, but in Guidry's case, she is also involved in student outreach activities. For Hansen, training retriever dogs, fishing and hiking are in her after work plans. For physical activity, Tai Chi

does it for Pepper and running the 2000 Houston-Tenneco Marathon is a goal for Araiza-Young. As for the fine arts, Guidry is involved in the performing arts and Pepper plays the piano.

When asked about what advice they can provide to other JSC women, Cerna and Araiza-Young suggest always doing the best job you can, taking the initiative, working smart and being a team player. Guidry added, "Show respect at all times and demand respect in return. Don't be intimidated by anyone." Hansen suggests taking the initiative and "seeing what needs to be done rather than waiting for someone to hand you something interesting." "While your career is important, don't sacrifice your family life and outside interests," adds Pepper.

These women don't plan on retiring any time soon and they see the future of the space program, and for themselves, in the many exciting space initiatives currently under way. They include the X-38, Trans-Hab, Regenerative Life Support, the ISS, a voyage to Mars, a return trip to the moon and other development programs that will keep NASA on the technological "cutting edge." With these women involved, NASA will surely remain on the cutting edge.

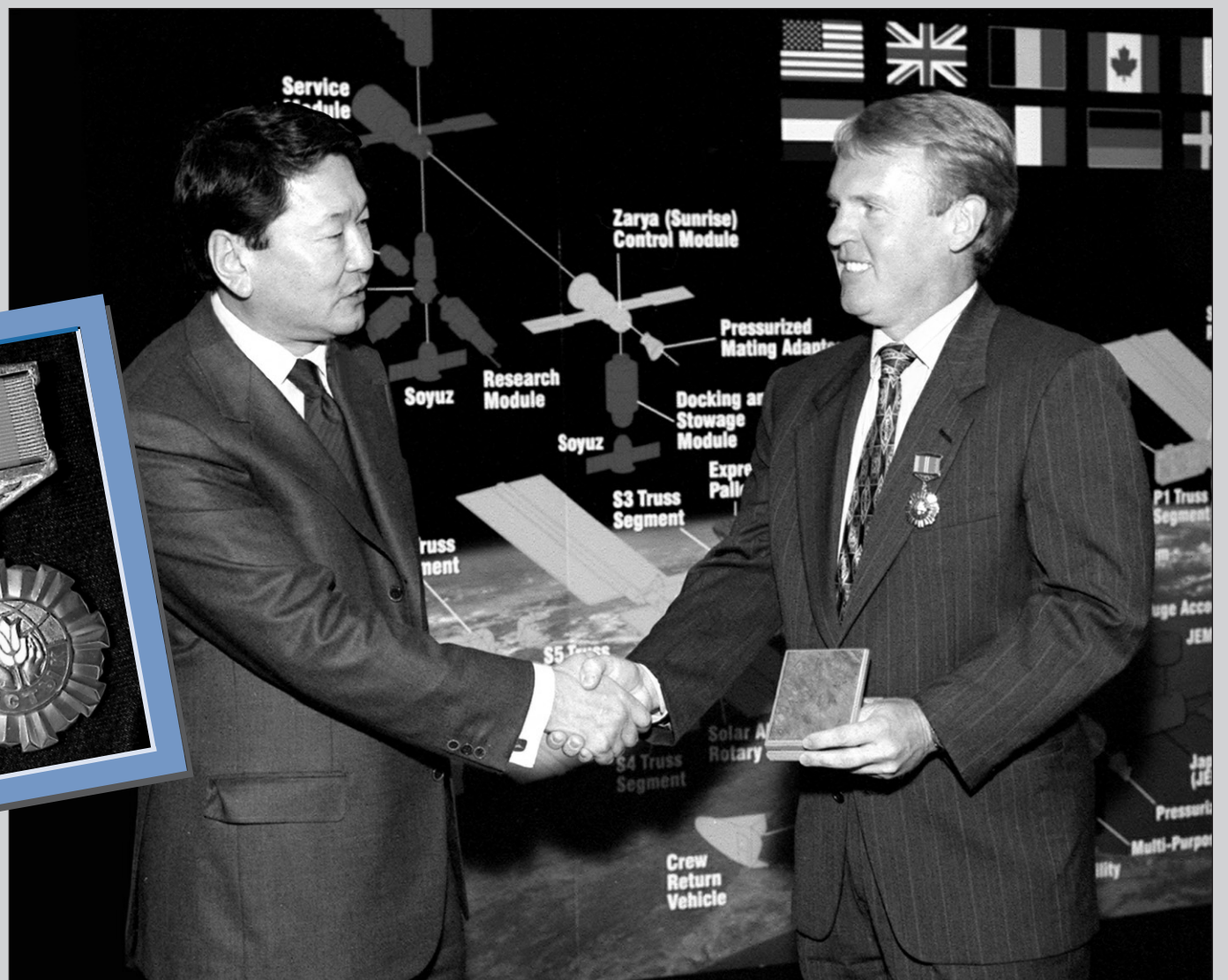
In recognition of Women's History Month, there will be a "Focus on Women" exhibit on display March 10-12 at the Bldg. 3 cafeteria and March 15-17 at Ellington Field. ■

'While your career is important, don't sacrifice your family life and outside interests.'

— Laura Pepper

Thomas receives Kazakhstan's state award

Ambassador of the Republic of Kazakhstan to the United States Bolat Nurgaliyev, left, presents the high state award of Kazakhstan – order "Dostyk" ("Friendship") – to Astronaut Andy Thomas during a recent visit to JSC. Thomas, Kazakh Cosmonaut Talgat Musabaev and French Research Cosmonaut Leopold Eyharts worked together on board Mir last year, completing numerous research projects including those comprising the Kazakhstan scientific program. Last November, Nursultan Nazarbayev, president of Kazakhstan, awarded the crewmembers the high state order in recognition of their exceptional courage, cooperation and excellent work. ■



Ripped from the ROUNDUP

Ripped straight from the pages of old Space News Roundups, here's what happened at JSC on this date:

1 9 7 9

Columbia, the first Space Transportation System Orbiter, takes off today from Dryden in California to ride on the back of NASA's 747 carrier to Kennedy Center. *Columbia* will make three intermediate stops at military air bases along the way, stopping overnight at Kelly AFB in San Antonio.

At Kennedy, *Columbia* will spend 20 weeks in systems testing and checkout including installation of 7800 ceramic tiles, three main engines, and the Orbiter Maneuvering System. It will then spend three weeks in the Vehicle Assembly Building being mated to its External Tanks and the Solid Rocket Boosters.

1 9 8 9

Discovery and her crew of five proved Monday that NASA can take a serious technical setback, correct the problem and launch safely without compromising the space shuttle flight schedule.

Protecting a critical interplanetary launch window for Magellan, STS-29 Commander Michael Coats, Pilot John Blaha and Mission Specialists James Bagian, Robert Springer and James Buchli rode *Discovery's* towering column of thrust and smoke on a near-perfect launch beginning at 8:57 a.m. CST Monday.

After accepting a two-week delay for replacement of the three main engines' high pressure oxidizer turbopumps, *Discovery* and her crew had to endure one last nearly two-hour delay. The Monday launch...was pushed back by ground fog and unfavorable upper level winds.

1 9 9 4

Astronauts Norm Thagard and Bonnie Dunbar arrived in Russia on Feb. 24 heralding the start of a new era in U.S./Russian space cooperation.

The two shuttle veterans are beginning a year of intensive training at the Russian cosmonaut training center in Star City as primary and backup crew members for the launch of the Mir 18 flight, currently targeted for March 1, 1995. Thagard is a member of the primary crew, with Dunbar a member of the backup flight team.

New program lets business owners tap into NASA technology

For 40 years, NASA technology has fueled America's space programs and produced numerous commercial products. Now, a new program helps owners of local small businesses tap into NASA's technology to solve technical problems.

The Space Alliance Technology Outreach Program (TOP) offers business owners a chance to team up with engineers, scientists and technicians in the aerospace industry. The program, a partnership among NASA, the Clear Lake Area Economic Development Foundation, local universities, aerospace contractors and other organizations, pairs business owners with a team of scientists and engineers. The program was kicked off last November.

Cathy Kramer, a NASA manager with decades of experience in engineering problem-solving, is taking a one-year break from her usual duties at JSC to direct the program. Prior to this new assignment, she managed JSC's Biomedical Hardware Development and Engineering Office and served as chief of the Life Sciences Project Division.

After Kramer completes her term as executive director of TOP, another NASA employee will head the program. Plans call for the program to focus on business owners in the Clear Lake area during the first year, then expand to businesses in the Houston area during the second year and finally go statewide by the third year. Once the program reaches its third year, the Texas Department of Economic Development will manage it.

"Some of the best minds in the world have solved problems for NASA," Kramer says. "Through TOP, those same people are available to help small businesses with their technical problems. We have a vast universe of technology just waiting to be used in the private sector."

The process is simple, Kramer says. Interested business owners need to complete and submit a form to request technical assistance. If the request is accepted, a NASA project team will be assigned to the problem. Business owners may receive up to 40 hours of personnel time free of charge.



JSC Photo S99-02376 by James Blair

David Williams, left, and Cathy Kramer, executive director of the Space Alliance Technology Outreach Program, check out the latest version of the Perigard, the device which he invented to keep his catheter dry in the shower while he underwent chemotherapy. The device, developed with the help of NASA, uses a combination of foam and an epoxy NASA uses on its launch and re-entry helmets.

According to Kramer, the program won't do any work that can be done by consultants in the private sector. If a business can receive technical assistance through other businesses, NASA will recommend seeking a commercial solution.

TOP has been a tremendous success in Florida for the past three years, generating some \$14 million in sales revenues for local businesses. NASA has solved more than 600 technical problems for businesses there, saving or creating more than 100 jobs in the process. In Florida, TOP has

tackled challenges as diverse as helping a mulch company solve a conveyor belt problem to helping another firm find methods to make prosthetic limbs fit better.

Although few requests for assistance have been submitted from Clear Lake area business owners, one success story has already been documented.

Like many patients undergoing chemotherapy, David Williams struggled with keeping the central venous catheter in his arm dry. He had to wrap a plastic bag around his arm whenever he took a shower to keep it dry and prevent infection.

After visiting JSC during Inspection 98, Williams met with Kramer and the TOP team to begin researching the problem. A solution was found within one week: a water-

resistant foam used on shuttle astronauts' launch and re-entry helmets. When paired with an epoxy that NASA uses, the foam provided just what Williams needed to stop moisture leaks.

An economic impact commercialization model for Williams' product is being conducted to determine the marketability of the product to medical supply distributors.

For more information on the program, call Cathy Kramer at 281-486-5535. ■

St. Thomas' Episcopal Pipe Band to perform at JSC

JSC will host the St. Thomas' Episcopal School Pipe Band on March 17 for the annual St. Patrick's Day celebration. The pipe band will perform at the Bldg. 3 cafeteria. JSC and contractor employees are encouraged to attend the performance as their workload permits.

In August 1998, the St. Thomas' Episcopal School Pipe Band won its third Juvenile World Pipe Band Championship, establishing it as one of the premier pipe bands in the United

States. First founded in 1962, the band is a popular performer at local and national events, including playing for several presidents and for the queen of England.

The band's biggest local performance is its annual Scottish Festival held in March at the Compaq Center. The band, along with about 150 Scottish dancers from St. Thomas', puts on a two-hour Edinburgh tattoo style extravaganza and features the "champion" highland dancers. ■

TICKET WINDOW

EAA events

The Little Mermaid on Ice
Saturday, April 3, 12 noon
\$13.00

Exchange Store hours

Monday-Friday

Bldg. 3 7 a.m.-4 p.m.

Bldg. 11 9 a.m.-3 p.m.

For details, please call x35350.

The following discount tickets are available at the Exchange Stores

General Cinema Theaters	\$5.50
Sony Loew's Theaters	\$5.00
AMC Theaters	\$4.75
Astroworld Early Bird (valid through May 31)	\$17.75
Astroworld One-day Admission	\$21.00
Astroworld Season Pass (valid at all Texas Six Flags Theme Parks and Water World)	\$54.75
Water World	\$10.75
Moody Gardens (2 of 6 events)	\$9.75
Schlitterbahn Water Park	adult...\$20.75 child (3-11)...\$17.50
Space Center Houston	adult...\$10.25 child (4-11)...\$6.50 (JSC civil service employees free.)
Space Center Houston Annual Pass	\$18.75
Splash Town Water Park	adult...\$14.50 (child 48" and under)...\$11.50

All tickets are non-refundable. • Metro tokens and value cards are available.



PEOPLE *on the* MOVE

Human Resources reports the following personnel changes as of February 13, 1999:

Key Management Assignments

Bill Parsons was named director, Center Operations.
Randy Gish was named director, Business Management.
Greg Hayes was named director of Human Resources.
Dave Lengyel was selected as deputy to the assistant to the director for Human Space Flight, Russia.
Doug Blanchard was named deputy director, Public Affairs.
Curt Brown was named acting deputy director, Flight Crew Operations.
Joel Walker was named deputy director, Center Operations.
Susan Braymer was named deputy director of Human Resources.
Bobbie Gail Swan was selected as technical assistant to the director, Flight Crew Operations.

Promotions

Charles Bell was selected as a contracting officer in the Institutional Business Management Office in the Business Management Directorate.
Ann Bronson was selected as a contract specialist in the Space and Life Sciences Business Management Office in the Business Management Directorate.
Judy Flanagan was selected as a program analyst in the Resource Control and Reimbursables Branch in the Office of the Chief Financial Officer.
Jan Read was selected as a program analyst in the Financial Management Division in the Office of the Chief Financial Officer.
Rose Garza was selected as the secretary for the deputy program manager for technical development in the International Space Station Program Office.

Leah Garcia was selected as the secretary in the EVA, Robotics, and Crew Systems Operations Division, in the Mission Operations Directorate.

Melissa Martinez was selected as the secretary in the Information Products and Services Division in the Information Systems Directorate.

Angela Pollard was selected as the secretary in the Information Technology Division in the Information Systems Directorate.

Reassignments Between Directorates

Andrea Falls moves from the International Space Station Program Office to the Business Management Directorate.
Jim Thornton moves from the EVA Project Office to the Mission Operations Directorate.
Brenda Ward moves from the International Space Station Program Office to the Engineering Directorate.
Pete Smith moves from the International Space Station Program Office to the Office of the Chief Financial Officer.
Liz Fountain moves from the Engineering Directorate to the Space Shuttle Program Office.
Jennifer Rasnic moves from the Information Systems Directorate to the Space Shuttle Program Office.
Jerry Van Horn moves from the Business Management Directorate to the Space Shuttle Program Office.
Scott Gahring moves from the Mission Operations Directorate to the Safety, Reliability, and Quality Assurance Office.
Eulalio Nandin moves from the Mission Operations Directorate to the International Space Station Program Office.
Tony Ornelas moves from the Engineering Directorate to the International Space Station Program Office.
Dwight Auzenne moves from the Safety, Reliability, and Quality Assurance Office to the Space Operations Management Office.
Jon Hall moves from the Office of the Chief Financial Officer to the EVA Program Office.

DATES & DATA

March 12

Astronomers meet: The JSC Astronomical Society will meet at 7:30 p.m. March 12 at the Center for Advanced Space Studies, 3600 Bay Area Blvd. For details, call Chuck Shaw at x35416.

March 17

Scuba club meets: The Lunarflins will meet at 7:30 p.m. March 17. For details, call Mike Manering at x32618.
Astronomy seminar: The JSC Astronomy Seminar will meet at noon March 17, 24 and 31 and April 7 in Bldg. 31, Rm. 248A. For more information, call Al Jackson at x35037.
Spaceland Toastmasters meet: The Spaceland Toastmasters will meet at 7 a.m. March 17, 24 and 31 and April 7 at the House of Prayer Lutheran Church. For more information, call George Salazar at x30162.
Communicators meet: The Clear Lake Communicators, a Toastmasters club, will meet at 11:30 a.m. March 17, 24 and 31

and April 7 at Lockheed Martin, 555 Forge River Rd. For details, call Allen Prescott at 282-3281 or Mark Caronna at 282-4306.

Spaceteam Toastmasters meet: The Spaceteam Toastmasters will meet at 11:30 a.m. March 17, 24 and 31 and April 7 at United Space Alliance, 600 Gemini. For details, call Patricia Blackwell at (281) 282-4302 or Brian Collins at x35190.

March 18

Directors meet: The Space Family Education board of directors will meet at 11:30 a.m. March 18 in Bldg. 45, Rm. 712D. For details on this open meeting, call Gretchen Thomas at x37664.

March 22

Alzheimer's support group meets: The Clear lake Alzheimer's Caregiver Support Group will meet from 7:30 p.m. to 9 p.m. March 22 in the first floor conference room in St. John Hospital, West Building, in Nassau Bay. For details, call Nancy Malley (281-480-8917) or John Gouveia (281-280-8517).

NASA BRIEFS

HEART ASSIST PUMP EFFECTIVE IN EUROPEAN TRIALS

A miniaturized ventricular-assist pump, developed for heart patients using NASA technology, has been successfully implanted into seven people in European clinical trials. More than 20 additional implants are expected by mid-1999.

The tiny device has functioned normally and to specification, said Dallas Anderson, president and CEO of MicroMed Technology Inc. of Houston, Tex., the company to which NASA granted exclusive rights for the pump. Specific medical information on the individual patients is confidential. But one person has undergone a successful heart transplant after 75 days with the device implanted in his chest. That, Anderson said, demonstrates the pump's capability to keep a patient alive until a donor heart becomes available.

MARS GLOBAL SURVEYOR BEGINS FULL MAPPING

NASA's Mars Global Surveyor spacecraft began its primary mapping mission, following a successful firing of its main engine on February 19 to fine-tune its path around the red planet into a nearly circular, Sun-synchronous orbit. The final "transfer to mapping orbit" burn lowered Global Surveyor's closest approach over Mars from 253 miles to approximately 229 miles.

The mapping orbit was designed so that Surveyor passes over a given part of Mars at the same local time each orbit. At about 2 p.m. local Mars time, the spacecraft will cross the equator flying northward on the daytime side and about 2 a.m., it will cross the equator flying southward on the nighttime side. This timing is essential for effective interpretation of atmospheric and surface measurements, because it allows scientists to separate local daily variations from longer-term seasonal and annual trends.

ARTIFICIAL MUSCLES TO BE USED ON ROBOTIC SPACE EXPLORERS

Artificial muscles that should give space robots animal-like flexibility and manipulation ability will get their first test on a small NASA rover destined to explore an asteroid.

Under development by Dr. Yoseph Bar-Cohen of NASA's Jet Propulsion Laboratory, Pasadena, Calif., the artificial muscles are based on a simple, lightweight strip of highly flexible plastic that bends and functions similarly to human fingers when electrical voltage is applied to it.

Bar-Cohen and a small team of scientists and engineers are working to turn these strips into grippers and strings which can grab and lift loads, among many other potential uses.

GILRUTH CENTER NEWS

<http://www4.jsc.nasa.gov/ah/exceaa/Gilruth/Gilruth.htm>

Hours: The Gilruth Center is open from 6:30 a.m.-10 p.m. Monday-Thursday, 6:30 a.m.-9 p.m. Friday, and 9 a.m.-2 p.m. Saturday. Contact the Gilruth Center at 281-483-3345.

Sign up policy: Sign up in person at the Gilruth Center and show a yellow Gilruth or weight room badge. Classes tend to fill up two weeks in advance. Payment must be made in full, in exact change or by check, at the time of registration. No registration will be taken by telephone. For additional information, call x33345.

Gilruth badges: Required for use of the Gilruth Center. Employees, spouses, eligible dependents, NASA retirees and spouses may apply for photo identification badges from 7:30 a.m.-9 p.m. Monday-Friday and 9 a.m.-2 p.m. Saturdays. Cost is \$10. Dependents must be between 16 and 23 years old.

Nutrition intervention program: Six-week program includes lectures, a private consultation with the dietitian and

blood analysis to chart your progress. For additional information, call Tammie Shaw at x32980.

Defensive driving: One-day course is offered once a month at the Gilruth Center. Pre-registration required. Cost is \$25. Call for next available class.

Stamp club: Meets every second and fourth Monday at 7 p.m. in Rm. 216.

Weight safety: Required course for employees wishing to use the Gilruth weight room. Pre-registration is required. Cost is \$5. Annual weight room use fee is \$90. The cost for additional family members is \$50.

Exercise: Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays. Cost is \$24 for eight weeks.

Step/bench aerobics: Cardiovascular workout. Classes meet from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32 for eight weeks. For additional information, call Kristen Taragzewski, instructor, at x36891.

Yoga: Stretching class of low-impact exercises designed for people of all ages and abilities in a Westernized format. Meets Thursdays 5-6 p.m. Cost is \$32 for eight weeks. Call Darrell Matula at x38520 for additional information.

Ballroom dancing: Classes meet from 7-8:15 p.m. Thursdays for beginner advanced classes and from 8:15-9:30 p.m. for beginner-intermediate and intermediate students. Cost is \$60 per couple.

Country and western dancing: Beginner class meets 7-8:30 p.m. Monday. Advanced class (must know basic steps to all dances) meets 8:30-10 p.m. Monday. Cost is \$20 per couple.

Fitness program: Health-related fitness program includes a medical screening examination and a 12-week individually prescribed exercise program. For additional information, call Larry Wier at x30301.

C O M M U N I T Y N E W S**Texas Independence Trail Riders pass through center**

The Texas Independence Trail Riders made their way through JSC Feb. 9 on their way to the Houston Livestock Show and Rodeo.

They arrived at 3:45 p.m. as scheduled and were joined by 15 JSC Circle Riders. The group wound through the center and set up camp overnight at the Gilruth Center.

Later that evening, the NASA/Clear Creek/Friendswood Subcommittee of the Houston Livestock Show and Rodeo's Metro Go Texan Committee sponsored a dinner and dance at Space Center Houston. More than 800 people attended the celebration. The highlight of the evening was the Houston Livestock Show

and Rodeo's presentation of a \$109,000 check to Longhorn Project officials, including JSC Director George Abbey. The donation will be used to complete the buildings and facilities of the Longhorn Project.

The event raised more than \$19,000 for the Houston Livestock Show and Rodeo's scholarship fund. The proceeds will fund scholarships for high school seniors in the Clear Creek and Friendswood school districts.

The Texas Independence Trail Riders packed up and departed the Gilruth Center the following morning, following a breakfast provided by Team NASA. ■



JSC Photo S99-01998 by James Blair



JSC Photo S99-01989 by James Blair

Dennis Klein (foreground) of Solutia, Inc. and Leon Blum (background), chief of staff, JSC's ISO 9000 Office, judge a McWhirter Elementary School student's volcano exhibit on display during the recent Science Fair.

Future engineers exhibit works during annual Science Fair

By Leon Blum

Johnson Space Center employees and contractors recently went out into the community to promote the sciences at 20 local elementary, intermediate and high schools.

Civil servants and contractor employees worked together, judging the many student entries in this year's Science Fair. Judges came from all the disciplines found across the center. Engineering, Medical Sciences, Legal, ISO 9000, and many other offices sent representatives to help local schools and students. Robin Hart, who works for Information Dynamics in the Public Affairs Office, organized and coordinated the judging activities.

The students worked hard to put together science projects that demonstrated their ability to understand and use the scientific method. Hundreds of projects were grouped into a diverse set of scientific topics including engineering, biology, math, consumer, Earth, and mechanics. Judges evaluated each student's work in the categories of scientific method, methodology, creativity and presentation. Judges also had the opportunity to provide written feedback to the students.

The exhibits showed each of the judges more than just the student's knowledge of the subject. The students all demonstrated their abilities, skills, hidden talents, hobbies and interests. From whether a bath uses more water than a shower, to the movement of light sensitive robots, the exhibits were all interesting. They showed what future engineers and scientists are thinking about today. ■

College students to conduct experiments on NASA's KC-135

Forty-eight teams of college students from around the country will be "floating" through school this month aboard a NASA research aircraft.

The teams are here for NASA's 1999 Reduced Gravity Student Flight Opportunities Program, funded by NASA and administered by the Texas Space Grant Consortium, Austin.

This year, the students will fly in two separate sessions with the first 48 teams flying this month and the rest in August. About 96 teams of undergraduate students will be taken aloft to study the effects of microgravity on various scientific experiments.

Teams are flying experiments aboard NASA's KC-135 aircraft that uses a roller-coaster-like flight profile over the Gulf of Mexico to provide brief periods

of microgravity. Each flight includes approximately 40 parabolic arcs. During each parabolic arc, passengers and their experiments can experience about 25 seconds of zero-gravity.

During the student campaign, teams of up to four students and a professional

journalist will fly aboard the aircraft to conduct and evaluate their experiments. The journalist will document and report on the students' efforts.

A supervising professor and a student ground-support team will remain at Ellington Field to support their flying counterparts.

Months before they get to fly on the KC-135A, the students must identify, develop and test their experiments. The experiments are critiqued for

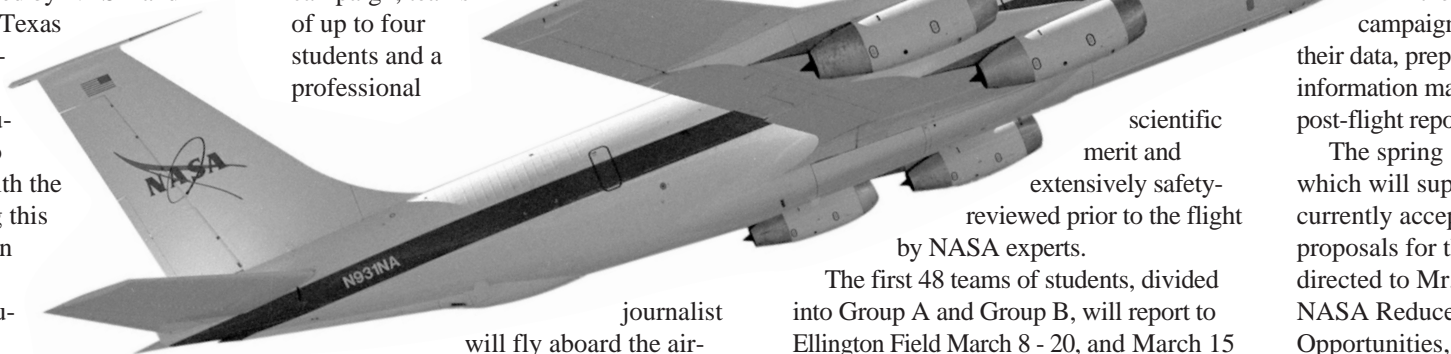
scientific merit and extensively safety-reviewed prior to the flight by NASA experts.

The first 48 teams of students, divided into Group A and Group B, will report to Ellington Field March 8 - 20, and March 15 - 27, respectively. During the first week of their two-week visit to Houston, program participants receive pre-flight training and assemble and test their experiment packages. During the second week, the students fly with their experiments, adjusting equipment as needed, and conducting post-flight

debriefings and reviews. Each team also is required to develop a program for sharing the results of its experiment with teachers, students and the general public following the conclusion of the flight campaign. Participants must analyze their data, prepare applicable education and information materials, and submit final post-flight reports.

The spring 1999 student campaign, which will support 48 teams in August, is currently accepting applications. Student proposals for that campaign should be directed to Mr. Burke Fort, Director NASA Reduced Gravity Student Flight Opportunities, Texas Space Grant Consortium, 3925 West Braker Lane, Suite 200, Austin, TX 78759.

A list of the selected teams and additional information about the program can be found on the Internet at <http://www.tsgc.utexas.edu/float/> ■



When it comes to Mars, universities mean business

By John Ira Petty

Six teams from universities around the country have been selected to write drafts for the NASA Mars Exploration Business Plan under the 1999 NASA Means Business Student Competition.

The new national pilot program directly involves university students in real NASA programs and missions. The competition is a Human Exploration and Development of Space University Partners (HEDS UP) Program. HEDS UP is sponsored by NASA and is administered by the Lunar and Planetary Institute and Texas Space Grant Consortium.

Among the program's goals are to broaden and strengthen the professional relationships between NASA scientists,

engineers, and administrators and counterparts in the academic community and to provide a hands-on educational experience for the students involved. It also seeks to generate fresh views on how to accomplish human exploration and development of space.

The winners were Massachusetts Institute of Technology, Texas A&M University, the University of Maryland, Georgia Tech University, the University of Colorado, and the University of Illinois Champaign/Urbana.

"It was a very close competition," said Humboldt C. Mandell Jr. of the Exploration Office at JSC, who coordinates the center's NASA Means Business effort. "All the proposals submitted displayed strengths."

The student teams selected in the national competition will write sections

of the draft of the NASA Mars Exploration Business Plan, part of the strategic roadmap by which people will initially explore and develop Mars.

Each team's proposal will investigate issues important to NASA's Mars Human/Robotic Exploration Team mission planners, and propose solutions. The Mars mission planners will review each team's work with the expectation of incorporating it into the official NASA Mars Exploration Business Plan.

Winning teams receive \$1,000 cash awards and travel grants to JSC, where they will present their work at a NASA Customer Engagement Conference May 24 to 26.

Winners were selected on criteria including strength and depth of thought in their proposals, with particular emphasis on recognition of core planning issues

facing NASA and its prospective partners; institutional and community resources obtained in support of the team's proposal-writing and post-selection activities, for example course credit, coverage of expenses, local publicity, and community outreach support.

Each of the six student teams will be partnered with key NASA and industry scientists, engineers and administrators who will act as information sources or mentors.

JSC's Steve Nesbitt and Ralph Schomburg were among the evaluators, who also came from NASA Headquarters, the Jet Propulsion Laboratory, Ames Research Center and Kennedy Space Center.

For further information, see <http://www.tsgc.utexas.edu/nmb>. ■

STAR VISITS STAR CITY – Actor Tom Hanks recently toured astronaut and cosmonaut training facilities at the Gagarin Cosmonaut Training Center at Star City, Russia. Astronaut Terry Wilcutt, then NASA's Director of Operations at Star City, here shows the two-time Academy Award winner and star of *Apollo 13* the inside of the Mir Space Station's core module. Hanks, a self-proclaimed space enthusiast, was in Moscow filming for an upcoming movie.



New royalty formula for civil service inventors in effect

By John Ira Petty

A new and more equitable formula for distribution of royalties to civil service inventors and NASA has gone into effect, Henry L. Davis, director of the Technology Transfer and Commercialization Office, announced.

Under the new formula a single inventor will receive the first \$5,000 of royalties, plus 25 percent of royalties over \$5,000.

In the case of two to four inventors. Each will receive an equal share of up to \$5,000. They also will share 25 percent of remainder up to \$25,000. They will share 30 percent of the remainder after the first \$25,000.

Five or more inventors will receive an equal share of the first \$25,000, and will share 30 percent of the remainder after the first \$25,000.

The NASA portion of the royalties are available for technology transfer applications.

Royalties awarded to JSC inventors in for fiscal year 1997 totaled \$37,090. In fiscal 1998 awards were \$66,614. Tech Brief awards – awards of \$150 to each inventor for publication of papers in Tech Briefs Magazine – totaled to \$15,300 in fiscal 1997 while \$21,600 was awarded in fiscal 1998.

"The trend is positive," Davis said. "But for royalty awards to continue to increase, all inventors, including contractors, should report new technologies to the Technology Transfer and Commercialization Office as soon as possible."

Davis said Ed Fein, JSC patent counsel, is available to answer question. His extension is 34871. ■

NASA requests submissions for 1999 Software of the Year Award

NASA's Chief Information Officer Lee Holcomb, co-sponsor with NASA's Chief Engineer Daniel Mulville, chair of NASA's Inventions and Contributions Board, is calling for submissions for the 1999 NASA Software of the Year Award to give recognition to software developed and owned by NASA.

Last year, the competition resulted in two first place winners who were each awarded \$50,000. Information about the winner and the finalists from 1998 is available at <http://www.hq.nasa.gov/office/codei/swy98win.html>.

The award, which will include a plaque, a certificate signed by the administrator, and up to \$100,000, will be presented to author(s) of software in which (1) NASA has an intellectual property interest, (2) it has been supported, adopted, sponsored, or used by NASA, (3) it is significant to the NASA mission, and (4) software programs must have completed all experimental phases. Additional guidance for the competition is available at the above Web site.

Entries will be judged by the NASA Software Advisory Panel comprised of software development experts from all

NASA centers and JPL. After its review, the panel will submit its selection(s) to the ICB. The ICB may recommend a monetary award of up to \$100,000 for the winner(s). The award will be presented by NASA officials later in the year on behalf of the NASA administrator.

NASA Form 1329 (ICB Award Evaluation Questionnaire) must be filled out for each entry. Copies of the software, sample applications and data, and descriptive documentation of the package should be included, in addition to evidence demonstrating the impact, ease of use, and degree of innovation and suitability of the entry. This information will be the primary data used by the panel in recommending awards.

Additional inquiries on award criteria should be made through the NASA Space Act Awards liaison officer at any NASA center or through the ICB.

Call (202)358-2468 for names of these contacts. Entries and supporting material must be submitted to these NASA offices not later than April 16, 1999. Each center will then forward to the ICB the center's top selection by May 14, 1999. ■

Shuttle lands in Idaho

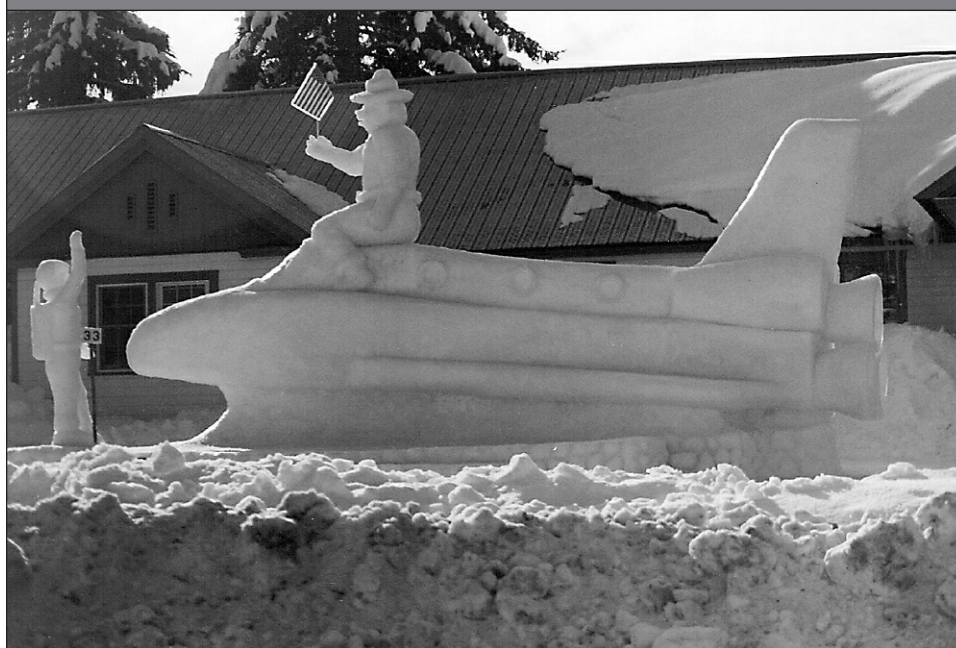
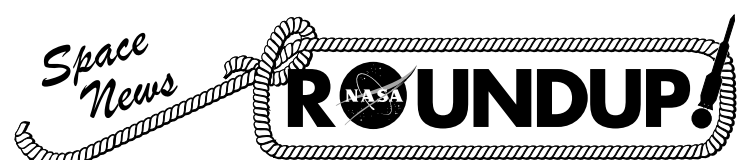


Photo by Stevie Murphy

With Smokey the Bear at the controls, the shuttle glided to a smooth landing in McCall, Idaho, just in time for the McCall Winter Carnival. An astronaut greets the flag-bearing bear. McCall elementary school student Katherine Swick designed the snow sculpture. She and her father, an ice architect and forest ranger with the U.S. Forest Service, made the sculpture. Stevie Murphy, McCall elementary school teacher, took the photo.



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