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SPACE CENTER Roundup

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JSC historian's award-winning book recalls Apollo era

NASA Johnson Space Center Historian Glen Swanson has been awarded the George H. Pendleton Prize by the Society for History in the Federal Government for his book "Before This Decade Is Out: Personal Reflections on the Apollo Program" (NASA: NASA History Office).

The book is a collection of oral histories that were gathered primarily from the JSC Oral History Project, which is devoted to preserving the words and remembrances of key participants in NASA's human space program. It includes reminiscences from the perspective of many of the key political leaders, engineers, scientists, and astronauts who made the Apollo Program such a resounding success.

"This award is really an acknowledgment of those individuals whose stories are laid out in these pages and told in their own words," Swanson says.

Shortly after Swanson arrived at JSC in August 1998 to work on the JSC Oral History Project, he was approached with the idea of assembling a book that would be a collection of oral histories that focused on the Apollo Program. With the onset of the 30th anniversary of the Apollo 11 mission, he knew that the Apollo Program would soon draw a lot of renewed attention.

Swanson read and edited thousands of pages of transcripts to try and capture the essence of the Apollo Program from an engineering/management perspective. He also went back and gathered oral histories from other programs at JSC and additional NASA centers.

"One of the challenges for me as editor was to translate any technical language in the transcripts into easily understandable prose," said Swanson. "Many of these



Glen Swanson

folks come from an engineering background and speak a language all of their own. To help the reader through the language, I added footnotes to explain referenced dates, acronyms and terms most

people may not be familiar with. I also removed awkward pauses and other common utterances present in the spoken word which do not translate well into readable prose. The end result is a book that I

believe is very easy to read and understand. Many times publications of this subject matter are very technical, but this book reads like a good story with each chapter slightly different from the rest because each has its own storyteller."

The book contains brief biographical introductions followed by interviews of people who worked on the Apollo Program at JSC (then the Manned Spacecraft Center) as well as at other NASA centers including the Stennis Space Center and NASA Headquarters. It includes oral recollections from James Webb, who served as the NASA administrator during the early days of the manned space program through Apollo; Wernher von Braun, rocket pioneer and architect of the Saturn V; Robert Gilruth, director of the Manned Spacecraft Center; and Apollo astronauts Harrison Schmitt and Charles Duke.

According to Swanson, a highlight of the book has proven to be the chapter on Geneva Barnes, a relative unknown in the Apollo story whose career with NASA included a brief stint as a public affairs assistant to Neil Armstrong. She worked in the Public Affairs Office at NASA Headquarters when the Apollo 11 astronauts returned from the first landing on the Moon. She accompanied the crew on a worldwide tour of 22 countries in 38 days, a unique experience she recounts in her chapter.

Swanson also selected all of the photographs included in the book. He went through JSC's photo archives, searching for images that had not been published before that would convey a personal side of the individuals featured in each chapter.

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Astronaut remembered...

Tree-planting ceremony scheduled for Astronaut Conrad

On June 2, JSC will celebrate the life of Astronaut Charles P. (Pete) Conrad, the third person to walk on the Moon, by planting a Live Oak tree in his honor, ensuring that his legendary role as a space explorer will never be forgotten.

JSC civil service and contractor employees are invited to attend the ceremony, which begins at 11 a.m. adjacent to Bldg. 111. Employees are encouraged to ride the JSC shuttle bus (route A) to the site as there is no nearby parking.

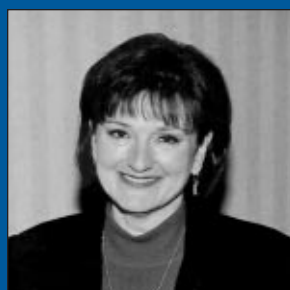
Center Director George W.S. Abbey and former Deputy Center Director P.J. Weitz will begin the ceremony, followed by the ceremonial tree planting and a moment of silence. A T-38 flyover will complete the program.



Conrad's family, astronaut alumni and crewmembers also will be in attendance. Conrad left his mark on history November 19, 1969, when, as commander of the Apollo 12 mission, he and Astronaut Alan Bean set their lunar module "Intrepid" down on the Moon's Ocean of Storms to achieve the second of six landings in the Apollo Program. Hours later, Conrad crept safely out of the vehicle and onto the Moon's surface. Parodying the historic words of Neil Armstrong four months earlier, Conrad said, "Whoopie! Man, that may have been a small one for Neil but that's a long one for me."

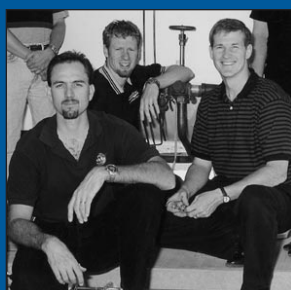
Conrad also flew on two Gemini missions, Gemini 5 and 11, and commanded the first crew to live and work on America's first space station, Skylab.

Conrad died July 8, 1999, at age 69. ■



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Darnell named Procurement Supervisor of the Year

Ginger Darnell, manager of the Institutional Procurement Office at the Johnson Space Center, has been selected as the Procurement Supervisor of the Year under the NASA Procurement Awards Program.

Darnell manages a diverse range of procurement functions at JSC which support the center's daily operations and infrastructure including base operations; information technology and services; construction and modification of facilities; safety, reliability, and quality assurance; technology transfer; and public affairs.

Darnell is extremely proud of the accomplishments of the procurement professionals in her office in the areas of performance-based contracting, the use of small business/small disadvantaged business in meeting center requirements, the use of commercial and mid-range procedures to expedite the procurement process, the implementation of the credit card program at JSC, and the reduction in the backlog of contracts to be closed out. Although she enjoys the many challenges and complexities that come with managing such

a diverse area, her greatest enjoyment is working with and developing the people in her organization.

Darnell began her federal service career in 1973 with the Internal Revenue Service and joined NASA in July of 1980. She has spent most of her NASA career in the field of procurement supporting the Space Shuttle Program, the Space Operations Program, Research and Engineering activities, and Center Operations. She also worked as a policy analyst for a short while in the Lunar and Mars Exploration Office and as a branch chief in the Center Operations Directorate, serving as

“*I try to stress to employees that it is really up to them to take responsibility for their own career development and to ensure that they are taking advantage of every opportunity out there to increase their knowledge and their work experience.*

— Ginger Darnell

a contracting officer's technical representative and overseeing a wide range of administrative functions at the center.

Darnell feels that her experience working in other areas has allowed her to see the procurement process from a totally different perspective and that this greatly enhanced her effectiveness once she returned to

procurement. “I like to encourage people to take some risks and to try new things occasionally. Although it's great to be an expert in one particular area, I feel that you really need to stretch yourself and to broaden

your experience base in order to expand your career opportunities.”

Darnell is also a firm believer in the value of actively participating in professional organizations such as the National Contract Management Association. She has been a member of the Space City Houston Chapter for almost 20 years, serving as the Chapter president in 1995, holding various other offices through the years, and receiving the honor of NCMA Fellow in 1997.

From a procurement standpoint, Darnell feels that the greatest challenge she has faced so far in her career was working on the agency-wide Consolidated Space Operations Contract. Along with Contracting Officer Roberta Beckman, Darnell was a member of the Acquisition Strategy Team as well as the Source Evaluation Board. The goal of CSOC is to reduce the overall cost to NASA for sustained high quality and reliable space mission operations and data services. CSOC is intended to shift the end-to-end

management responsibility and performance accountability from the five NASA centers to the CSOC contractor.

According to Darnell, “This was a unique experience to deal with five NASA centers to pull off this multibillion-dollar procurement to consolidate all or part of 16 existing NASA contracts. Not only were the cultures of the centers quite different, we had the huge complexity of moving primarily level-of-effort contracts into a performance-based contract. Needless to say, there were some pretty tense moments in our strategy sessions and SEB meetings, but ultimately we succeeded as a NASA team in awarding the CSOC contract.”

Because of the wide variety of procurement actions handled in her office, which includes everything from purchase orders to multimillion-dollar support services contracts, Darnell's office is often considered a training ground for new contract specialists and purchasing agents. She considers it critical for her employees to have a good understanding of what is required of them in terms of training, performance, and attention to customer service. “I try to stress to employees that it is really up to them to take responsibility for their own career development and to ensure that they are taking advantage of every opportunity out there to increase their knowledge and their work experience.”

One example of a career development opportunity that Darnell took advantage of herself was a 3-month rotational assignment in the Office of Legislative Affairs at NASA Headquarters. This opportunity to gain an understanding of how NASA interacts with Congress and responds to external issues was invaluable.

Other awards that Darnell has received include the NASA Exceptional Achievement Award for her management of the procurement activity supporting the Space Shuttle Program, the JSC Certificate of Commendation for her management of contracts supporting the Center Operations Directorate, and the Source Selection Acquisition Improvement Award for the CSOC procurement. ■



Tom Luedtke, associate administrator, NASA Office of Procurement, presents the Procurement Supervisor of the Year Award to Ginger Darnell, manager of the Institutional Procurement Office at the Johnson Space Center.

JSC area once home to Native Americans

By David Haines

The immediate vicinity of the Johnson Space Center was home to Native Americans, some dating back as far as several thousand years B.C. and predating tribal affiliation.

There are literally hundreds of ancient campsites located in the greater Galveston Bay complex, several of which are located on Clear Lake and its adjacent estuaries. The campsites, or “middens,” are actually ancient refuse piles which are composed of the detritus of the daily lives of these prehistoric Texans, and include broken pottery shards, flint projectile points, animal and fish bones, and literally millions of shells of the mussel *rangia cuneata*. When in season, the *rangia* clam was a staple food item of these people, as it thrived in the not-too-salty brackish water of the Galveston Bay estuarine system.

Erosion, subsidence and tidal action over the millennia have all acted to expose some of these middens; others have been exposed inadvertently by development. A nearby example of a midden exposed by development is the Harris County Boys Home site, located adjacent to JSC on Mud Lake. This prehistoric site is one of the largest on the entire upper Texas Coast and is marked with a Texas State historical marker. The site was exposed as the Clear Lake Forest subdivision was being developed and a

storm drain excavation exposed some ancient burials.

The people who inhabited the Galveston Bay area in antiquity were not a culturally advanced civilization when compared to other native peoples, such as the Plains tribes. Archaeological studies have shown that theirs was a mean existence, with provision of food and the battle against the elements taking precedence over all other activities. They were able to develop a fairly extensive trade network with neighboring peoples to the north and east, who provided flint for tools and other commodities in exchange for such items as sea shells, which were used for ornaments and decoration.

The first known European contact with these people was recorded by the Spanish explorer Cabeza de Vaca who, with his crew, was shipwrecked on Galveston Island in 1528. De Vaca spent several years with the natives as their quasi-captive and traveled great distances with them throughout the southwest portion of what is now the United States. Fortunately, he kept a diary of his captivity and travels, and it is this document which provides the only known firsthand account of life among these people.

For more information on this subject, see “The Indians of Texas from Prehistoric to Modern Times” by W. W. Newcomb Jr. and *Texas Monthly's* “Field Guide to Stone Artifacts of Texas Indians.” ■

OPEN HOUSE

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C O M M U N I T Y N E W S**Volunteers help Seabrook students build solar cart**

Mike Ewert certainly knows how to rev the engines of local students.

Ewert, life support analyst, was part of a team of JSC engineers who worked with Seabrook Intermediate School students on a Solar Go-Cart project. Other JSC mentors included David Bergeron, Space Industries, a division of GB Tech., and NASA's Cindy Cross, Tico Foley, Katy Hurlbert, Scott Lazaroff, Karen Nyberg, and Michael Rouen.

Together, in less than one month's time, the student-mentor team designed a go-cart powered exclusively by solar energy. Lightweight flexible solar photovoltaic (PV) panels on the hood and roof of the cart charge the battery whenever the cart is in the sun. A separate, stationary PV panel can also be used to provide a faster charge if desired.

"I didn't think we could do it at first," said Courtney Lankford, a seventh-grade student who worked on the project. "I helped with the chassis part and learned a lot about renewable energy."

Many of the solar go-cart's other components, such as the motor and the steering system, were cannibalized from a children's motorized toy jeep. The frame was constructed using PVC pipe and glue and students shaped plexiglass using a heat gun to form the hood of the vehicle. The cart also features a bench seat and an adjustable accelerator pedal to accom-

modate the varying heights of the drivers.

"I liked the construction part and the building of the cart the most," said Jonathan Peavey, a seventh-grade student who worked on the project.

The cart didn't come without challenges though. Like any engineering design project, setbacks arose, but the students tackled them just as any other. For instance, during an early test, a 30-amp fuse blew and the team determined that they needed to put in a circuit breaker. Early on, the cart also suffered from a bent axle but the problem was quickly remedied by reinforcing the axle.

At a presentation unveiling the solar-powered cart to students and parents, Ewert credited NASA for providing him with volunteer time for the project as well as loaning the solar panels. Ewert also recognized many of his colleagues for their assistance.

"It's thinking about the future that motivated me to do this," said Ewert as he addressed an outdoor crowd of students, teachers and parents. "On pretty days like this, you can see the haze and it makes you really see the pollution in our area. It will be students like these that will lead us to the goal of cleaner air to and renewable energy sources that help reduce our dependence on imported oil."

The solar-powered vehicle was seen by thousands of people at the Houston Earth Day celebration last month. ■



Photo by Nicole Cloutier

ALL SYSTEMS GO — Seabrook Intermediate students revel at the success of their solar-powered go-cart during a recent demonstration for parents and schoolmates. Mike Ewert, NASA, center, was a JSC volunteer mentor who helped the students build the vehicle while teaching them about renewable energy. Shown here, left to right, are Ash Robson, Trey Garner, Max Muzerie, Robert McPhail, Chris Zinn, Mason Markee and Jonathan Peavey.

Are you the missing link in Space Link?

Can you share about three hours of your day with an area student a few days this summer? If so, your time and enthusiasm are needed as JSC prepares to participate in Space Link, a career-shadowing program formerly known as Vital Link.

Volunteers are needed to host approximately 20 students from area schools who will visit JSC June 5-8. Their visits will last from 8:30 - 11:30 a.m. each day. Professionals in all fields are welcome to participate in providing the students with an opportunity to explore careers in aerospace.

The goal is to have the students experience firsthand how classroom subjects are used in the workplace. Volunteers are welcome to show the students various sites of the center, such as the Mission Control Center, Lunar Sample Laboratory Facility,

or the mockups as well as share their own daily activities and projects.

"Some of directorates invite a student and then have them rotate throughout the team each day," said Robin Hart, Speakers Bureau coordinator. "But we've found that the students have a better experience when they pair up with one person for the program. They feel more comfortable and build a better relationship than they might by being introduced to a new person each day as well as new sights and sounds."

Civil servants interested in sharing some of their time may contact Hart at x34754 for more information. On-site contractors should contact their education team for information on how to be involved. ■

Other volunteer opportunities can be found at <http://www4.jsc.nasa.gov/scripts/eweek/outreach.asp>

Community college students board KC-135 for first flight

NASA JSC Photo JSC2000e12696

Northwest College team members Jason Tisdale, Tomi Fatunde and Tracy Scott (mentor) test their experiment on projectile motion.

For the first time in the history of NASA's Reduced Gravity Student Flight Opportunities Program, community college students got a chance to fly their experiments aboard the KC-135 "Weightless Wonder."

Forty-eight students, from throughout Texas but mostly from the Houston area, participated in eight teams as members of flight and ground crews during the community college flights. The flights took place the week of April 17.

Experiments covered studies of gravity, elodea leaves, projectile motion, pharmaceutical aerosols, surface tension and viscous effects,

resistive exercise devices and plant pollination in microgravity.

JSC scientists and engineers served as mentors for the flight teams. Prime mentors were Elizabeth Bloomer, Rod Lofton, Bob Stuckey, Tracy Scott, Chuck Lloyd, and Katy Hurlbert. Backup mentors were Adam Dershowitz, Bryan Snook, Brett Maryott, and Chris Johnson. Carol Grunsfeld and Beth Shepherd served as co-mentors for one team.

About 1,000 students have flown in zero g aboard the KC-135 since NASA's Reduced Gravity Student Flight Opportunities Program began in 1995. ■

Employees' children earn scholarships

This year's winners of the NASA College Scholarship Fund are Derek Juang, son of Langley Research Center employee Jer-nan Juang; Natalie Yip, daughter of Langley Research Center employee Long P. Yip; Joyce Stuckey, daughter of NASA Headquarters employee Ronald K. Stuckey (and sister to 1998 recipient, Jennifer Stuckey); Karen Ruff, daughter of retired Marshall Space Flight Center employee Rudolph C. Ruff; Justin Montenegro, son of Marshall Space Flight Center employee Justino Montenegro; and Katie Hancock, daughter of Wallops Flight Facility (Goddard Space Flight Center) employee David W. Hancock III. This brings the total number of recipients to 90 and 56 of these have graduated.

Applications were restricted to dependents of NASA employees who are planning to major in science or engineering. All NASA centers were well represented among the candidates with 69 eligible applications received. All had exceedingly high grade point averages and all scored well on the SAT (several in the 1,500 range and one with 1,600) and all were actively involved in their community.

The NASA College Scholarship Fund, Inc., Board of Directors has determined that seven scholarships will be awarded next year. Each scholarship will be renewable annually for a maximum of \$8,000 over six calendar years.

The Scholarship Fund was established to award scholarships agencywide to qualified dependents of NASA and former NASA employees. The Fund was established as a direct result of a substantial unsolicited gift by the noted Pulitzer Prize winning author, James A. Michener. Many NASA employees have contributed to the fund directly or through the Combined Federal Campaign. Other major contributors include the Freedom Forum (to honor the Hubble crew members in 1994 and again in 1997 to honor Shannon Lucid) and the JSC and KSC Chapter's of the NASA Alumni League. The Fund will be listed in this year's CFC as a National Unaffiliated Agency (identification number 1038). ■

Further information about the Scholarship Fund may be obtained from Teresa R. Sullivan at x31034.

White Sands team applies expertise to real-life problems

White Sands Test Facility has been researching materials and flammability hazards for various space pursuits since the Apollo 201 fire. The backbone of the oxygen fire hazards work since that time has been testing. WSTF has the capability to perform all of the current NASA standard tests for oxygen compatibility.

Joel Stoltzfus, the WSTF Oxygen Hazards Analysis Team leader, states, "We've developed an expertise through the years. Our lab has become a resource NASA-wide for controlling fire hazards in oxygen systems through proper design and operation."

The lab began building its niche in understanding the hazards of oxygen systems in the 1980s when David Pippen, then chief of the Laboratories Office at WSTF, empowered researchers to delve into studying flammability and oxygen-enriched atmospheres. "His vision was to create a world-class, pre-eminent laboratory, and his foresight in this area of safety is what set us on the path," said Stoltzfus. "He was the one who endorsed moving ahead in this direction and developing the hazards analysis approach. Frank Benz and Jack Stradling developed the technical foundation on which the current protocol rests. Now everyone uses the system Pippen fostered here."

Under Pippen's guidance, WSTF transitioned from producing data to be analyzed elsewhere, to analyzing test data and developing materials science in-house. The next step was to apply this data to, and develop an understanding of, real-life problems. Thus the current oxygen hazards analysis approach was born. With time, this approach of applying materials flammability and ignitability data to oxygen systems has been refined into a very useful tool. So useful, in fact, that members of the WSTF Oxygen Hazards Analysis Team are often called upon to teach this approach to others.

The end result was development of a universal oxygen hazard analysis protocol that could be applied to a wide range of industries that use oxygen systems, such as aviation, the medical industry, chemical producers, and the scuba diving industry.

Tech transfer

In the early 1980s, WSTF sought to interact with the oxygen-using community in a more formal way. This was accomplished by joining consensus standards committees such as the American Society for Testing and Materials G-4 Committee on Flammability and Sensitivity of Materials in Oxygen-Enriched Atmospheres. WSTF has been involved in the development of several ASTM standard test methods, editing of publications, and performing industry-sponsored test programs. WSTF personnel were instrumental in developing the award-winning ASTM Technical and Professional Training course "Fire Hazards in Oxygen Systems."

In fact, past and present members of the WSTF Oxygen Hazards Analysis Team are the primary instructors for this course. These instructors are frequently requested to train personnel from various industries on proper procedures for minimizing fire risks in oxygen systems. The course gives a step-by-step process for managing the fire risk through

material selection, proper design, and operating procedures. The WSTF Oxygen Hazards Analysis Team also developed an Oxygen Systems Operation and Maintenance course for personnel who work hands-on with oxygen systems. Members of the Oxygen Hazards Analysis Team have taught more than 200 courses and have traveled worldwide in support of this effort.

It's an interesting challenge, according to Stoltzfus, who sees the complexities of

car, using the jaws of life – busy saving lives, and they don't notice the oil from the car dripping into their oxygen regulator. Just that small amount of contaminant is all it takes to create a fire hazard in an oxygen system."

That is why WSTF continues to work with industry to train others and develop oxygen components and systems that are more fault-tolerant. To this end, WSTF is working with the National Institute for Occupational Safety and Health and the

this type of research and, undoubtedly, this small NASA team is making a big impact on all of our lives, as well as our space program.

Current work

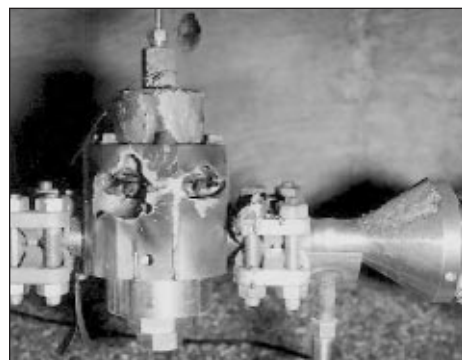
The expertise of the WSTF Oxygen Hazards Analysis Team still plays a vital role in the space program today. Currently, it is busy supporting the



NASA-WSTF 0400-1016

White Sands Test Facility Oxygen Hazards Analysis Team members, left to right, David Hirsch, Harold Beeson, Steve Peralta, Mike Kirsch, Brian Anderson, Joel Stoltzfus, Lori Kubinski, and Mike Shoffstall. Not pictured are Elliot Forsyth, Tim Gallus and Sarah Phelps.

trying to ensure safe conditions for environments that sometimes lack control, such as emergency response teams. "It's completely different when dealing with fault tolerance in the private sector, where the environment cannot always be controlled," said Stoltzfus. "Even if they attempt to maintain their oxygen systems by the book, they might unknowingly contaminate their oxygen system and create a fire hazard. For example, an EMT might be in the field having to rescue someone from under a



Shown here, an example of a fire investigated by the WSTF Oxygen Hazards Analysis Team. When the fire occurred, oxygen was not flowing through the regulator; however, the dome and body of the stainless-steel regulator were pressurized. It was postulated that the ignition occurred as a result of a leak past the seal between the diaphragm and the regulator body. The fire probably propagated from the diaphragm to the stainless-steel body, where the resulting damage occurred.

Food and Drug Administration to develop a test for medical oxygen regulators to give the regulator a chance of surviving in such a hostile environment.

Most recently, the team rewrote NASA's safety standard for oxygen systems (NSS 1740.15) for publication as ASTM Manual 36, "Guidelines for Oxygen System Design, Materials Selection, Operations, Storage, and Transportation."

Relevance

Fire hazards in oxygen systems is a relevant subject for the general public as well. In 1993, a woman burned to death while in her doctor's office waiting room. It is most likely that the oxygen regulator on top of her small, portable oxygen tank ignited and caused the fatal fire. It is probable that just a small fault in the component led to the disaster, but it is just one example of the potential risks associated with oxygen-enriched environments.

In such a case, WSTF's recommendations to change from flammable aluminum valves to nonflammable brass valves might have saved the woman's life. NIOSH and FDA have since issued safety alerts regarding the use of aluminum valves, which are believed to have a design flaw. No one can put a value on the lives that might be saved by

International Space Station Program. The team has performed an end-to-end oxygen hazards analysis of the entire ISS Environmental Control and Life Support System and fields questions daily from the ISS team concerning potential fire hazards in the ISS. Team members have gone to Russia to inspect their ISS oxygen hardware to ensure their designs meet the established standard.

The team is also interested in making sure those who use the ECLSS on orbit are aware of potential hazards. "We want to get the training to those folks who'll be using the life-support systems," said Stoltzfus. "They'll be relying on hardware like the portable breathing apparatus for more than 15 years. During that time, an astronaut could lose some Chapstick®, which could accidentally come into contact with an exposed oxygen system connection, contaminating the system. Crew members need to know that this would create a fire hazard."

The team will soon be conducting a training session for the Expedition One crew. Stoltzfus says that in the future, they hope to incorporate an abbreviated course into the training that all astronauts and T-38 pilots undergo. ■

For additional information visit the Oxygen Compatibility Web site at <http://www.wstf.nasa.gov/oxcompat/>

JSC co-ops complete spring semester work tours

As the summer draws near, JSC co-ops are wrapping up their spring semester work tours as many prepare to head back to school for the summer. Students within the program typically alternate between studying at school and working at JSC. This semester saw co-ops working in eleven directorates and accomplishing a slew of projects fundamental to the center's mission. "The quality of the students in the co-op program is phenomenal," says Co-op Program Manager Robert Musgrove. The program continues to be a primary link between the Johnson Space Center and academic institutions nationwide, attracting students who hope to work here full-time after graduation. According to Musgrove, "this is a result of our reputation for giving co-ops an on-the-job learning experience that can't be beat."

"You get hands-on experience that complements your studies well," says Pooja Agrawal, a co-op in the Flight Dynamics Officer Office. "More importantly, you get to see the big picture – the space program come together as a whole." Agrawal, a junior at Purdue



NASA JSC Photo 2000E14673 by Bill Stafford

Texas A&M's Janna Althaus became one of the center's first co-ops to work a flight as a certified flight controller this semester.

Mechanical, Maintenance, Arm and Crew Systems Group, became one of the first co-ops in Center history to work a flight as a certified flight controller. She was certified as MECH II last summer and supported all three STS-101 launch attempts this past month.

"I felt as though I was given the responsibility of a full-time employee" says Althaus, a native of Austin, Texas. "After all the STS-101 training I felt like a real part of the MMACS team." Althaus, who at one time began to question her decision to become an engineer, says working at JSC has rekindled her interest. "Co-oping at NASA allowed me to find a place where I really love working and that I could see as enjoyable long term."

This semester has also seen co-ops become instructors. Mandy Rogers, a junior at Purdue University, spent this semester working in the Training Division as a station avionics instructor and is now certified to teach three different Part Task Trainer lessons

to crewmembers, flight controllers and fellow trainers. Rogers, a native of Bellefontaine, Ohio, has enjoyed how "people-oriented" her tour has been.

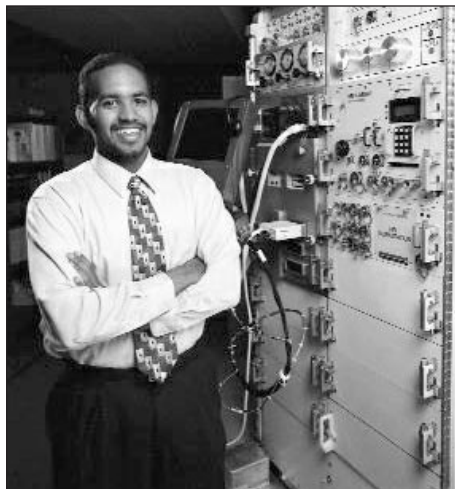


NASA JSC Photo 2000E14675 by Bill Stafford

Purdue University co-op Mandy Rogers became certified to teach three PTT courses this semester.

"I enjoy working closely with people on a daily basis, while still dealing with technical issues." Rogers believes the co-op program has given her the chance to contribute to the space program in two different ways. "I have contributed not only through the work that I've done for NASA, but I have served as a direct link to NASA for my friends and family back home, expanding their knowledge of the space program and increasing enthusiasm and support of space exploration."

Co-ops have accomplished design and fabrication projects as well this semester. Nahom Beyene, a senior in mechanical engineering at UT-Austin, was assigned to the Biomedical Hardware Development



University of Texas co-op Nahom Beyene designed and fabricated a close-out door this semester.

and Engineering Office where he designed and fabricated a close-out door for the Human Research Facility high-fidelity mockup in Bldg. 9. Beyene, a native of Dallas, Texas, says he has "enjoyed the experience of being respected as an individual working for a team with a common project." He was so impressed with the JSC co-op program that he spoke to Harris County Legislators during their visit to JSC about his work at NASA to show the value of NASA student programs.

Tim McGee, a senior at the University of Illinois, wrote the software for a pneumatic transporter – a revolutionary vehicle which has wheels made of sixteen inflatable bladders. The vehicle does not have a rotary motor but rather rolls by transferring air from bladder to bladder. "Co-oping at JSC has allowed me to explore various areas of engineering including analysis, design, and systems integration. This experience has proven invaluable by showing me the direction I want to take my career," says McGee, a native of Arlington Heights, Ill.

Co-ops have also had the opportunity to work on actual flight vehicles. Juliet Jurkovskis, a junior at Texas A&M, spent the semester as a software engineer working on the X-38 project and participated in simulations involving vehicles 201 and 131R, both of which will fly in the coming years. Jurkovskis, a native of a Round Rock, Texas,



NASA JSC Photo 2000E14674 by Bill Stafford

University of Illinois co-op Tim McGee stands in front of the vehicle for which he wrote the software.

comments that working at JSC has given her a better idea as to what subjects she does and does not want to pursue. "I've learned about engineering and technologies while working on an exciting project with people whom I admire."



NASA JSC Photo 2000E14676 by Bill Stafford

Texas A&M co-op Juliet Jurkovskis in front of the X-38 on which she worked as a software engineer.

"Co-ops contribute greatly to the mission of the center," explains Musgrove. "Not only do they perform professional-level work for their organizations, but they also heavily support the center's outreach efforts such as Inspection, SCIAD, High School Outreach and the KC-135 Student Flight Campaign." The number of co-ops in the program is increasing to meet the center's entry-level hiring needs. "As they have for many years, this current group of co-ops will be sought after upon graduation to fill many of the center's permanent positions." ■



NASA JSC Photo 2000E14677 by Bill Stafford

Purdue University co-ops Nicholas Saadah and Pooja Agrawal worked in the Flight Design and Dynamics Division this summer.

University and a resident of Dracut, Mass, spent this semester analyzing flight data from missions involving a rendezvous. After running more than eight hundred test cases, she generated a set of plots which will help flight controllers better determine whether or not a safe rendezvous can be accomplished from their current orientation. "Conducting this study helped me understand orbital mechanics better and decide what I wanted my focus to be."

Nicholas Saadah, a senior at Purdue University, worked in the same division debugging a computer code known as TSA which will eventually replace the Mission Operations Computer, a computer which has been used to deorbit every U.S. space vehicle since the Apollo Program. "It's very exciting to think that I am working on a code this monumental," says Saadah, a native of Oklahoma City. "I'm very honored and I can't wait to see the end result."

This semester also saw a historic achievement as Janna Althaus, a senior at Texas A&M University working in the

JSC kicks off 2000 Savings Bond Campaign

JSC's U.S. Savings Bond Campaign begins May 22 and continues through June 2, 2000. Employees will receive more information about savings bonds during the campaign. Buying savings bonds is one of those fortunate transactions where both the buyer and seller profit. Interest rates for Series EE savings bonds are based on market yields of actively traded Treasury notes and bills and are adjusted every six months, climbing as market rates increase. Each May 1 and November 1, the Treasury announces the rate which is 90 percent of the average yield on five-year Treasury securities for the preceding six months. Bonds earn these rates right from the start; the current rate as of May 1 is 5.73 percent.



Savings bonds provide numerous other advantages. Interest earned is not subject to state or local taxes, and federal tax liability can be deferred until the bonds are cashed. In addition, when bonds are redeemed for the purpose of financing higher education – you or your children's – interest earned under some circumstances is completely tax free. Bonds can be cashed any time after six months but bonds cashed before five years are subject to a three-month interest penalty.

More information about savings bonds can be found by clicking on the Savings Bond Campaign box on the Human Resources Office homepage at <http://hro.jsc.nasa.gov/>. If you have additional questions, contact your directorate campaign coordinator or Candy Hunt at x31836. ■

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 6 5

The first development test of a possible landing rocket system for the Apollo spacecraft was successfully performed here May 12 with the drop of a boilerplate spacecraft from a crane into a 700,000-gallon water tank.

The 15-foot deep tank, located on the northwestern edge of the Manned Spacecraft Center, was built by the Facilities Division for the tests. It is 130 feet on a side, with 3-foot high retaining walls, and is lined with a plastic material.

1 9 7 0

Astronaut Neil Armstrong was named Monday to head NASA's Aeronautics Program. He will take over as Deputy Associate Administrator for Aeronautics, Office of Advanced Research and Technology at NASA Headquarters, effective July 1, 1970.

He succeeds Charles W. Harper who is joining Dr. Wernher von Braun in carrying out the agency's planning effort for future U.S. aeronautics and space missions.

In his new position, Armstrong will be responsible for the coordination and management of overall NASA research and technology work related to aeronautics and cooperation and coordination between NASA, industry and other government agencies with respect to aeronautics.

1 9 8 5

More than 250 million bits of data on Spacelab 3/51-B experiments were brought back to principal investigators when *Challenger* landed after seven days in orbit. One of the principal investigators, JPL's Dr. Taylor Wang, became the first PI to fly with his experiment.

The flight also produced the first crystal grown in space from fluids. Payload specialist Lodewijk van den Berg, who operated the Materials Science Experiments during the flight, said, "We hope the crystals are as good as they obviously look."

The returned crystal will be analyzed for its value in X-ray and gamma ray detectors used in scientific, medical and industrial applications.

Scientific and Technical Information Center unveils new resources

Employees were able to discover a universe of knowledge at their fingertips as the Scientific and Technical Information Center hosted an Open House April 12 in the Main Library in Bldg. 45, Rm. 100. Attendees got a look at how to navigate the STI Center Web site, received product demonstrations, and enjoyed refreshments, a scavenger hunt and prizes.

The STI Center collections, which include books, journals, documents, and electronic resources, are housed in the Main Library, the Medical Sciences Library in Bldg. 37, and the International Space Station Program Library in Bldg. 4S. Recently, the Main Library has undergone exciting facility upgrades including new carpeting, new painting, additional electrical outlets and new lighting in the entrance.

Last year, more than 2,400 books were added to the STI Center's collections. The new STI Center Web site (<http://stic.jsc.nasa.gov>) was also launched. It provides access to multiple electronic resources, many of which are subscriptions for which the library pays so that users can access them from their desktops.

"We have a spectacular collection of electronic resources available on our Web site," said Jane Hultberg, supervisor of the STI Center. "These include electronic finding aids, which access databases that help our customers find journal articles, and many electronic reference books."

These electronic reference books include the 20-volume *ASM Handbook* and *Ullman's Encyclopedia of Industrial Chemistry*.



NASA JSC Photo JSC2000-03173 by Benny Benavides
NASA's Maureen Dutton, left, discusses military, government and industry standards available online at the Scientific and Technical Information Center Web site with Jean Northington, librarian.

Users can enter a key word and select author, title, or subject fields to do their search. Call numbers for works will be displayed as well as locations. Users can browse the bookshelves for their desired items or submit requests for books and then pick them up at the library. If the book is not available at JSC, the library will try to get it from another library through interlibrary loan. Users must have a Form 1621 on file with the STI Center before borrowing library books.

Other electronic search tools include ReconSelect, an index to NASA's aerospace documents, and the Document Index System, an index to documents produced by or for JSC.

In addition to searching databases and card catalogues electronically, on-site users can get articles delivered through the STI Center's UnCover service. UnCover is a document delivery service with a database of 18,000 multidisciplinary journals from 1988-present. Users may search and order journal articles to be delivered directly to their desktops electronically or via fax. UnCover is available for on-site use only.

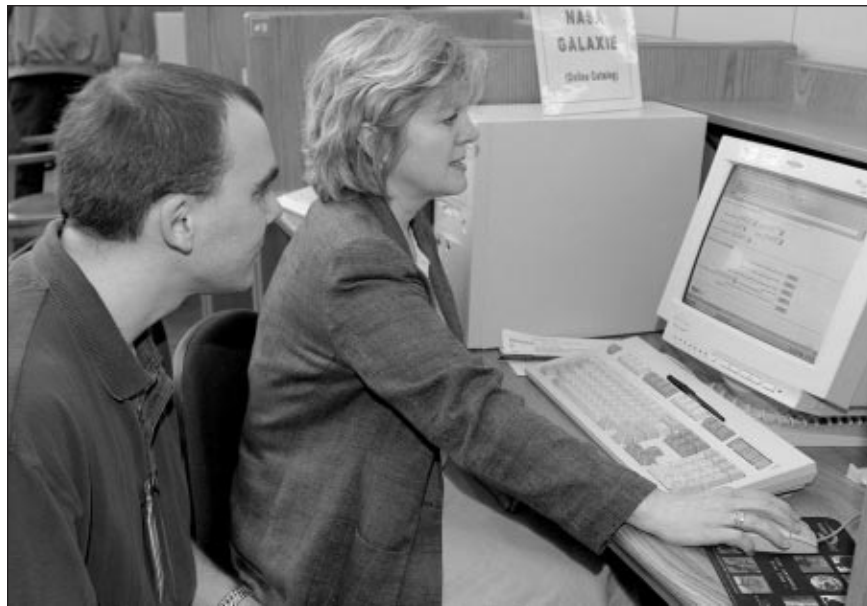
Customers may also get many interlibrary loan articles delivered via E-mail through Ariel, a new desktop delivery system.

"If we don't have access to the periodical in our library," said Jody Mantell, interlibrary loan assistant, "the request is sent to interlibrary loan. I can request the article from another library or from a document delivery service. After it is received in a file, I E-mail it to the customer who can then open it after downloading the document delivery instructions. Customers can then print the document from their desktop workstation."

Brought online about eight months ago, Ariel has proven to be very popular with on-site users.

The STI Center also has an electronic subscription to current military and government standards and many industry standards. A small hardcopy collection of industry standards, not available on the electronic system, is maintained in the Main Library. Current JSC standards are also available in hardcopy. ■

For more information, contact the Main Library at x34245, the Medical Sciences Library at x37138, and the International Space Station Program Library at x47066.



NASA JSC Photo JSC2000-03175 by Benny Benavides
Jan Berry, technical services librarian, shows Christopher Rawls of Lockheed Martin how to use the NASA GALAXIE Online Catalog.

Users can click on "STI Center" on the JSC homepage and then on "Electronic Resources." Select "A-Z Database List" to access the list of available electronic resources.

Demonstrations of NASA GALAXIE, an online card catalog, were conducted during Open House.

"NASA GALAXIE is for all NASA libraries across all NASA centers," said Sandra Weber, documents lead. "When users go in to use NASA GALAXIE, they will choose one of the centers. When 'Johnson' is selected, they will be able to see what books and journals are available at the three libraries here on site."

TICKET WINDOW

The following discount tickets are available at the Exchange Stores

General Cinema Theaters	\$5.50
Sony Loew's Theaters	\$5.50
AMC Theaters	\$5.00
Fiesta Texas	adult . . . \$20.50 . . . child (under 48 inches) . . . \$17.25
Astroworld Early Bird (use by June 18)	\$17.25
Astroworld	1 day . . . \$21.00 . . . 2 day . . . \$31.00
WaterWorld	\$12.00
Moody Gardens (2 events) (does not include Aquarium Pyramid)	\$10.75
Moody Gardens (Aquarium only)	\$9.25
Sea World	adult . . . \$29.00 . . . child (3-11 years) . . . \$19.25
Schlitterbahn	adult . . . \$21.50 . . . child (3-11 years) . . . \$18.00
Space Center Houston	adult . . . \$11.00 . . . child (age 4-11) . . . \$7.25 (JSC civil service employees free.)
Space Center Houston annual pass	\$18.75
Splash Town	1 day . . . \$13.00 . . . Season Pass . . . \$37.50
Postage Stamps (book of 20)	\$6.60

Exchange Store hours

Monday-Friday
Bldg. 3 7 a.m.-4 p.m.
Bldg. 11 9 a.m.-3 p.m.

- All tickets are nonrefundable.
- Metro tokens and value cards are available.

For additional information, please call x35350.

Please bring your driver's license to pay by personal check.



Not on file: *Engineer Highlight*

Title: International Space Station Operations Advisor to NASDA.

Time at NASA: 12 years. (Nine years as Space Shuttle Propulsion Systems flight controller, three years in current position).

Education: Bachelor of Science and Engineering, Mechanical and Aerospace Engineering, Princeton University, 1988.

Favorite music: Just about anything by Paul Simon.

Favorite book or movie: Favorite book is *Siddhartha*, by Herman Hesse. Favorite movie is *Casablanca*.

When away from JSC: Enjoy Mexican food prepared by my wife and my mother-in-law... sabroso!

What you like about NASA...and your job at JSC: That the public is interested in our work and that I have an opportunity to share and discuss our work with everyone that I meet

Background: Nantel Suzuki has been living in Tsukuba, Japan, home of the NASDA Tsukuba Space Center, for the past three years. Although many people would have welcomed the chance to work in 'the land of the rising Sun', few would have had the genealogical connections that made it such a unique opportunity for Suzuki.

Suzuki was born in Canada and raised in the U.S. since he was 12. He is of Japanese descent and has relatives in Japan, so when the unique position opened up in the ISS program, Suzuki was quick to



Photo by Nicole Cloutier

Name: **Nantel Suzuki**

apply. NASDA requested NASA provide a long-term advisor in Tsukuba to help them prepare for ISS operations. Suzuki was selected and with his then-pregnant wife, Martha, and first son, departed for a two-year commitment in Japan.

The arrangement was extended an additional year and although his role was to bring NASA technical guidance and

cultural perspective to NASDA managers and engineers as they worked to interpret and implement ISS regulations, Suzuki and his family have in turn absorbed the Japanese culture.

"This has turned out to be a very rich experience for the entire family," said Suzuki. "Tsukuba is a very international city within Japan so we've not only been

exposed to the Japanese culture but to many others as well."

Suzuki's wife has taken up "shodo," traditional Japanese brush calligraphy, and their older son attends Yochien, a school for youngsters similar to kindergarten. Although fluent in French and English, Suzuki spoke little Japanese and read even less of the difficult "kanji" characters when he first began his tour. However, his two sons bounce from speaking English to Japanese without much hesitation.

Immersing yourself in another country, especially one as unique as Japan, comes with its challenges as well, but Suzuki says technology eased the logistical burdens tremendously.

"Living and working productively from abroad is becoming easier and easier in this information age," said Suzuki. "I've used my tour here to test the limits of remote operations, and I can say that things have definitely improved in the last three years. Of course the growth of the Internet has helped."

Despite the logistical glitches that may arise, Suzuki feels privileged to have played such a role in the space program.

"The effort put forth by NASDA and our other international partners to bridge language and cultural barriers has impressed me and motivated me to respond in kind," said Suzuki. "The other day I was sitting in on a telecon between NASDA and ESA. Here were several Japanese engineers and their ESA counterpart from Spain, and all were discussing technical requirements in English – It was quite a remarkable scene!" ■

Continued from Page 1

SWANSON

"I tried to make the book more personal by adding photos of people, family members and other uniquely human experiences related to the program," he said.

The cover photo shows the Saturn V rocket and the Vehicle Assembly Building in the background, towering above a few people who appear in the foreground.

"I picked the cover photo because for me it invokes a sense of wonderment over the absolute enormity of the project," said Swanson. "Apollo was an enormous effort that wove both hardware and people together into one amazing tapestry. I think the photograph blends the two elements together quite well. In writing about the Apollo Program, the 'machine' is often depicted as overshadowing the 'man' because it was such a perfect example of our nation's technological virtuosity for that time period. But we shouldn't forget that at the core of the program were the people, their accomplishments and reflections, which is what I tried to capture in this book. These are the people's stories, and it was through their achievements that the program was made possible."

In editing the transcripts, Swanson found that people's accounts of particular occurrences vary. He says that accounts of events vary based on how people remember them or how they want them to be remembered. So in reading the book the reader may encounter the same event told from differing perspectives. "The historian has to consider every angle of an event and not just take one person's account as absolute fact," Swanson said.

Although accounts of events may differ, most of the people interviewed agreed that it was a wonderful time to be alive and all were excited to have been a part of the Apollo Program.

"People were extremely proud to be able to work on the Apollo Program," said Swanson. "Time went by very fast, and for most, they did not have an opportunity to step back and put into perspective the history making events of the period. They knew that what they were doing was important and that somehow it would be remembered, but many regretted not being able to take the time to just soak it all in. By giving us their oral histories, for many, this offers them the first real opportunity to preserve their role in history from their own perspective."

Many of those interviewed for the JSC Oral History Project said that Apollo 8 was the highlight of the program and their career.

"Going to the Moon after only two unmanned missions of the Saturn V made a lot of people very nervous," said Swanson. "If Apollo 8 had not been a success, we probably would not have made it to the Moon by the end of the decade."

Swanson believes that receiving the Pendleton Prize for his book says a lot about the role oral history plays in historical research. "I think the award says a lot about the Oral History Project and oral history in general. Typically among historians, oral histories aren't regarded as good primary source material because oftentimes they are not

considered to be an accurate representation of events. But I'm of the opinion that oral histories serve as a valuable reference tool and, like any other reference, should be checked and rechecked for accuracy. In addition, oral histories may open doors to additional resources that otherwise may not have

been considered if not having been first mentioned by the interviewee during the course of their oral history."

"Before This Decade Is Out": Personal Reflections on the Apollo Program" was published in October 1999. Looking ahead, Swanson foresees writing books on the history of the Space Shuttle Program and the X-38.

For now, the JSC historian, whose duties

have expanded to covering all aspects of history related to the center, is occupied with trying to establish a formal history function at the center and managing its historical collections. "The center has been without a historian and formal history function for nearly 10 years," said Swanson, "and, as a result, there is a tremendous backlog of work to be done in getting this invaluable historical resource up and running again for use."

The Pendleton Prize is given to an individual author or to principal collaborators for an outstanding major publication on the federal government's history produced by or for a federal

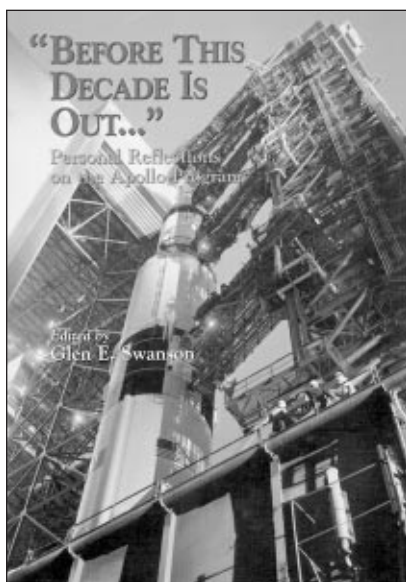
history program. Awards are given to narrative histories, edited collections of articles or essays, or any other published historical work of comparable scope. Entries are judged for value in furthering the understanding and history of the federal government, quality and thoroughness of research, style and appropriateness of presentation, suitability and rigor of methodology, and use of original and primary materials.

The Pendleton Prize has the additional requirement that the publication nominated must have been produced by a federal historian(s) or for a federal history program, including history offices in the federal agencies and history-related programs in other federal entities. Finally, the nominated work must have been published in the calendar year immediately preceding the spring awards.

The Pendleton Prize commemorates Ohio Senator George H. Pendleton, sponsor of the 1883 Civil Service Reform Act that bears his name. This is the second year that this prize has been awarded. This prize was first awarded in 1998 to Robert J. Watson for "Into the Missile Age, 1956-1960" which was published by the History Office of the Office of the Secretary of Defense.

Swanson received the award on March 16 during the Society for History in the Federal Government's annual spring meeting held this year at the Library of Congress in Washington, D.C. ■

Copies of the book may be purchased at the JSC gift shops or online through the Government Printing Office Web page at: <http://www.hq.nasa.gov/office/pao/History/gpo/order.html>



DATES & DATA**May 24**

Robotics Workshop: AIAA Houston section hosts *Robotic Helpers for Space Explorers*, a free automation and robotics workshop at the Gilruth Center at 8 a.m. Presentation followed by a panel discussion and a luncheon at noon. Event is free but advance registration is required. Lunch costs \$7.50. Contact Sheryl at (281) 483-8243.

INNOVATIONS 2000: Various technical societies (AIAA, IEEE, ISA, etc.) lead an afternoon of technical sessions covering a wide range of industries and disciplines. Event will be at the Gilruth Center beginning with a luncheon at noon, presentations at 1:15 p.m. and reception at 3:35 p.m. Advance registration is required. Conference fee is \$5. Lunch is \$7.50. For additional information contact Sheryl at (281) 483-8243.

Astronomy seminar: The JSC Astronomy Seminar Club will meet at noon May 24 and 31 and June 7 and 14 in Bldg. 31, Rm. 248A. For more information contact Al Jackson at x35037.

Spaceteam Toastmasters meet: The Spaceteam Toastmasters meets at 11:30 a.m. May 24 and 31 and June 7 and 14 at United Space Alliance, 600 Gemini. For more information contact Patricia Blackwell at (281) 280-6863.

May 25

Radio Club meets: The JSC Amateur Radio Club meets at 6:30 p.m. at Piccadilly, 2465 Bay Area Blvd. For more information contact Larry Dietrich at x39198.

Communicators meet: The Clear Lake Communicators, a Toastmasters International club, meets May 25 and June 1 and 8 at 11:30 at Wyle Laboratories, 1100 Hercules, Suite 305. For more information contact Allen Prescott at (281) 282-3281 or Richard Lehman at (281) 280-6557.

June 1

Warning System Test: The site-wide Employee Warning System performs its monthly audio test at noon. For additional information contact Bob Gaffney at x34249.

June 5

Space Society meets: The Clear Lake area chapter of the National Space Society meets at 6:30 p.m. at the Parker Williams Branch of the Harris Co. Library at 10851 Scarsdale Blvd. For more information contact Murray Clark at (281) 367-2227.

OUT&ABOUT ★

Alyson Hickey, NASA flight simulation engineer, at a brown-bag luncheon in April explains how the shuttle training aircraft (STA) helps astronauts. The presentation on the STA and its software system was sponsored by the Society for Software Quality. For additional information on SSQ call Chuck Hoffman at (281) 280-1960 or visit www.ssq.org.

June 6

Quality Society meets: The Bay Area Section of the American Society for Quality meets at 6 p.m. at the Ramada King's Inn on NASA Road 1. For details contact Ann Dorris at x38620.

June 8

Airplane club meets: The Radio Control Airplane Club meets at 7 p.m. at the Clear Lake Park building. For more information contact Bill Langdoc at x35970.

MAES meets: The Society of Mexican-American Engineers and Scientists meets at 11:30 a.m. in Bldg. 16, Rm. 111. For more information contact George Salazar at x30162.

June 9

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

NASA BRIEFS**HUBBLE FINDS MISSING HYDROGEN**

For the past decade astronomers have looked for vast quantities of hydrogen that were cooked-up in the Big Bang but somehow managed to disappear into the empty blackness of space.

Now, NASA's Hubble Space Telescope has uncovered this long-sought missing hydrogen. It accounts for nearly half of the "normal" matter in the universe – the rest is locked up in myriad galaxies.

Astronomers believe at least 90 percent of the matter in the universe is hidden in exotic "dark" form that has not yet been seen directly. But more embarrassing is that, until now, they have not been able to see most of the universe's ordinary, or baryonic, matter (normal protons, electrons and neutrons).

The confirmation of this missing hydrogen will shed new light on the large-scale structure of the universe. The detection also confirms fundamental models of how much hydrogen was manufactured in the first few minutes of the universe's birth in the Big Bang.

NASA CREATES NEW OFFICE TO FOSTER HEALTH AND SAFETY

Administrator Daniel S. Goldin recently announced the creation of a new office to increase the agency's emphasis on health and safety on the ground and in space.

Dr. Arnauld Nicogossian will lead the effort as Chief Health and Medical Officer, reporting directly to the NASA Administrator. Dr. Nicogossian will be responsible for developing the agency's infrastructure in areas such as best medical practices, professional development and training, and improvement.

"Dr. Nicogossian's wealth of experience as the flight surgeon for the Apollo-Soyuz program; as a researcher at NASA's Johnson Space Center; and as the Associate Administrator for Life and Microgravity Sciences and Applications makes him the perfect choice," said Goldin. "He will be responsible for developing policy and oversight of the agency's health program."

The Administrator has made health and safety NASA's number one priority, expanding the agency's efforts to create a healthy and diverse workforce focusing on cutting edge research, a permanent human presence in space, and developing new technologies to extend human reach into the far corners of the solar system.

Did you know?

JSC distributes 2,326 copies of Roundup to retirees across the country. One of NASA's retirees recently sent a note to the editor.

Mr. William Jeffs, Editor:

Your punching the right button! The *Roundup* has matured. The format, articles, schedules, etc. are excellent.

I read and look at the *Roundup* with pride. Thank you.

Emily Ertl

GILRUTH CENTER NEWS**Sign up policy:**

All classes and athletic activities are on a first-come, first-served basis. 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, cash or by check, at the time of registration. No registration will be taken by telephone. For more 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.

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

Nutrition intervention program: Six-week program includes lectures, a private consultation with the dietitian and blood analysis to chart your progress. Program is open to all employees, contractors and spouses. For details 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: Low-impact cardiovascular workout. Classes meet from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32 for eight weeks. Kristen Taraszewski, instructor.

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, instructor, at x38520 for more information.

Ballroom dancing: Classes meet Thursdays from 6:30-7:30 p.m. for beginner, 8:30-9:30 p.m. for intermediate and 7:30-8:30 p.m. for advanced. 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 details call Larry Wier at x30301.

Aikido: Martial arts class for men and women meets 5-6 p.m. Tuesdays and Wednesdays. No special equipment or knowledge is needed to participate. Aikido teaches balance and control to defend against an opponent without using strength or force. Beginning and advanced classes start each month. Cost is \$35 per month.

SPACE CENTER Roundup

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