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Spaceport News

America's gateway to the universe. Leading the world in preparing and launching missions to Earth and beyond.

John F. Kennedy Space Center

Fortieth Anniversary
Pioneering the Future

Sputnik I, the world's first artificial satellite that the Soviet Union launched on Oct. 4, 1957, provided the impetus for the founding of the National Aeronautics and Space Administration. Just over 40 years later, we are building an International Space Station with the Russians as partners.

Although Cold War rivalries prompted many early initiatives, the legislation that enabled NASA's creation called for the peaceful exploration of space for the benefit of all.

This pioneering spirit not only reaches across the globe today to unite cultures, it also spans generations — uniting both young and old.

Within the first few years of NASA's founding, the agency launched its first high-profile program involving human spaceflight: Project Mercury. John Glenn Jr. became the first U.S. astronaut to orbit the Earth on Feb. 20, 1962, aboard a Mercury-Atlas 6 in "Friendship 7."

Today, Glenn is training with the crew of STS-95 to again launch into orbit around the Earth to engage in research for the benefit of all. A variety of experiments sponsored by NASA, the National Space Development Agency of Japan (NASDA) and the European Space Agency (ESA) during STS-95 will focus on life sciences, microgravity science and advanced technology during the flight.

Alan Shepard's candle continues to burn

Alan Shepard in his space suit inside the Mercury capsule. Waiting in the rocket as delays postponed his flight, Shepard instructed the launch team to just "light this candle."

Alan Shepard Jr., America's first man in space and the fifth to walk on the moon, died at age 74 on July 21.

After his historic space flight in 1961, amid a period of Cold War rivalries and uncertainty, Shepard reinvigorated the American spirit with his courage, tenacity and unflappable, can-do attitude.

"Alan Shepard will be remembered, always, for his accomplishments of the past: being one of the original seven Mercury astronauts, for being the first American to fly in space and for being one of only 12 Americans ever to step on the moon," said NASA Administrator Daniel Goldin.

"He should also be remembered as someone who, even in his final days, never lost sight of the future."

Shepard was born on Nov. 18, 1923, in East Derry, New Hampshire, where he studied in a one-room schoolhouse. There, he completed six grades in five

(See Shepard, Page 3)

Where there's smoke, there's NASA research

As fires raged through Florida earlier this month, creating a veritable inferno across the sunshine state, a handful of students were burning the midnight oil at Kennedy Space Center to help researchers develop better smoke and fire models.

"We need to develop better tools to more effectively manage fuels that can potentially ravage Florida's ecosystem," said Ron Schaub, ecologist and remote sensing analyst with the Dynamac Corporation. Dynamac, under the Life Sciences Support Contract at KSC, conducts environmental monitoring and ecological research.

"We're seeking to reduce the risk and impact of wildfires to provide a safer environment for people and to better manage it for wildlife," he said.

Working in the Ecological Program under the auspices of NASA's Biomedical Office at KSC, Schaub has been active in student outreach programs for years to help develop young minds as well as resources to better predict where and how fast fires spread.

This summer, the Ecological Program enjoyed the assistance of 10 interns through the Summer High School Apprenticeship Research Program (SHARP) and the Summer Industrial Fellowship for Teachers (SIFT).

"We need to develop a new generation of fire models," Schaub pointed out. "Certainly the experience of this summer in Florida emphasizes the importance of controlled burns. More people today are living in areas of dense vegetation. Regional planning needs dictate that we need to burn with a much higher level of precision. Our interagency fire and smoke modeling will allow us to do just that."

The interagency fire and smoke modeling project was developed to create tools to predict the intensity and spread of wildland fire and smoke. The project is sponsored by KSC's Biomedical Office and the Merritt Island National Wildlife

(See Smoke, Page 4)

KSC stands for safety

On July 16, Kennedy Space Center employees took a stand for safety — standing down from work for the entire day to focus exclusively on safety.

For the first time ever, about 14,000 KSC employees, both NASA civil service and contractors, departed from normal activities, rescheduling Shuttle and space station work, to participate in a panel discussion that was broadcast centerwide and to train throughout the day on safety-related issues. The afternoon events included vendor displays across the center as well as organization seminars and training.

Also participating in the Super Safety Day activities were employees from Cape Canaveral Air Station and Patrick Air Force Base. The theme of KSC's first Super Safety Day was 'Safety on the Line.'

"This means that each one of us accepts responsibility for our own safety, for the safety of our coworkers, our equipment and our facilities," said Center Director Roy Bridges during opening remarks. "It means that each one of us is proactive in creating safe working conditions, that each one of us will stop unsafe work practices when we see them without hesitation, and that each one of us will practice safe behavior both on and off-duty."

KSC's goal, reminded Bridges, is zero mishaps and zero injuries. He noted that the safety record of DuPont employees off the job is as good as KSC's record on the job. The company is known as one of the world's safest organizations.

Senior NASA and contractor managers have participated in DuPont safety training, held last year at KSC. During Super Safety Day, Bridges summarized the essence of DuPont's safety philosophy.

"Unsafe behavior leads to mishaps and injuries," Bridges said, "and safe behavior comes from safe thinking."

Model safe behavior, he noted, includes knowing our jobs, maintaining our workplace, keeping physically and mentally fit, being an active player in safety, being part of the total team and contributing our experiences to benefit others.

Bridges then introduced keynote speaker C. Gordon Fullerton, NASA pilot and astronaut. Fullerton's lively and entertaining opening remarks included the importance of preparation, practice and persistence in the regular tasks we perform every day. Brief presentations followed Fullerton's talk. Speakers who addressed the audience on subjects ranging from individual responsibility to focus and discipline included KSC Deputy Director for Launch and Payload Processing Loren Shriver; Air Force Brigadier General Randall Starbuck; JSC Astronaut Office Chief Kenneth Cockrell; JSC Space Shuttle Program Office Manager Tommy Holloway; Aerospace Safety Advisory Panel Chairman Richard Blomberg and KSC Associate Director for Advanced Development and Shuttle Upgrades JoAnn Morgan.

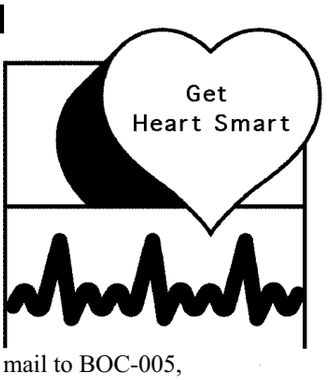
Additional panel members provided insight into safety issues across the board, responding to live questions from the KSC, Cape Canaveral Air Station, and Patrick Air Force Base audience. More than 150 phones calls, faxes and e-mails were sent in to the panel live during the morning session, and 100 questions were sent in prior to Super Safety Day.

More than 100 displays around KSC included educational and interactive activities related to fire safety, blood pressure screening, boating and water safety, household chemicals, defensive driving, and more.

CPR and you

KSC's Biomedical Office is taking a poll to see how many employees at Kennedy Space Center and Cape Canaveral Air Station are interested in training to become certified by the American Heart Association in adult cardiopulmonary resuscitation (CPR).

If you are interested in receiving CPR training, please provide your name and mail code to Janie Marsh via e-mail at janie.marsh-1@ksc.nasa.gov, or internal mail to BOC-005, Occupational Health Facility.



You also can call Marsh at 867- 2027. The deadline is Friday, Aug. 21.

KSC workers participated in safety-related demonstrations throughout the afternoon.

Panel moderator Loren Shriver, at podium, assisted in directing live questions to the panel that included, left to right, Roy Bridges, Randall Starbuck, Kenneth Cockrell, Tommy Holloway, Richard Blomberg and JoAnn Morgan.

Shepard ...

(Continued from Page 1)

years. On weekends, he rode his bicycle 10 miles to a local airport, where he cleaned hangars and fanned a passion for flying sparked by Charles Lindbergh's 1927 landmark flight across the Atlantic.

Following World War II, Shepard began training as an aviator and took additional lessons at a civilian flying school in his spare time.

He later became one of the Navy's top test pilots and took part in high-altitude flying tests.

When he was selected to be one of America's first seven Mercury astronauts he was regarded "as a top-notch Navy aviator, tough, quick-witted, and a leader," wrote Tom Wolfe in *The Right Stuff*.

Although his flight on May 5, 1961, was brief, it was a major accomplishment during an era when doubts abounded. On April 12, less than a month before Shepherd's scheduled liftoff, the Soviet Union launched a spacecraft called Vostok I that carried 27-year-old cosmonaut Yuri Gagarin on one lap around Earth. The feat not only made Gagarin the first man in space and the first to orbit the planet, but also gave the Soviets bragging rights in the Cold War's space race.

Delays pushed Shepard's launch back three days, and once he'd been strapped into the tight little Freedom 7 capsule perched atop a Redstone rocket, further complications delayed the launch another four hours. Shepard finally was sent booming off into the Florida morning sky at 9:34 a.m. After his 15-minute, 302-mile flight, Freedom 7 decelerated from 5,180 miles an hour to 500 miles an hour in about 30 seconds, and Shepard was squeezed by a tremendous pressure about 10 times the force of Earth's gravity.

Shepard splashed down 40 miles from Bermuda, and the next day, he was in Washington, D.C., where President John F. Kennedy awarded him the Distinguished Service Medal.

An ear problem later grounded Shepard and he was put in charge of the astronauts' office for the next 10 years. But he refused to give up on getting back into space, and when surgery corrected his ear problem, he was offered command of the Apollo 14 moon mission that was launched on Jan. 31, 1971.

Shepard and Ed Mitchell spent 33 1/2 hours on the moon, much of which was spent towing, pushing and even carrying a cumbersome cart bearing tools and compartments for geological samples. When the work was finished, Shepard pulled out two golf balls and unfolded a collapsible golf club. Despite thick gloves and a stiff suit that forced him to swing the club with one hand only, he became the first person ever to hit golf balls on the moon. He was the fifth man to walk on the moon and the oldest at the age of 47.

Shepard retired from NASA in 1974 and started Seven Fourteen Enterprises (for Freedom 7 and Apollo 14), which served as an umbrella company for several enterprises.

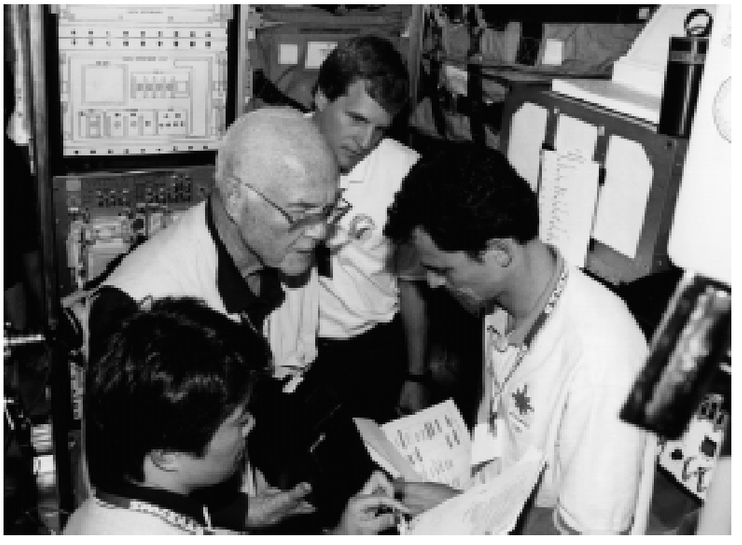
He also served for many years as the chairman of the Mercury 7 Foundation — now the Astronaut Scholarship Foundation.

"Alan Shepard lived to explore the heavens," Goldin said. "On this his final journey, we wish him Godspeed."

All seven of the Project Mercury astronauts share breakfast prior to Astronaut Alan Shepard's departure to Pad 5 for the first manned suborbital flight on the Mercury Redstone 7. Joining them for breakfast is Dr. William Douglas, far left. Facing the camera from the left are Astronauts John Glenn, Alan Shepard, Scott Carpenter and Wally Shirra. With their backs to the camera are Gordon Cooper, Gus Grissom and Deke Slayton.

Training for STS-95 ... that was Glenn; this is now

Listening to a briefing by Chris Jaskolka of Boeing, second from left, inside the SPACEHAB module are STS-95 crew members (from left) Payload Specialist Chiaki Mukai, with the National Space Development Agency of Japan (NASDA), Mission Specialist Stephen Robinson and Payload Specialist John Glenn Jr., U.S. senator from Ohio. STS-95 will feature a variety of research payloads, including experiments on space flight and the aging process. STS-95 is targeted for an Oct. 29 launch aboard the Shuttle Discovery.



STS-95 crew members recently reviewed procedures in the SPACEHAB Payload Processing Facility in Cape Canaveral. From left are Payload Specialists Chiaki Mukai and John Glenn Jr. and Mission Specialists Scott Parazynski and Pedro Duque with the European Space Agency.

Smoke ...

(Continued from Page 1)

Refuge.

The specific goals of wildland fire and smoke modeling are to more effectively conduct controlled burns for fuel reduction and habitat management, to more effectively suppress uncontrolled wildfires in areas where fuels have accumulated to hazardous levels as a result of fire exclusion, and to better plan development of cultural and industrial resources.

In support of the fire and smoke modeling effort, Dynamac ecologists are characterizing wildland fuels through 'biomass harvesting' and remote sensing using aerial imagery. Biomass harvesting involves the collection of ground vegetation that includes litter, herbs and woody vegetation. This biomass provides a highly flammable fuel.

"Basically, fire requires fuel, oxygen and heat. That's it," said Schaub. "And essentially, all vegetation above water can burn; it's all fuel."

Fire and smoke model development requires highly detailed data on fuels, weather and fire behavior. So the students who worked in Schaub's office assisted him in collecting samples of Florida's abundant 'fuel' around KSC to build a data model for scientists and researchers to better understand the influences on fire behavior.

One twig at a time

First, an area representative of a particular vegetation type, or 'fuel,' was selected. It was partitioned into a defined area and harvested in layers. Everything from the ground up was then collected and categorized by species, size and whether or not it was dead or alive (dead vegetation is more flammable).

Students from NASA's Space Life Sciences Training Program gather vegetation within a nine-square-meter fenced-in area to use as part of a Geographic Information System that will help scientists and researchers better understand and manage the influences of fire behavior.

Then, Schaub and the students dried, weighed and photographed everything, later scanning the samples into a computer to create digital images.

These data are used to generate fuel models, adding to an already extensive"Geographic Information System." With this information, the Ecological Program is able to produce high-resolution computer-assisted modeling over a very specific area for analysis.

"We take aerial imagery and classify it in a way that allows scientists to query the data and learn more about the behavior of wildfire," said Schaub.

As seen from a photo taken from an airplane at about 15,000 feet, the computer-rendered model is able to define vegetation down to an individual pine tree. This level of detail should lead to improved data modeling for high-level predictive and perhaps preventive fire management.

Members of the U.S. .Fish and Wildlife Service use a flamethrower to ignite a controlled burn at the Merritt Island National Wildlife Refuge.

Going for the burn

Controlled burns are an essential part of the equation.

"Fire is essential in the maintenance of habitat," Schaub pointed out. As an example, the Forida scrub jay is a bird that has evolved and can only continue to subsist in a fire-maintained ecosystem.

The birds require an environment of scrub approximately three to four feet high, otherwise they will not thrive or continue to reproduce, and eventually the species would perish.

The Florida scrub jay's population has declined by at least 50 percent, a loss due primarily to habitat loss and degradation.

"Fires prevent the scrub from becoming too tall and allow for patchy areas of clear land [such as sand] that offer the birds a better view of predatory threats, such as hawks," Schaub said.

In addition to this maintenance of habitat for threatened and endangered species, fire-related responsibilities include the protection of KSC employees, residents and visitors and also of the natural, cultural and industrial resources around the Merritt Island National Wildlife Refuge.

Approximately 95 percent of Kennedy Space Center is managed by the U.S. Fish and Wildlife Service, and about 63,000 acres of the wildlife refuge are managed with prescribed fire.

To support fire and smoke model development at KSC, test burns are conducted by the Dynamac Corporation in collaboration with the Los Alamos National Lab, the Los Angeles County Fire Department, NASA's Applied Meteorology Unit, the U.S. Fish and Wildlife Service and other organizations.

The Los Alamos National Lab provides supercomputing capabilities to KSC to support more precise data modeling. The Los Angeles County Fire Department is interested in learning more about fire behavior and control for the safety and welfare of its citizens.

It is hoped that fire departments can use the information to make decisions about where to deploy firefighters and equipment when battling a wildfire. The Applied Meteorology Unit is a tri-agency cooperative effort located at Cape Canaveral Air Station (CCAS).

The unit provides weather forecasting, monitoring, and data collection and archiving. This is important in profiling the behavior of winds as well as lightning detection.

Since KSC and CCAS have some of the most sophisticated weather forecasting equipment in the nation, the wildlife refuge was chosen for an experiment earlier this year to check a computer simulation against the reality of a raging fire.

The test was of such importance that it captured the attention of U.S. Secretary of Interior Bruce Babbit.

"I don't think there's another place in the country where you could do this type of burn and learn so much," Babbit said.

It's a project that could save lives and billions of dollars in property, he added.

The next controlled burn is scheduled to take place in late September.

KSC's Biomedical Office participates each year in three educational outreach programs: Space Life Sciences Training Program, SHARP and SIFT.

It's still hurricane season

An uncharacteristically dry summer this year veils the fact that we're in the middle of hurricane season, which runs through Nov. 30. Although El Niño has passed, it has been replaced by its little sister, La Niña. La Niña turns the Pacific waters colder than usual and plays the same weather tricks as its older brother, but often in reverse — wet where it was dry and vice versa. The climatological change could mean menacing Atlantic hurricanes over the next few months.

Keep KSC Hurricane Center numbers handy. The center's number is 867-9200 or, for a 24-hour hurricane update, call 861-7900. Also, know what the difference is between a hurricane watch and a hurricane warning. **Watch:** Hurricane conditions are *possible* in the specified area of the watch, usually within *36 hours.* **Warning:** Hurricane conditions are *expected* in the specified area of the warning, usually within *24 hours.* This view of Hurricane Emilia in the Pacific Ocean was taken by the STS-65 crew in 1992 using a hand-held 70mm camera.

Space Act Award winners honored

A Technology Awards breakfast was held July 30 in the Space Station Processing Facility cafeteria to recognize NASA and contractor innovators who received Space Act awards during the past year. A total of $83,000 in Space Act awards was received by 114 KSC workers this past year.

The breakfast to honor the innovators was held in conjunction with the center's second annual Technology Transfer Week, July 27 through 31, sponsored by the Technology Programs and Commercialization Office.

Space Act Awards include both automatic and board action awards.

Automatic awards include those for patent application, software release to the public or for having a technical article published in the NASA *Tech Briefs* magazine.

Board action awards include awards for projects that have been evaluated by the NASA Inventions and Contributions Board at NASA Headquarters in Washington, D.C., and found to have a tangible value to NASA's space and aeronautic mission, either through use at Kennedy Space Center and/or for having current or potential value in the commercial marketplace. All of these types of awards were represented at the breakfast.

Projects that received recognition included electronically active coatings for corrosion protection, a tile cavity measurement system, an environmentally controlled abrasive blasting suit, a knowledge-based reasoning tool for Space Shuttle propellant loading, a paperless procedure system for flight hardware and payloads, an ultrasonic bolt cage, the use of ultrasound to improve the effectiveness of a permeable treatment wall, a wireless information network, a particle fallout activity sensor, a turbine/brush pipe cleaning system, an orbiter window illumination device, a system for accurate location of lightning strikes, an incremental walking robot for locomotion and inspection of very thin wall ducts, and others.

Updates on ODIN

Want to know more about the Outsourcing Desktop Initiative for NASA (ODIN)?

KSC has been named the Office of Space Flight ODIN Lead Service Center with responsibility to issue an award for a single contractor to provide ODIN services. KSC intends to have the delivery order issued this fall with ODIN contractor in place on Dec. 1. At KSC, the ODIN contractor will provide desktop, server and remote communications services.

ODIN meetings are scheduled to give KSC workers opportunities to ask questions. The meetings are scheduled:

Aug. 3
8:30 a.m., LCC 1R29

Aug. 4
1 p.m., O&C MBR

Aug. 11
1 p.m., LCC 1R29

Aug. 12
8:30 a.m., O&C MBR

Aug. 18
8:30 a.m.,
Training Auditorium

Award Last By Project
July 23, 1998

PROJECTS COMPANY
FTIR Spectrometer
Propulsion System Advisor
Simulated Hydrogen Fire
Ultraviolet Portable Unit
Electronically Active Coatings
for Corrosion Protection
OMS Pod Alignment Tool
Mechanical Version
Real-time Non-volatile Residue
(NVR) Monitor
Lockheed Vision Inspection

Food for thought

From soup to nuts, nutrients are essential for good health, growth, vigor and sustaining life.

But why exactly do we need them? What are their chief functions in the body? What are good food sources? And what are the symptoms of deficiency? How do we know if we need to take supplements?

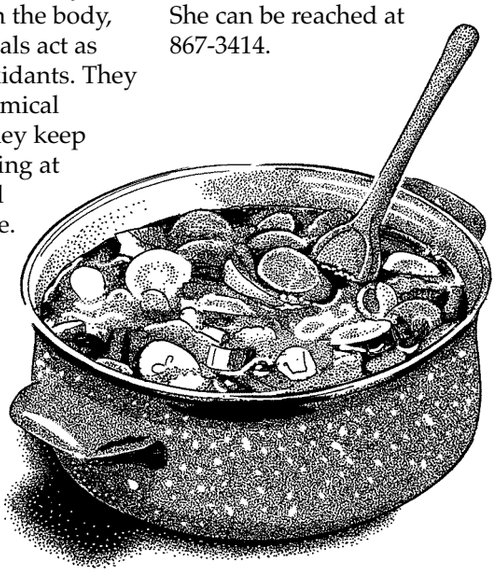
The August packet of information available through KSC's Health Education and Wellness Program answers all of these questions and more. Special emphasis is placed on antioxidants (vitamins C, E and betacarotene) and what role they play in fighting cancer and heart disease.

While every nutrient is uniquely essential to your well-being, each one functions most effectively in combination with others.

Although present in only minute quantities in the body, vitamins and minerals act as catalysts and antioxidants. They also assist in biochemical transformations. They keep your body functioning at optimum levels and help prevent disease.

Find out more about the importance of vitamins and minerals in your life and what you can do to improve the quality of life through better nutrition.

Free packets of information are available throughout the month of August at all medical facilities or upon request to Carol Roth, BOC-005. She can be reached at 867-3414.



Scoring big for the future

Eli Alper, a junior at Trinity Prep High School in Winter Park, Fla., recently was honored with winning one of eight regional prizes of the NASA Student Involvement Program, a competitive program to foster greater scientific literacy among high school students.

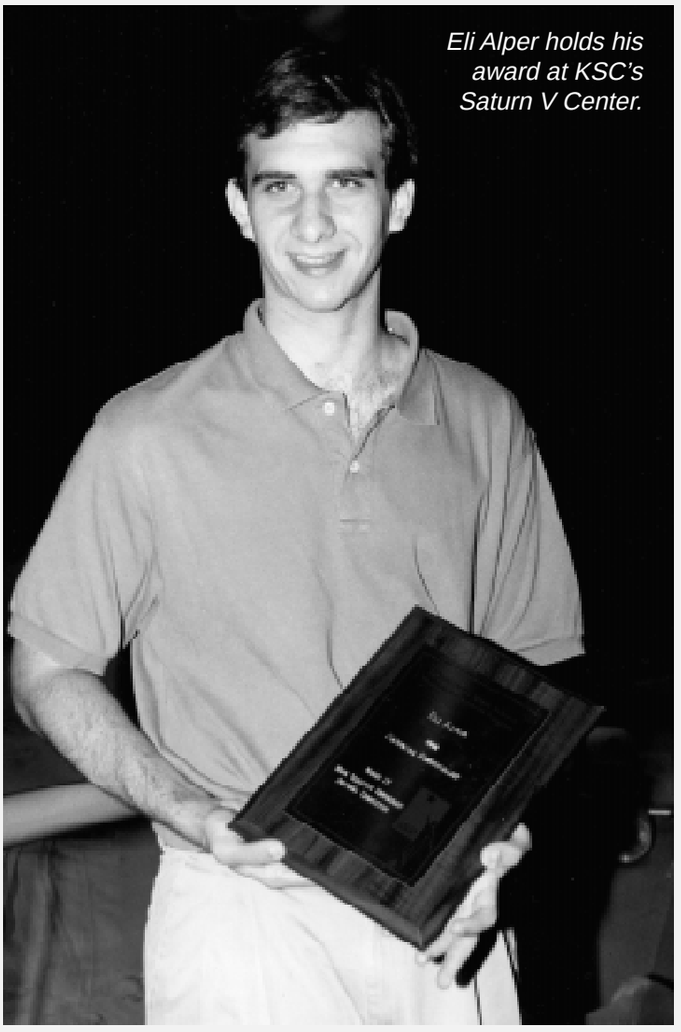
To do this, Alper beat out hundreds of other students who also submitted entries from his region, which included 12 states.

The students had to submit a proposal regarding an experiment that either could be conducted on Mars or on the way to Mars. Alper's proposal involved determining the evidence of life through the presence of amino acids. His proposal concentrated heavily on physics and chemistry.

Winning this award meant a trip to Washington, D.C., for Alper along with the seven other regional winners who presented their proposals to NASA scientists and members of Congress.

As if that wasn't enough, Alper also found out in May that he received a perfect score on his SAT, which stands for Scholastic Assessment Test, a standard measure of a student's readiness for and potential success in college.

As an indication of how difficult this is to achieve, of the 327,599 juniors who took the test in 1997, the average verbal score was 528 and the average math score was 532. Alper's perfect scores were 800 in each category.



Eli Alper holds his award at KSC's Saturn V Center.

NASA Alumni League meets at KSC

On June 16, 42 members of the NASA Alumni League (NAL) met with Center Director Roy Bridges and were provided with information about the current status of center programs and insight into future direction of KSC by the spaceport's top management team.

During the meeting, topics of discussion included the Shuttle program, expendable launch vehicles and payloads, the International Space Station, future launch vehicles, advanced development and Shuttle upgrades, and Public Affairs activities.

The NASA Alumni League is made up of more than 180 NASA retiree members and was created to maintain close ties with the agency — supporting its goals, objectives and activities.

Any NASA retiree is eligible to become a member of the NAL.

For more information about the league and how to join, contact NASA Alumni League President Norris Gray at (407) 254-2161.

You can also reach Gray by writing him at 808 Thomas Barbour Drive, Melbourne, Fla. 32935.

STS-88 Mission Specialist Jerry Ross removes the cover from the Unity node in KSC's Space Station Processing Facility so that he and Boeing Technician Doug Adams (left) can inspect it. Training Technician Glenda Laws (right) looks on. The STS-88 crew recently participated in the Crew Equipment Interface Test (CEIT) at KSC. The CEIT gives astronauts an opportunity for a hands-on look at the payloads they will be working with on orbit. STS-88, the first Shuttle launch for the International Space Station, is scheduled for liftoff this December.

John F. Kennedy Space Center

Spaceport News

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