

October 8, 1999

SPACE CENTER Roundup

VOL. 38, NO. 19 LYNDON B. JOHNSON SPACE CENTER, HOUSTON, TEXAS

Additional safety checks delay next shuttle launch

Following an electrical short experienced during the launch of *Columbia* on STS-93 in July, space shuttle managers have initiated comprehensive inspections and repairs of the shuttle's electrical wiring and have delayed launch of the next mission, now planned to be STS-103 to service the Hubble Space Telescope, to no earlier than November 19.

As a result of the damaged wire in *Columbia* and subsequent inspections that found additional damaged wires in *Discovery* and *Endeavour*, managers have developed a plan that includes inspecting and repairing more than 100 miles of wiring in each shuttle orbiter. Because the inspection and repair work has progressed more quickly on *Discovery* than on *Endeavour*, *Discovery's* flight to the Hubble Space Telescope on STS-103 has replaced *Endeavour's* flight on STS-99 as the next mission, said Space Shuttle Program Manager Ron Dittmore.

As of late September, however, managers were still preserving the option of launching STS-99, the Space Radar Topography Mission, before the end of the year, although it appeared unlikely that *Endeavour* could be ready for launch before early December.

Shuttle wiring inspections have been under way since early August because of a problem experienced by *Columbia* during STS-93. On July 20, five seconds into the flight, an electrical short circuit interrupted power to computer controllers for two of the shuttle's three main engines. Backup controllers immediately began operating as designed, however, and there was no impact on the mission. Technicians later traced the problem to a wire whose insulation had been damaged, exposing the wire conductor, which subsequently shorted when it touched a metal screw head.

"The team working on these inspections and repairs has included people here at JSC

and at the Kennedy Space Center and personnel from both United Space Alliance and NASA," Dittmore said. "This has been a very complex problem and it has involved a great deal of very focused, often tedious, work. The team has just done an excellent job tackling this issue and keeping the safety of the shuttle at the forefront every day."

At press time, inspections of *Discovery* were nearing completion and the repairs were progressing well. The work

plastic tubing and adding Teflon wrapping to others. In addition to adding wire protection, technicians are removing any burrs or sharp edges on fasteners which could potentially damage wires.

"To prevent a recurrence of damage, we are placing convoluted tubing around wire bundles in the most likely areas to be damaged," Dittmore said. This will protect the wires against sharp edges and fasteners so that there will be no likelihood in the future that a bundle of wires will touch these areas.

of wires to short. Testing has shown that the wires don't short easily.

"We don't plan to inspect every wire but we will have inspected enough wires to feel confident that we will be safe because, where feasible, we are putting critical functions in different bundles, we are protecting the bundles and, once protection is in place, the probability of an electrical short due to wire damage is very low," said Dittmore. "Adding these three things together will put us in a good position to go fly."

In addition to reviewing the wiring of the orbiters, shuttle managers and technicians have looked at the solid rocket motors, boosters, the external tank and the main engines to gauge if the wiring in those components is susceptible to damage. The reviews also have included crew equipment, spacesuits and ground support equipment at the launch site. Those reviews have found that the wiring in most components was well-protected and that there was no reason to suspect they may have suffered damage similar to that found on the orbiters.

Dittmore said that all the wiring problems appear to have been caused by work-induced mechanical damage that stemmed from the wires being rubbed or stepped on, or from heavy objects set down on them. None of the problems are related to age of the wiring, normal wear or vibration from shuttle operations.

"We have to be sensitive about working around these wires," said Dittmore. "We have to have a heightened awareness of what can happen in the work area. Everywhere we're developing hardware, we need to look at our practices and make sure that we're not inducing damage."

Future remedies being reviewed include changes in work rules to prevent inadvertent wire damage by workers, changes in work platforms to prevent people or tools from touching certain parts of the orbiter, and the addition of more detailed wire inspections to the processing flow that each shuttle undergoes between flights. ■

“We are looking at all aspects of the program, alerting each organization that wire damage can occur just by working in the areas where wires are located.”
— Ron Dittmore



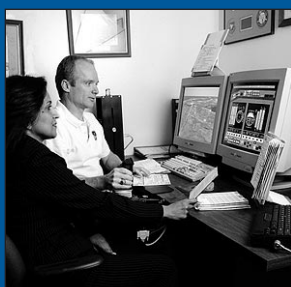
KENNEDY SPACE CENTER, FLORIDA – A wire damaged by abrasion from the head of a screw (seen below the bundle) was found during electrical wiring inspections in *Columbia's* payload bay. During launch of *Columbia* on mission STS-93, a damaged wire caused a short circuit in two separate main engine controllers.

on *Endeavour* was about two weeks behind that being performed on *Discovery*, and inspections of *Atlantis* had just begun as it was moved into the third shuttle hangar at KSC. That hangar was vacated September 24 by *Columbia* as it was ferried to Palmdale, Ca., to begin a 10 month maintenance and modification period. *Columbia* will be inspected and repaired during its stay in California.

The inspectors will examine about half the electrical wiring in each shuttle by the time they are finished. In addition to the repair of damaged wiring, technicians are adding protection against future problems. These steps include encasing some wires in

Although the original design of the shuttle precludes the situation in most areas, technicians also are separating wires that serve the same function from the same bundle. That way damage to one area cannot knock out primary and backup wires that perform the same function such as those used for the computer controllers.

In addition to performing inspections and repairs and looking at design redundancy, technicians are testing wires, exposing conductors on side-by-side wires and vibrating them, exposing conductors to sharp edges and metal plates, to see how sensitive they are to damage and to shorts. The objective is to understand the potential



Desktop shuttle simulator improves training.

Page 2



Come rain or come shine, the day will be fine.

Page 5



Oven fresh pizza delivered to your door.

Page 6

Astronaut Ascent/Entry Trainer adds to crew training tools

By Nicole Cloutier

Easier access, quicker simulation turnaround time, and improved crew training are just some of the benefits evolving from a desktop shuttle simulator developed by JSC's Rapid Prototyping and Interface Development (RaPID) Lab.

Known as the Astronaut Ascent/Entry Trainer, the simulator designed to provide astronauts with an easily accessible tool to maintain proficiency in ascent and entry flight procedures is getting rave reviews from astronauts and trainers alike.

"It's a great training tool," said JSC Associate Director (Technical) John Young, a frequent user of the AET. "I just ran the latest trajectories for STS-99 on it and it truly is an advance in terms of what we can do with our computer technology and the skilled team we have here working on the software."

Prior to the AET, training for ascent and entry flight procedures was primarily based on the Shuttle Mission Simulator. Although it provides very valuable training, the SMS is in high demand for its limited operating hours and requires advance scheduling and significant personnel support.

"We needed something to augment the training for the dynamic procedures," said Col. Charlie Precourt, chief, Astronaut Office, who initiated development of the trainer from the Astronaut Office and later contacted the RaPID Lab to tie in their expertise. "We wanted a trainer that would include all the Guidance Navigation and Control procedures such as RTLS aborts, TAL aborts and high and low energy entry procedures."

With that in mind the RaPID Lab designers went to work and delivered a product that can simulate space shuttle ascents and entries on a desktop computer. Astronauts can practice nominal ascents and intact aborts, contingency aborts, entries, and TAEM flight procedures.

"The AET is truly a team production," said Jeff Bertsch, chief of MOD's Technology

Applications Office, home of the RaPID Lab. "Although the initial software development was a small RaPID Lab project, the AET is actually a collaboration of ideas and technologies from many organizations. The Astronaut Office, Engineering Directorate and MOD worked together to make the AET a reality. A major goal in the develop-

ment of the AET was to capitalize on existing tools and commercially available technology as much as possible."

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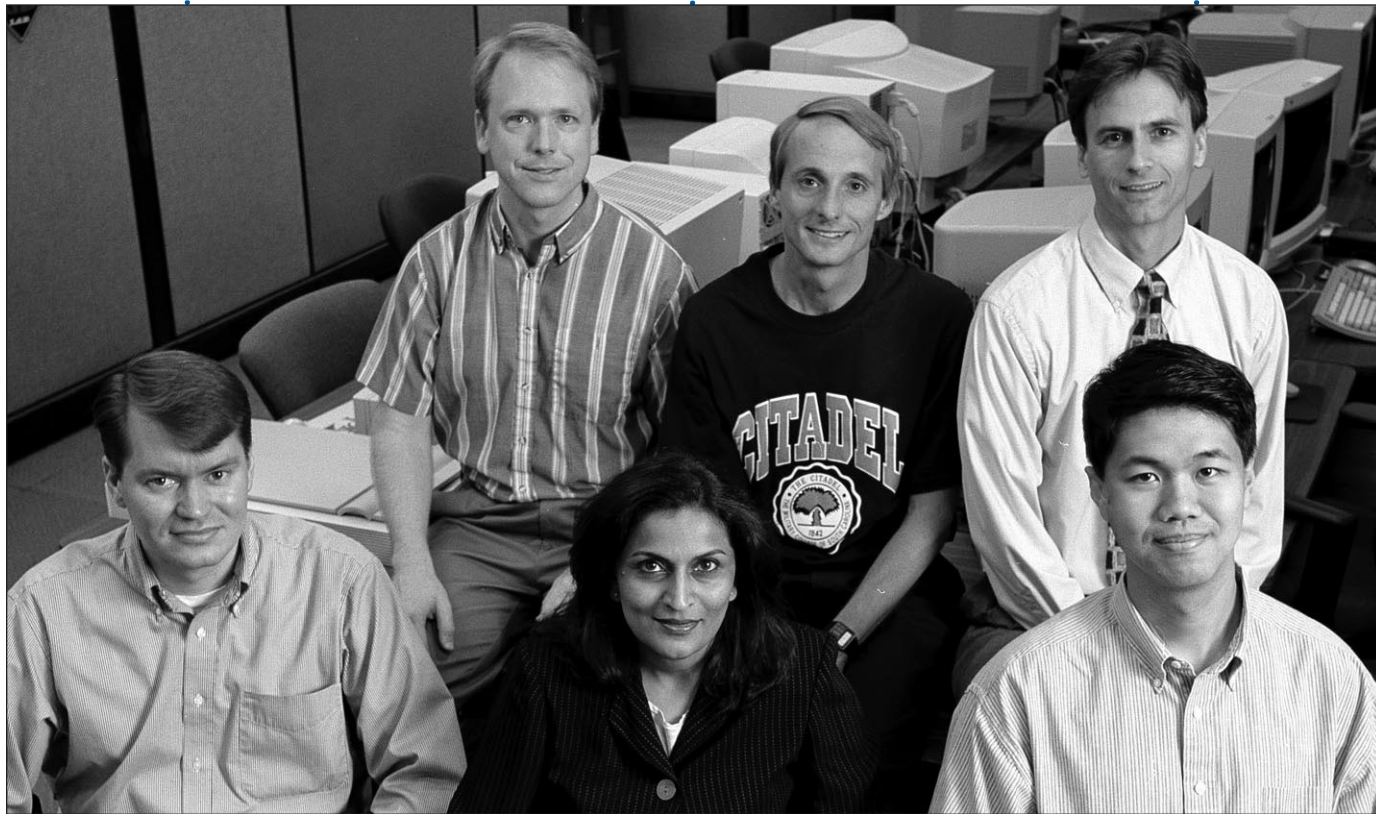
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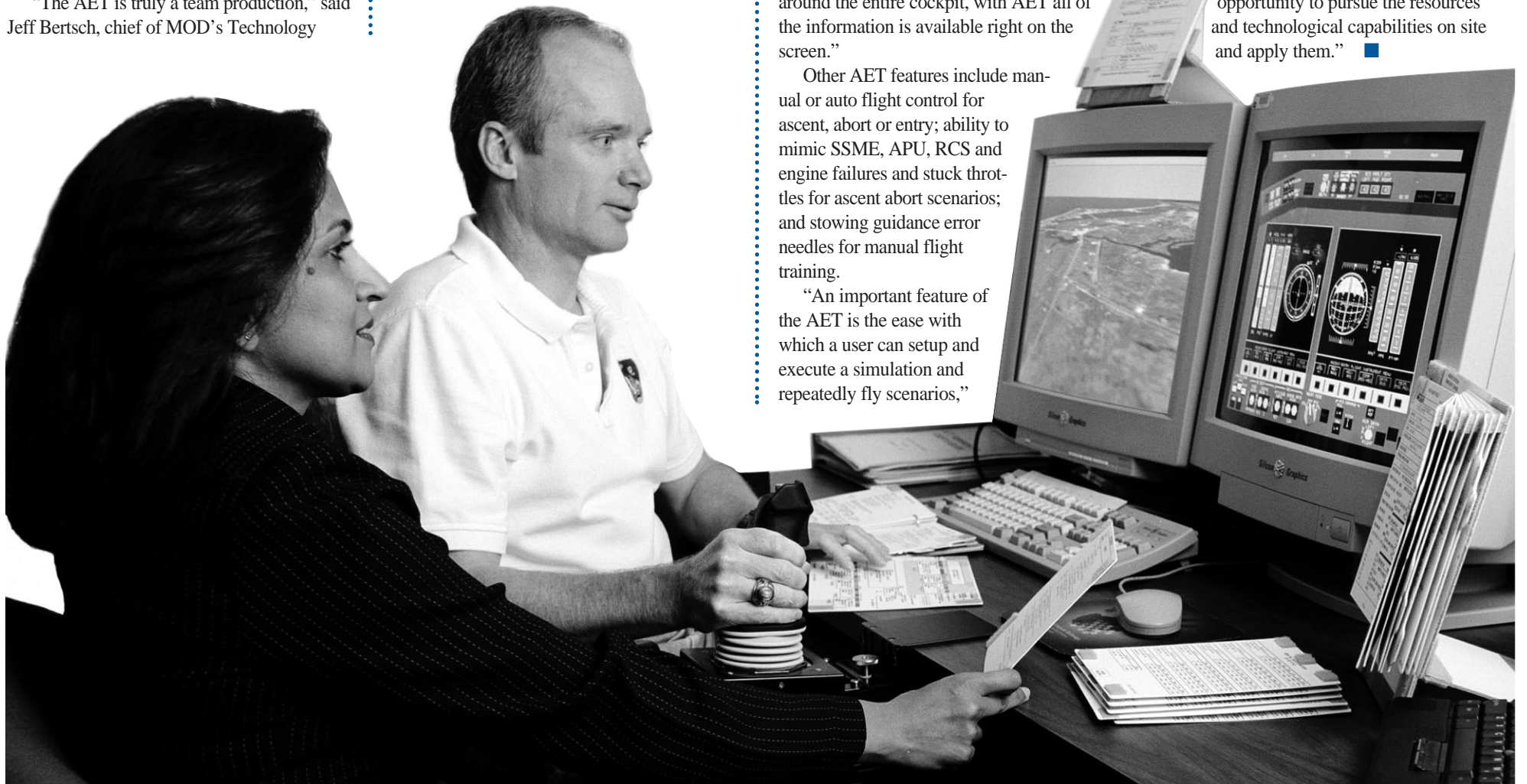
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The AET development team, from left, front: Mason Menninger, USA, Shashi Srinivasa, Jaymark Engineering, Francis Choi, USA, and back: Tom Smith, Barrios, Daniel Deger, NASA and Jeff Bertsch, NASA.



Shashi Srinivasa, the Ascent/Entry Trainer project lead, and Astronaut Charlie Precourt try out new features to the AET in Bldg. 4S.

NASA JSC Photo S99-07341 by James Blair

PEOPLE IN THE NEWS**Deputy director for Russian Projects, SR&QA receives honor**

Gary W. Johnson, JSC deputy director of Russian Projects, Safety, Reliability and Quality Assurance, received the Rocket Space Corporation Energia Korolev Medal for Technological Management during an International Space Station Joint American-Russian Safety Working Group meeting last July in Moscow. Johnson's Russian counterpart, Boris Sotnikov, presented the award.

The award was presented in recognition of Johnson's management of the ISS Phase I Program Joint Safety Assurance Working Group. From 1992 through 1998, Johnson and Sotnikov served as co-chairs of the JSAWG during the Shuttle/Mir Program, working to resolve issues to ensure the safety and success of Phase I missions.

"I'm very honored to receive this award from the Russians," said Johnson. "I was pleased that they felt so highly of the work we do."

The JSAWG developed a single process to evaluate the safety of all aspects of the Phase I missions, including the transportation of cargo to the Mir station aboard U.S.

and Russian spacecraft. This process was unique in that it allowed American and Russian cargo to be flown safely aboard the space shuttle, the Soyuz and the Progress. It also provided for the safe operation of American hardware aboard the Mir.



Gary W. Johnson

NASA JSC Photo S99-11401 by Robert Markowitz

The group also performed safety assessments of all Phase I space walks involving NASA astronauts, flyarounds and shuttle/Mir dockings. The team also investigated technical problems that arose during the course of Phase I.

"During Phase I, the Russians learned a lot from us in how we do a formal safety program and, at the same time, we learned a great deal from them regarding how to conduct operations, transport cargo and keep astronauts safe

in space for extended periods of time," said Johnson.

A 35-year veteran of the space program, Johnson joined NASA in 1964 as a project engineer in the Power Distribution and Sequencing Section at what was then the Manned Spacecraft Center in Houston, working on the Apollo sequencer system. From 1969 to 1974, he served as subsystem manager for the sequential subsystem for the Apollo Command and Service Module, the Lunar Excursion Module, and later the Skylab CSM. From 1974 to 1975, he was the subsystem manager for the Apollo-Soyuz Test Project electrical and sequential subsystems.

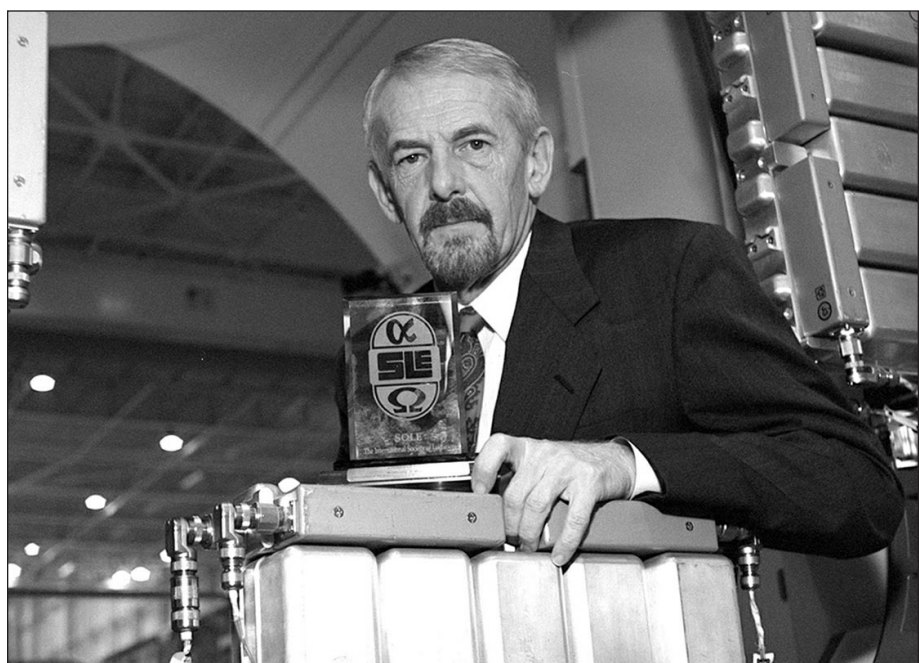
Assigned to the JSC Engineering Office, Space Shuttle Orbiter Project, from July 1974 through January 1975, he was responsible for the integration and implementation of orbiter-level technical requirements for data processing, displays

and controls, electrical and instrumentation systems.

From 1975 to 1978, Johnson served as head of the Equipment and Installation Section in the Power Distribution and Control Branch of the Control Systems Development Division in the Engineering and Development Directorate. He was a NASA test subject for the testing of spacesuits and related hardware and project manager for the Shuttle Avionics Integration Laboratory electrical power distribution and control interfaces.

After serving a brief stint in 1978 as a special assistant to the JSC director, providing support to the center director's technical assistant, Johnson was appointed deputy chief of the Electrical, Mechanical, and Environmental Systems Branch in the Flight Control Division, a position he held until 1981 when he was appointed chief of the Mechanical and Payload Systems Branch in the Systems Division.

From 1983 to 1985, Johnson served as chief of the Guidance and Propulsion Systems Branch in the Systems Division responsible for the development of flight controllers in the Space Shuttle Reaction Control System, Orbital Maneuvering System, consumables management, guidance and control, hardware and software, and on-orbit propellant transfer systems. In October 1985, he was appointed deputy director, Safety, Reliability, and Quality Assurance. He was appointed to his current assignment in 1997. ■

Station logistics manager receives high honor

Anthony J. Butina Sr.

NASA JSC Photo S99-10560 by James Blair

The Society of Logistics Engineers presented NASA-JSC employee Anthony (Tony) J. Butina Sr. with its Founder's Medal, the society's highest award, at the 34th annual Logistics Symposium in Las Vegas. The first award recipient was Wernher von Braun.

Butina is currently the manager of the International Space Station's Logistics and Maintenance Program Office, a position he has held for five years. During his tenure, he has brought logistics to the forefront of NASA and the International Space Station participants' consciousness.

Butina has contributed to logistics education and public awareness through

his presentations to classes at the University of Houston, serving as a chapter chairman and supporting his contractor personnel in their participation in SOLE at the local, national and international levels.

The Founder's Medal is the highest award that SOLE can bestow upon an individual for outstanding achievement in logistics engineering, technology, or management. SOLE presents this award to honor logisticians whose contributions to the profession are significant, outstanding, and have national or international impact. ■

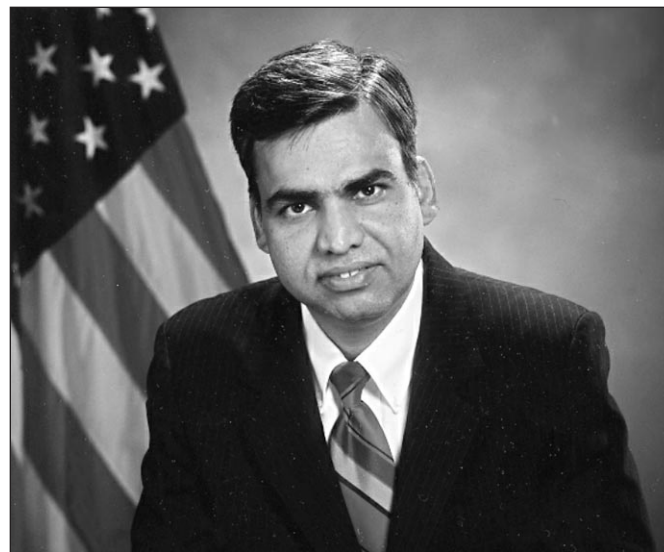
JSC Earth Sciences chief receives two awards

Dr. Kamlesh Lulla, chief of the Office of Earth Sciences of the Space and Life Sciences Directorate, was recently recognized at the Ninth Lukacs Symposium on the

International Environmetrics and the American Statistical Association.

The president of the American Society for Photogrammetry and Remote Sensing, Dr. Thomas Lilles,

awarded Dr. Lulla a Presidential Citation Award for his outstanding service to the society as an associate chief editor of the organization's premier journal, Photogrammetric Engineering and Remote Sensing. The journal is an internationally recognized professional publication with a circulation of more



Dr. Kamlesh Lulla

NASA JSC Photo S99e06650 by James Blair

Frontiers of Environmental and Ecological Statistics for the 21st Century (Pennsylvania State University) for his scientific contributions to Earth and remote sensing sciences.

Dr. Lulla received the Twentieth Century Distinguished Service Award at the symposium which was cosponsored by the International Association for Ecology, USEPA,

than 15,000 subscribers.

Dr. Lulla is also chief editor of Geocarto-An International Journal of Remote Sensing, Geographic Information Systems and Geosciences. He is an internationally recognized expert and has published more than 200 papers, book chapters and reports in Earth science remote sensing. ■

'Take VPP Home' theme of Safety & Total Health Day

Safety isn't just for work anymore. Well, really, it never was, but too often people park their safety habits at the office door when they leave. Safety & Total Health Day hopes to change that thinking a bit.

Managers have been asked to carry the theme, "Take VPP Home," forward in planning for their own organization's activities, and the idea is further carried out in the spectacular array of booths and speakers that will be part of the day, October 20.

What started out as a modest project some four years ago has grown into the most important employee-driven event on site, and, most participants agree, it gets better every year. This year will be no exception.

Besides a stellar group of speakers, much creativity has gone into the planning of booths and demonstrations. And, as the theme suggests, much of the information and training will be applicable at home as well as at work.

More than 50 booths will be on display, many of them new this year. For

example, if the person at the car care booth looks familiar, it's because it will be Scotty Kilmer of KHOU-TV (Channel 11), best known as the Saturday morning "Car Talk" host, and he'll be here to share auto tips.

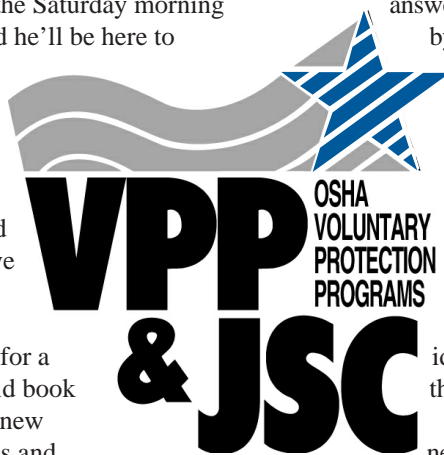
M*A*S*H* "The Swamp" booth is sure to draw a crowd too. You can get first-aid information and have your questions answered by a real M.D. Also, register for a free top-line, first-aid book valued at \$50. Two new booths, Men's Issues and Women's Issues, will also be available for specific questions. Never lose your money to a con-artist again. The financial booth will inform you about scams and how to spot them. Traveling to Russia? You'll find the latest on travel in that country, and you can even learn safety phrases you may need while there.

You can also get your cholesterol screened and visit the M. D. Anderson booth to get cancer questions answered. And, just for fun, stop by the Wheel of Fortune booth and try your luck at answering safety and health questions to win an award.

Other great booths and demos to look for can be found at the Safety & Total Health Day Web site, along with many, many ideas and suggestions for the day's activities.

If you're serious about fitness, get a group together and take part in training for the Health Run/Walk. If enough show up, you just might win a "George Award" for your directorate to display the entire year.

Finally, remember one of the most important of all events – the Safety & Total Health Day Blood Drive. It is a gift of life for which there is no substitute. ■



Health run caps off day's activities



NASA JSC Photo S98-14249

Runners get a good start for last year's Safety and Total Health Day Run.

Of all the options available for better health and longer life, the greatest benefit is achieved by improving physical fitness.

Physical exercise, such as walking and jogging, produces a long list of health benefits, both mental and physical, and helps you feel good. To recognize the importance of physical fitness in JSC employees' health and well-being, Safety and Total Health Day will feature the fourth annual "Training for Health" Walk/Run October 20.

Two routes have been mapped out, a two-kilometer course for walkers and a five-kilometer course for runners. The event begins at 3 p.m. at the Gilruth Recreation Center. The physically challenged are welcome. Refreshments will be provided at the pavilion following the event.

All participants must register for the event. There is no charge to participate, but registrants may pay \$6 to order a commemorative T-shirt (\$7 for size XXXL). The first 200 registrants will receive a free water bottle waist pack. Registration ends promptly at 1:30 p.m. October 20.

Participation in the walk/run is voluntary. Employees should check with their directorate or organization for details on participating in this event.

The walk or run you complete might be the start of a daily exercise program that could benefit your health and well-being for the rest of your life. ■

For further information call Greta Ayers at x30302 or Jennifer Jones at x32608.

Next blood drive is on Safety & Total Health Day

Now a tradition, JSC employees and contractors will be able to donate blood as part of their Safety and Total Health Day activities on October 20, or the following day.

This yearly event has become the most popular, as well as the most productive, of all JSC's on-site blood drives. In each of the last two years, JSC employees donated 508 and 598 units of blood, respectively. The donations have been used throughout the community in treating patients with a variety of medical conditions and include some JSC employees and their family members.

Experienced blood donors know that they can, if they desire, designate a person for whom their blood is donated. For example, last year many JSC employees donated blood for 4-year-old Brooke Hawes, neighbor of Information Systems Contract employee, Pat Doerr.

Hawes has been fighting cancer for a good part of her young life. Those who do not recall her story can read about it on the

blood drive Web site under "Testimonials." Blood donations have been a big help to Hawes and her family in their ongoing battle. She will soon undergo a bone marrow transplant,



NASA JSC Photo S98-14254

An employee takes time out to donate blood during last year's Safety and Total Health Day.

combined with her other treatments such as chemotherapy and radiation. At last count she still needed nearly 500 units of blood to replace those she has already used during the course of her treatments.

Donors may go to the Teague Auditorium lobby from 7:30 a.m. - 4 p.m., includ-

ing lunchtime, on October 20 or 21. Alternate donor locations will be set up to provide some relief for those who like to donate but cannot wait on the lines that often form at the Teague during this particular event. Check the blood drive Web site, located on the Human Resources Office homepage, for an announcement on alternate locations.

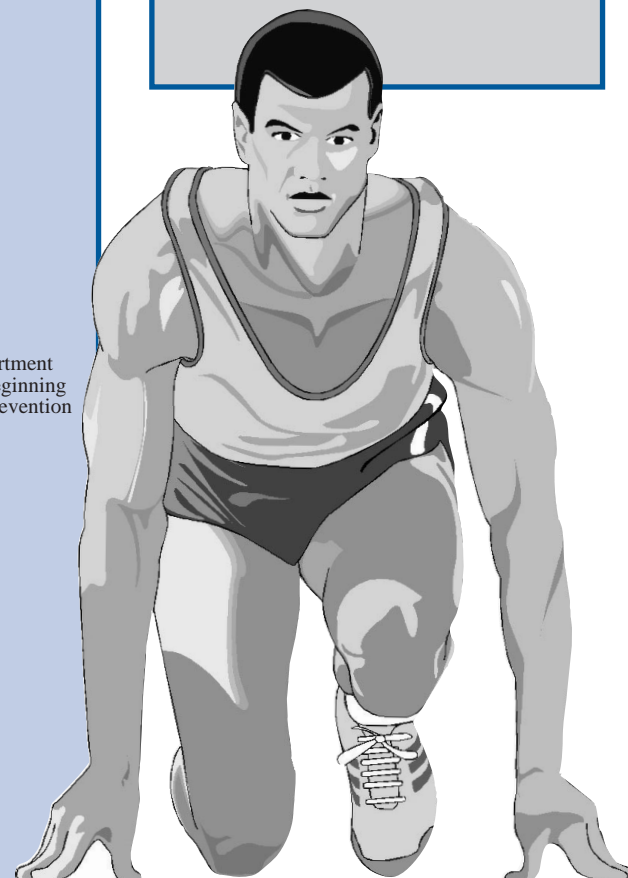
Anyone participating in the Safety and Total Health Day Walk/Run on October 20 is encouraged to give blood on October 21.

The procedure for drawing whole blood generally takes about 45 minutes, with plasma and platelet donations taking longer. Plasma and platelets, which require special processing, will only be drawn on the second day of the drive this year.

Call Donna Stuart at x33032 to make an appointment.

Prospective donors who have questions about how a medical condition may affect their ability to give blood may call St. Luke's Blood Donor Center at 713-791-4483. For details on the JSC Blood Drive call Dan Mangieri at x33003. ■

SAFETY AND TOTAL HEALTH DAY SEMINAR SCHEDULE October 20, 1999				
TIME	BUILDING 2 TEAGUE AUDITORIUM	BUILDING 30 AUDITORIUM	BUILDING 8 ROOM 2100	BUILDING 8 ROOM 248
7:30 a.m.	VIDEO			
8:00 a.m.	Colonel John Casper			
8:30 a.m.	Dr. Dave Williams			
8:50 a.m.	Dr. Tom Marshburn "Cholesterol"			
9:00 a.m.	OPENING: Mr. George Abbey	Dr. Daniel Gold of Texas Eye Institute "Lasik Surgery" Eye Correction Surgery		
9:05 a.m.	Introduction by Dr. Dave Williams			
	Dr. Robert Conn Morning Keynote "SMARTRISK ACCIDENT PREVENTION"			
10:00 a.m.			Houston Police Department 30 Minute Seminars beginning every hour on Crime Prevention	
10:15 a.m.	VIDEO	Dr. Larry Wier "PHYSICAL FITNESS, THE ESSENTIAL ELEMENT IN TOTAL HEALTH"		
10:30 a.m.	Austin Davis "COMEDY DEFENSIVE DRIVING AND CROSS WALK SAFETY"			
11:00 a.m.			HPD Seminar	
11:30 a.m.	VIDEO	Dr. Andrew (Tony) Jackson "ROLE OF FITNESS IN THE PREVENTION OF BACK PROBLEMS"		Houston Police Department 30 Minute Seminars beginning every hour on Crime Prevention
12:00 p.m.	Houston Police Department Debra Stefek "PROTECTING OUR CHILDREN" AND "CYBERSAFETY"		HPD Seminar	
12:30 p.m.		Employee Assistance Program Speaker Dr. Malinda Lea "STRESS: ARE YOU Y2K PREPARED?"		
12:45 p.m.				
1:00 p.m.	VIDEO		HPD Seminar	HPD Seminar
1:30 p.m.	John Drebinger Afternoon Keynote "SAFETY COMMUNICATIONS MAGIC"			
2:00 p.m.		Employee Assistance Program Sharon H. Burns, MA, LPCI, SOTP "HELPING YOUR CHILD BE SAFE IN TODAY'S SOCIETY"	HPD Seminar	HPD Seminar
2:30 p.m.	CLOSING Perry Bennett, Chuck Sawin			



*It will be lunch
"to the max"
during Safety & Total
Health Day.*

Astronaut band to serenade Safety & Total Health participants

After an enlightening morning focused on safety and health issues, JSC employees will enjoy the spacey mid-day music of the "Max Q" astronaut band.

The orbital ensemble will perform stellar selections from 11:30 a.m. - 1:30 p.m. outside the Bldg. 3 cafeteria. Carry-out lunches will be available from the cafeteria to take out to the lawn, where connoisseurs of fine food and fine music will be able to relax - perhaps even in the shade of a tree - and indulge both passions.

Extra trash bins will be set up so that JSC can be kept clean. Take advantage of this chance to hear the band perform their far-out tunes. ■

Words of the wise, the witty, the wondrous

By Mary Peterson

We at JSC are in for an extraordinary treat. Never before has such an impressive array of speakers been scheduled for a single event on site—to inspire, to inform, to challenge, and even entertain—with messages that will guide their listeners to a better life. If there is a single mantra to their presence, it would be, you can't control your life until you learn to control your own safety (Austin Davis).

The three headline speakers, Dr. Robert Conn, John Debringer, and Austin Davis, each nationally known, are as diverse as they are stimulating.

The first, Dr. Robert Conn, who will give the keynote address at 9 a.m., is a former children's cardiovascular specialist who quit his life's work to devote his time

to the safety education of others. In a recent telephone interview, the obvious question was asked, "Why give up a lucrative medical practice to go into the world of safety?," a pursuit hardly known for having money thrown at it. Conn laughed, "Most would probably say because I'm stupid," but there was, in fact, a deep, underlying reason that few others



Dr. Robert Conn

could experience. He explained, "As a doctor, I was part of the organ transplant team. One month at the hospital where I was working, we harvested five hearts from children all under the age of 3. All had drowned in home swimming pools, and I thought, none of these accidents had to happen."

This was a turning point for Conn who soon after developed the SmartRisk Foundation, headquartered in Toronto, Ontario, Canada, that has become a national resource for safety education. Its programs are highly innovative and appeal to a wide variety of audiences, including those thought to be impervious to anything new that smacks of safety - teenagers. "Safety isn't cool' are what we get from teens," says Conn. That is, until SmartRisk came up with HEROES and "Stupid-Line," two immensely popular programs that draw not only teens' attention but has attracted their willing participation.

SmartRisk is Conn's impossible dream, dedicated to helping people make the right (smart) choices to preserve and enhance their lives. You'll want to hear more.

The second speaker, John Debringer, in a word, is "a hoot." Debringer is that rare embodiment of



John Debringer

teacher and performer, both of which he does amazingly well. And, amaze you he will. For, not only is he a gifted speaker and teaching professional on the unlikely subject of how to communicate safety, he is also a certified hypnotist and accomplished magician—so watch your wallet! Watch your funnybone too, because Debringer's trademark is to leave 'em laughing while learning. Even off the cuff, he is so entertaining, that JSC's own Public Affairs Office thanked the safety folks for "allowing" them to give him a recent on-site tour. Prepare to learn and laugh at this session.

Austin Davis, the third headliner, is back for a repeat performance of his very successful seminar on Defensive Driving and Crosswalk Safety held at JSC this spring. Davis, a former police officer, has seen a lot of safety (and lack of it) up close and personal, and he has a wise and witty grip on the human condition. Combine that with his experience as a professional comedian and experienced corporate trainer, and

you have a dynamite presenter. Davis has appeared on numerous television shows, including *Jay Leno*, *Donahue*, and *City Under Siege*.

In addition to the above, JSC will offer numerous other speakers. See Schedule for times and location. ■



Austin Davis



NASA JSC Photo S99-11603 by James Blair

COME RAIN OR COME SHINE, THE DAY WILL BE FINE (October 20), promises the Safety & Total Health Day Planning Committee. Left to right: Jonathan Manning, Sheilla Goldberg, Emily Venski, Sandra Amundson, Missy Bryant, Chuck Sawin, Sharon Kemp, Ginger Gibson, Rachel Windham, Stacey Menard, Rindy Carmichael, Mary Peterson, Greta Ayers, Perry Bennett, Larry Wier, Tim Kropp, and Terri Blackwelder.

First, it was Oscar! Then it was Emmy. Then it was Tony. Now it's George!

It's an Academy Award of sorts for JSC fitness, and the very first one ever to be presented.

How do you win a George Award for your directorate? Just encourage the largest number of people you can to join the Health Run-Walk on Safety & Total Health Day. The directorate having the largest percentage participating wins a handsome trophy to display until next year's Safety & Total Health Day, when the defending champ can reclaim the prize or relinquish it to another winner (just like the "America's Cup").

In case you're wondering, the George Award was named for none other than our Center Director, George Abbey, who, more than any other person, has been the force behind our great safety and health program at JSC. You'll be proud to have the George Award in your directorate! ■

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 4

A new tool developed at the Marshall Space Flight Center saves the government about \$30,000 every time it is used.

Known as a magnetic hammer, the tool is used in the manufacture of fuel tank domes for the giant Saturn V Moon rocket booster which will send U.S. astronauts to explore the Moon. The magnetic hammer removes distortions from metals using electrical pulses lasting about 500 millionths of a second. Since the magnetic field pressure is distributed through the volume of the material, the resulting metal forming is uniform with no surface blemishes. It has been used eight times during the past six months – for a saving estimated at \$240,000.

1 9 6 9

The Apollo 11 astronauts made a stop in Amsterdam to visit with Dr. T. Samkalden, Mayor of Amsterdam, as part of their world tour. The crew of Apollo 11 aren't the only ones on tour for NASA and the United States. Dr. Charles A. Berry, JSC flight surgeon, just returned from a trip to Europe of South America which included brief visits to Moscow, Rome, Milan, Amsterdam, Brussels, Lisbon, and Mar del Plata.

Dr. Berry was honored in Moscow by a gala reception at the U.S. Embassy and at numerous receptions given for him by the USSR Academy of Sciences throughout Russia. His trip also included an audience with Pope Paul.

1 9 8 4

Astronomers have taken the first pictures of an extragalactic pulsar, the superdense remnant of a dead star that spins 20 times per second and throws out intense beams of energy. The pulsar, the first ever to be photographed outside of the Milky Way, lies in the Large Magellanic Cloud, a companion galaxy to our own. Scientists are studying the star's braking mechanism and sudden movements of its surface. "It strikes me as almost absurdly fascinating ... we are measuring one-micron changes at a distance of 150,000 light years," said Carl Pennypacker of the University of California's Lawrence Berkeley Lab.



'Out of this World Pizza'

Oven fresh pizza delivered to your door

Hungry? For those rainy days when you don't want to venture out of the office, for those special occasions such as a fellow employee's birthday, for those times when you want to eat on the run and leave a bit early, or when you just can't get over to the cafeteria, there is a new item on the JSC cafeteria menu that might interest you: pizza. And it's deliverable to your office – just call "Out of this World Pizza" at x41PIE.

"The main reason we entered into this new venture is to reach out to people in the outlying areas across the center," said Gary Novominsky, JSC cafeteria manager. "It's difficult for some employees to get to the cafeteria. If people can't get to my cafeteria, I'm going to deliver the food to their offices."

The idea for "Out of this World Pizza" came from the NASA Exchange Operations Manager Karl Schuler. A similar pizza delivery service is available to employees who work at the Medical Center. Because hospitals – like JSC – are huge facilities, it's not viable for an outside food delivery service to come onto the site and deliver. The Exchange is tailoring a similar program to fit the needs of JSC patrons.

Taste tests on different sauces, crusts and cheeses were done last July with the Exchange staff and with potential JSC customers. JSC Exchange employees settled on a product that everyone liked.

"I didn't want to put out a product that was just OK," said Novominsky. "I wanted to put out a product that people would enjoy and order often."

More than 500 pizzas were sold in the first month after the program began August 9. The favorite is the "Galactic": pizza with hamburger, sausage, onions, mushrooms, and Canadian bacon. Vegetarians to meat lovers will find something of interest on the current



NASA JSC Photo 99E12401 by Bill Stafford

Gary Novominsky, JSC cafeteria manager (and pizza delivery guy) delivers fresh hot pizza to STS-97 crewmembers, front row, from left, Pilot Mike Bloomfield, Mission Specialist Marc Garneau, Commander Brent Jett, and back row, from left, Mission Specialists Carlos Noriega and Joe Tanner.

menu. Specialty pizzas will be added to the menu in coming months.

"Hopefully we'll evolve to delivering salads, boxed lunches and other items," said Novominsky. "Customer feedback and demand will guide our future."

Orders may be placed beginning at 9:30 a.m. daily. Turnaround time is 30 to

45 minutes. Pizzas are delivered from 11 a.m. to 2 p.m. Prices range from \$8 to \$13 for 12-inch and 16-inch pizzas. Those who pick up their orders at the Bldg. 3 cafeteria will get \$1 off each pizza.

Employees may dial **41PIE** (x41743) to order. ■

COUPON



Out of this World Pizza

CALL: Ext. 41PIE (41743)

Orders taken: 9:30-1:30; We deliver onsite: 11:00 to 2:00!

Oven Fresh! Straight to your Door!

Onsite Delivery or Carryout

Expires November 19, 1999

NASA achieves ISO 9001 registration at all sites

As of September 17, all NASA centers, NASA Headquarters, the Jet Propulsion Laboratory and all of NASA's government operated facilities have achieved ISO 9001 registration or been recommended for registration.

With this accomplishment, NASA became the world's first federal or state

agency with multiple sites to have all its sites under ISO 9001 registration. NASA Headquarters is among the first corporate headquarters offices in the world to achieve its ISO 9001 registration. Administrator Daniel S. Goldin challenged NASA in November 1996 to have all the agency's facilities certified by September 1999.

"We are leaders in the world of science and technology. We must also be leaders in the world of quality. I am requiring that the agency be third-party certified in our key processes, by an internationally recognized registrar, to ISO 9001. This commitment applies to all centers and headquarters," said Goldin. ■

TICKET WINDOW

Exchange Store hours

Monday-Friday

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

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

All tickets are non-refundable.

Metro tokens and value cards are available.

Franklin Planners now available.

For more information, 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
Fiesta Texas	adult ... \$18.25 (child under 48") ... \$15.50
Astroworld one-day admission	\$21.00
Water World	\$10.75
Moody Gardens (2 of 6 events) (does not include Aquarium Pyramid)	\$10.75
Moody Gardens (Aquarium only)	\$9.25
Sea World	adult ... \$27.25 child (age 3-11) ... \$18.25
Schlitterbahn Water Park	adult ... \$20.75 child (age 3-11) ... \$17.50
Space Center Houston	adult ... \$10.25 child (age 4-11) ... \$6.50 (JSC civil service employees free.)
Space Center Houston annual pass	\$18.75

October 16 - 17

Wings over Houston Air Show . adult ... \$11 child (age 6-11) ... \$4.50

October 2 - November 14

Texas Renaissance Festival . adult ... \$15 child ... \$6.50

Effective October 1, the JSC Exchange will accept personal checks with valid Texas driver's license. We will no longer require a NASA badge. There will be a \$25 charge on all returned checks.

Don't forget Boss's Day
– October 15 –

Extraterrestrials invade Space Center Houston to answer the question:

Since the dawn of time, Earthlings have pondered, argued and squabbled over the question, "Could there be life on other planets?" While Scully and Mulder make it look easy, those of us on this planet know the quest for extraterrestrial life isn't quite so convenient. Until now.

Beginning October 8, everyone can dive into their own *X-Files* at Space Center Houston's new exhibit, *Are We Alone?* What might creatures from other planets look like and feel like? What could they tell us about existence beyond our solar system's third planet? You can explore all that and more at *Are We Alone?*, an out-of-this-world, interactive experience that will take visitors on a fun-filled voyage of mystery far from Earth, into the outermost reaches of our solar system and beyond.

It's a close encounter for everyone as you marvel at the centerpiece of the exhibit, where you'll meet a quartet of the most awesome robotic space creatures this side of Pluto.

'Are We Alone?'

There's Hairy Sandwalker, Gusty Traveler, Phineous Palindrome and the Clumping Rockettes. The 12- to 20-foot-tall robotic creatures represent life forms that might

develop on planets where the gravity, geology and atmosphere differ from those on Earth. These friendly space dwellers move, talk and will tell you all about what life is like on their planets.

"We're very excited to present our largest exhibit ever at Space Center Houston. We know families will truly have the time of their lives at this amazing new

attraction filled with extraordinary mystery and adventure, said Richard Allen, president and CEO. "*Are We Alone?* continues our tradition of offering our guests new experiences and intelligent family fun with every visit."

The Quest: In this area of the exhibit, guests can use state-of-the-art telescopes to see star fields beyond our galaxy, use radio telescopes to uncover "invisible" objects in a star field, and discover the odds of finding life elsewhere in the universe. Also, find out how scientists

have attempted to contact intelligent life beyond our planet.

A World Beyond: Jumpin' Jupiter! Spectacular Saturn! Discover what creates the dramatic color around these two planets. You also can see what the world would look like through the "eyes" of an infrared camera. Explore the surface of another planet with different atmospheric conditions... which reveals a mysterious landscape.

As it exposes you to a menagerie of possibilities in the worlds beyond what we know, *Are We Alone?* captures the imagination and the reality of extraterrestrial life. We've always wondered if there were life on other planets but never questioned, "Could they be here with us?" Until now...so come uncover all the fun and mystery at Space

Center Houston.

Are We Alone? is a nationally touring exhibit developed by Pacific Science Center in Seattle and the Search for Extraterrestrial Intelligence Institute, and is partially funded by the National Science Foundation.

Are We Alone? opens Friday, Oct. 8, and admission to the attraction is included with the cost of admittance to Space Center Houston. Ticket prices are \$12.95 for adults, \$8.95 for children 4 to 11 years of age. Children under 4 are admitted free. The price for senior citizens age 65 and over is \$11.95.

Hours of operation are 10 a.m. to 5 p.m. on weekdays, and 10 a.m. to 7 p.m. on weekends. The Center is closed Christmas day. ■

NASA JSC Photo s99-11657 by Robert Markowitz

America Recycles Day 1999

For our children's future... 'Buy recycled today'

It's time for round two of the JSC America Recycles Day contest. The JSC Environmental Stewardship Subcommittee's Recycling Work Group received about 400 entries in the September contest, a word search puzzle about recycling do's and don'ts. The puzzles have been scored and prizes are now being sent to the first 300 eligible winners. The October contest is a cryptogram. The cryptogram, along with a list of September winners and other America Recycles Day information, can be found on the America Recycles Day home page accessible through the JSC internal home page. Once again, the first 300 correctly solved puzzles from eligible employees submitted by October 22 will receive a small prize. Winners names along with the September winners will be placed in a pool to draw for the grand prize on November 15.

Most people don't think about what happens to the materials that they drop in the

recycling bin at home or work. Read on for some information that really brings home the idea that you're not really recycling unless you buy recycled.

More than 45 percent of all paper Americans use is recovered for reuse or recycling; in fact, more paper is now recovered than is being land-filled. That's about 267 million pounds of paper recovered each and every day for reuse and recycling in the U.S. And last year, 37 percent of the raw material fiber used to make new paper products came from recycled paper. To put that in more visual terms think of this:

▼ The paper recovered for recycling in the past 10 years would fill more than 3.5 miles of landfill space packed 50 feet high.

▼ Enough paper is collected for recycling each year to fill a box-car train 7,600 miles long.

▼ In 1997, more than 35 percent of all glass bottles and jars sold in the U.S. were

recycled. Most recycled glass is used to manufacture more bottles and jars; however, it is now being used in other applications such as manufacture of fiberglass insulation, roadbed aggregate for the nation's highways, driving safety reflective beads, and decorative tile.

▼ In 1998, almost 63 percent of aluminum was recycled. Only about 1 percent of consumer aluminum cans goes to landfills. The average aluminum can contains more than 50 percent post-consumer recycled content. Using recycled aluminum instead of aluminum ore saves 95 percent of the energy and air pollution during the manufacturing process (that's enough energy to light a city the size of Pittsburgh for six years). Every second, 1,500 aluminum beverage cans are recycled. If all the cans which have been recycled since 1972 were placed end-to-end, they would stretch to the moon almost 200 times.

▼ In 1997, nearly 1.4 billion pounds of plastic bottles were recycled; that's a recy-

cling rate of almost 24 percent. More than 1 billion pounds of non-bottle plastics, such as battery casings, film, bags, crates and x-ray film, were recycled. There are now almost 2,000 businesses engaged in handling and/or reclaiming recovered plastic for use in new products. Plastic is recycled into new bottles, carpet, filler for highways, computer housing and components, plastic lumber, plastic decking and even clothing.

▼ Almost 100 percent of automotive batteries are recycled.

Here are a few last statistics. Each of us makes about 4.5 pounds of garbage each day. About 60 percent of the trash we throw away ends up in one of the 3,000 U.S. landfills. Each of us can help conserve our planet's resources by participating in recycling programs and buying new products that contain recycled content.

A November article in the *Roundup* will feature information on recycling and buying recycled at JSC. For details about recycling at JSC, contact Jo Kines at x33218. ■



GILRUTH CENTER NEWS

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

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. 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 Taragzewski, 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 from 6:30-7:30 p.m.

Thursdays 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 more information 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.

PEOPLE *on the* **MOVE****Human Resources reports the following personnel changes:****Key Management Assignments**

John Whiteley was named director, Systems Management Office, Office of the Director.

Additions to the Work Force

Matt Maples joins the Power Systems Branch, Energy Systems Division, Engineering Directorate, as a design and test engineer.

Promotions

Matrenia Anumelle was selected as a purchasing agent in the Projects Acquisition Office, Business Management Directorate.

Honey Hyman was selected as executive information specialist in the Imagery and Printing Branch, Information Products and Services Division, Information Systems Directorate.

Helen Hickman was selected as a secretary in the office of the Associate Director.

Reassignments Between Directorates

Rafael Garcia moves from the Space and Life Sciences Directorate to the International Space Station Program Office.

Susan J. Anderson moves from the office of the Chief Financial Officer to the Human Resources Office.

Beth Hall moves from the International Space Station Program Office to the Human Resources Office.

Reassignments to Other Centers

Donna Settles of the Business Management Directorate moves to Langley Research Center.

Resignations

Greg Hall of the Information Systems Directorate.

Phil Forrest of the Mission Operations Directorate.

Carrie Lach of the Human Resources Office.

DATES & DATA**October 10**

Westside NSS meets: The "Westside" group of the Clear Lake Area chapter of the National Space Society will meet at 2 p.m. October 10 at Silicon Graphics, 11490 Westheimer, Suite 100. For more information, call Murray Clark at (281) 367-2227.

October 12

Aero Club meets: The Bay Area Aero Club will meet at 7 p.m. October 12 at the Houston Gulf Airport clubhouse at 2750 FM 1266 in League City. For details call Larry Hendrickson at x32050.

CLA-NSS meets: The Clear Lake Area chapter of the National Space Society will meet at 6:30 p.m. October 12 at the Freeman Memorial Branch Library, 16602 Diana Lane. For additional information call Murray Clark at (281) 367-2227.

NPMA meets: The National Property Management Association will meet at 5 p.m. October 12 at Robinette and Doyle Caterers, 216 Kirby in Seabrook. Dinner costs \$14. For more information call Sina Hawsey at x36582.

October 13

Astronomy seminar: The JSC Astronomy Seminar Club will meet at noon October 13, 20 and 27 in Bldg. 31, Rm. 248A. For more information call Al Jackson at x35037.

IAAP meets: The Clear Lake/NASA Chapter of the International Association of Administrative Professionals (formerly Professional Secretaries International) will meet at 5:30 p.m. October 13 at Bay Oaks Country Club. Cost is \$16. For more information and reservations, call Tami Barbour at (281) 488-0055, x238.

Spaceland Toastmasters meet: The Spaceland Toastmasters will meet at 7 a.m. October 13, 20 and 27 at the House of Prayer Lutheran Church. For details, call George Salazar at x30162.

Spaceteam Toastmasters meet: The Spaceteam Toastmasters will meet at 11:30 a.m. October 13, 20 and 27 at United Space Alliance, 600 Gemini. For more information call Patricia Blackwell at (281) 280-6863.

October 14

Airplane club meets: The Radio Control Airplane Club will meet at 7 p.m. October 14 at the Clear Lake Park building. For additional information call Bill Langdoc at x35970.

Communicators meet: The Clear Lake Communicators, a Toastmasters club, will meet at 11:30 a.m. October 14, 21 and 28 at Freeman Library, 16602 Diana Lane. For more information,

call Allen Prescott at (281) 282-3281 or Mark Caronna at (281) 282-4306.

MAES meets: The Society of Mexican-American Engineers and Scientists will meet at 11:30 a.m. October 14 in Bldg. 16, Rm. 111. For more information, call George Salazar at x30162.

October 16 and 17

Air Show: Wings Over Houston Airshow Festival will be held at Ellington Field October 16 and 17, 8 a.m. to 6 p.m. The show will feature world champion aerobatics, World War II reenactments and demos from U.S. military aircraft. For information visit www.wingsoverhouston.com or call (713) 266-4492.

October 20

Scuba club meets: The Lunarfans will meet at 7:30 p.m. October 20. For details, call Mike Manering at x32618.

Fun run: The Safety and Total Health Walk/Run will be held at the Gilruth Center October 20 at 3 p.m. Registration is now open for the non-competitive 3.1 mile jog/run and 1.25 mile walk. For more information call Greta Ayers at x30302 or Jennifer Jones at x32608 or visit the JSC Web site.

October 21

Directors meet: The Space Family Education board of directors will meet at 11:30 a.m. October 21 in Bldg. 45, Rm. 712D. For details on this open meeting contact Lynn Buquo at x34716.

October 25

Alzheimer's support group meets: The Clear Lake Alzheimer's Caregiver Support Group will meet at 7:30 p.m. to 9 p.m. October 25 in the first floor conference room, St. John Hospital West building, Nassau Bay. For details, contact Nancy Malley at (281) 480-8917 or John Gouveia (281) 280-8517.

October 28

Radio Club meets: The JSC Amateur Radio Club will meet at 6:30 p.m. October 28 at the Piccadilly, 2465 Bay Area Blvd. For more information, call Larry Dietrich at x39198.

November 1

NSBE meets: The National Society of Black Engineers will meet at 6:30 p.m. November 1 at Texas Southern University, School of Technology, Rm. 316. For details, call Kimberly Topps at (281) 280-2917.

NASA BRIEFS**NASA FORMS TEAM TO REVIEW SHUTTLE PRACTICES**

Following the recent discovery of maintenance-related damage to electrical wiring in the space shuttle, NASA is forming a team of leading aerospace experts to review the overall safety of shuttle maintenance and refurbishment practices.

The team will be chaired by Dr. Henry McDonald, director of Ames Research Center.

"Dr. McDonald's team will include top maintenance experts from NASA, the military, the aerospace industry and the commercial aircraft industry," said Joe Rothenberg, associate administrator for space flight at NASA Headquarters. "Their experience and lessons-learned compiled over the years will be essential to our continuous improvement processes for shuttle safety."

The team will assess NASA's standard practices for maintaining and refurbishing the shuttle orbiters, main engines and solid rocket boosters. It also will recommend improvements. Preliminary findings will be presented to NASA in October.

"I'm proud to lead this team and I am looking forward to the task ahead," McDonald said. "I plan to bring the best expertise available from around the country to examine this issue and recommend the right improvements. Ensuring the safety of the shuttle both now and well into the next millennium will be our top priority."

LOCKHEED MARTIN ENGINEERING CONTRACT TO CONTINUE

JSC will exercise a \$38.55 million level-of-effort option to continue its Engineering, Test and Analysis contract with Lockheed Martin Engineering & Sciences Co. of Houston. This type of option calls for the company to devote a specific number of hours – almost 1.2 million – to accomplishment of contract goals.

The initial contract, worth \$1.5 billion over 10 years, was awarded through the competitive procurement process and was effective January 1, 1994. It included a 5-year base effort and with 1-year and 4-year renewal options. The \$38.55 million contract is part of the annual renewal option.

The contract work will be performed at JSC and at Lockheed Martin's Houston facility.

The work includes: Engineering, scientific, and technical support to research and development laboratories and projects; analytical support to the design, development, and operations of projects; engineering, maintenance, and operations support for research and development facilities; systems engineering, programming and operations support of automatic data processing equipment and networks; design development and operations support of payloads and flight hardware; technical support to flight crew training for payloads and space walks; and furnishing equipment and systems associated with that work.

SPACE CENTER Roundup

The Roundup is an official publication of the National Aeronautics and Space Administration, Johnson Space Center, Houston, Texas, and is published by the Public Affairs Office for all space center employees. The Roundup office is in Bldg. 2, Rm. 181. The mail code is AP3. The main telephone number is x38648, and the fax is x32000. Electronic mail messages may be directed to:

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