March 22, 2002 Vol. 41, No. 6

Spaceport News

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http://www-pao.ksc.nasa.gov/kscpao/snews/snewstoc.htm John F. Kennedy Space Center

STS-110 to carry first Station plant experiment

PESTO payload developed by KSC Life Sciences

The first plant science experiment to be conducted aboard the International Space Station (ISS) will be delivered to the ISS during Mission STS-110.

The PESTO (Photosynthesis Experiment System Testing Operation) experiment was designed by Kennedy Space Center scientists.

STS-110 was set at press time to launch April 4. Its primary objective is the delivery of the S0 Truss Segment and the Mobile Transporter. Four spacewalks dedicated to truss installation are planned.

Commander Michael Bloomfield, a veteran of two previous space flights, will lead the seven-member crew aboard Atlantis. Stephen Frick will serve as pilot. Mission Specialists are Rex Walheim, Ellen Ochoa, Lee Morin, Jerry Ross and Steven Smith.

Expedition 4 crew member Dan Bursch (left) and his backup, Steve Robinson (center), harvest wheat from a Biomass Production System to practice Kennedy Space Center's PESTO (Photosynthesis Experiment System Testing Operation) experiment during crew training at Johnson Space Center. The two currently are aboard the Space Station. Crew Trainer Allison Branson (right) of Ames Research Center looks on.

Expedition 4 crew member Dan Bursch, currently on the ISS, is the primary crew member for the PESTO experiment.

The PESTO experiment is designed to study whether wheat will produce oxygen through photosynthesis and purify water through transpiration at the same rates as on Earth.

The experiment has important implications for future long-duration spaceflight and will be followed by additional experiments aboard Space Station.

Scientists at KSC and engineers and technicians from Orbitec of Madison, Wis., have worked on PESTO since 1997. They are eagerly anticipating the launch of their payload.

"We at KSC spend much of our time helping researchers process and integrate their life sciences payloads, so it's especially rewarding to conduct our own experiments," said Dynamac Corp.'s Dr. Gary Stutte, principal investigator for the PESTO experiment and supervisor of the plant research group at KSC. "The selection of the experiment by NASA's peer review process demonstrates the high quality of science conducted at KSC."

The NASA and Dynamac Corp. PESTO team at KSC are part of the Spaceport Engineering and

(See STS-110, Page 8)

Inside

TDRS-I on the go

A Great Blue Heron was silhouetted against the brilliance of the rocket exhaust as the Tracking and Data Relay Satellite (TDRS-I) launched March 8 from Launch Pad 36-A, Cape Canaveral Air Force Station. TDRS-I replenishes the existing on-orbit fleet of six spacecraft. The TDRS System is the primary source of space-to-ground voice, data and telemetry for the Space Shuttle. It also provides communications with the International Space Station and scientific spacecraft in low-Earth orbit such as the Hubble Space Telescope. This new advanced series of satellites will extend the availability of TDRS communications services until about 2017. Liftoff occurred at 5:59 p.m. EST.

Recognizing Our People

Delaware North manager leads outreach mission to Ireland

Ireland's Department of Education asked Tony Gannon, a guest services and education manager with Delaware North Parks Services at Kennedy Space Center Visitor Complex, to help present a series of space educational seminars in Dublin and to enlist a NASA astronaut to participate.

Ireland is Gannon's home country and he knows a number of officials in the department.

Accompanying Gannon on the trip was former NASA astronaut Dr. Sam Durrance, who is now executive director of the Florida Space Research Institute.

French European Space Agency astronaut Jean Francois Clervoy also joined Gannon and Dr. Durrance in Dublin for the seminars, which were officially titled "Opportunities 2002."

Over four days, more than 120,000 people attended.

The idea behind the department's space education seminars is to encourage Irish secondary and college students to take an interest in the sciences, and in particular, space and future careers in the space business.

Irish Prime Minister Bertie Ahern officially opened the seminars with a live linkup with the astronaut crew onboard the International Space Station.

The response to the seminars was so great that Dr. Durrance, Jean Francois Clervoy and Gannon were invited to appear on Ireland's National Television Station (RTE), and on National Radio.

"Delaware North was supportive in giving me permission to travel and time off," Gannon said. "I was given KSC literature and videos for presentation."

Ireland's Prime Minister Bertie Ahern (left) receives a picture of Europe from French Astronaut Jean Francois Clervoy at the opening of the "Opportunities 2002," Ireland's Department of Education-sponsored education seminar in Dublin, Ireland. Looking on is Tony Gannon, a guest services and education manager with Delaware North Parks Services at Kennedy Space Center Visitor Complex.

Employees of the Month

March Employees of the Month are (from left) Randy Eastman, Spaceport Engineering and Technology; Heather Dulude, Equal Opportunity Office; Prentice Washington, Spaceport Services; Dawn Oliver, Office of the Chief Counsel; and Joe Dalai, ISS/Payloads Processing. Not shown are Eddie Hefley, Joint Performance Management Office; David Reeves, Procurement Office; Jerrace Mack, Shuttle Processing; and Zulema Cruz, ELV and Payload Carriers Programs.

Press Site volunteers foster coverage

Press site volunteers provide much appreciated support services to the NASA External Relations team and the media during Space Shuttle launches and landings.

"They're awesome," is how veteran space reporter Todd Halvorson recently described the press site volunteers. "They're very patient with everyone while providing very up-to-date, accurate information in a timely manner."

Many of the volunteers have offered assistance since the first Space Shuttle launch, and some were here for the Mercury, Gemini and Apollo programs, and even earlier. They come from all walks of life, but all feel a special connection with the space program.

They help the News Chief and media services team when the press site is in full gear for a launch. They answer questions, coordinate tours, answer the phones, and help in any way they can. They bring order to chaos.

According to Jay Barbree, NBC-TV News correspondent, "The press center could not operate without the capable volunteers prior to and during Shuttle launches."

Angelo "Ang" Taiani, one of many of the volunteers, worked for NASA beginning in 1960. While working as a special projects officer, he volunteered at the press site during the Apollo 12 launch.

After retiring in 1984, Taiani continued as a VIP and Launch Vehicle escort for the Space Shuttle and ELV programs. He has participated in more than 500 launches.

"I like to meet the different people who come here for the orientation tour," Taiani explained.

Norris Gray, another tour escort, added, "We enjoy sharing our knowledge and a little bit of space history with those we meet."

Gray came to Cape Canaveral Air Force Station in 1962 to work on the Bumper Project. He retired from NASA in 1984 and started volunteering in 1985.

"Meeting the people is a big factor in my life," said Gray. "The press is a pleasure to work with."

Johnny Johnson said, "I come out here to relax."

He is known to friends here as "King of the Cape." His volunteer days began just two days after retiring from NASA in 1995.

Many volunteers gain lifelong friends from their experiences.

Bob White began volunteering at the press site while working during the Mercury, Gemini and Apollo programs and the Shuttle program until his retirement in 1995. White met Australian writer Dr. Colin Keay during the Apollo 11 launch.

"We still keep in touch and remain friends today," said White. "The most impressive person I met, though, was Walt Disney, and also, Bill Dana, a very funny man."

Prior to retiring from NASA in 1994, Renata Trantham worked as a tour guide and met Jacques Cousteau during the Apollo mission days.

"The space program is in my blood. I try not to miss any of the launches," Trantham said.

Bill Beeker and Roy Whitson share query desk and phone responsiblities. Beeker came to NASA on the Gemini program in 1963. He retired in 1994 but missed being a part of it all.

"The work is fascinating. I get to see firsthand the world's interest in the Space program," he said.

Among the many calls he has fielded was one from a woman in Perth, Australia, who wanted to confirm that she saw the Shuttle on reentry over her hometown.

"She said it looked like a roman candle," Beeker said with a smile.

Whitson arrived in Titusville in 1964 to work on the Manned Spaceflight program and Orbiter project office. He retired in 1995 while working on the MIR program.

Whitson described one of the interesting calls he received, "One man called and asked if he could talk to one of the astronauts and wish them a good flight."

Robert Gass, a photographer for Interspace News, summed the volunteers' contributions up by saying, "They're an incredible resource. They should be commended for what they do."

Above, press site volunteer Ed Walker escorts John Tylco, a MIT photographer, setting up a remote camera at Launch Pad 39-A for the STS-109 launch of Columbia. At left, two volunteers, Norris Gray (left) and Ray Yost, work at the NASA News Center to answer a mission inquiry. Many of the volunteers have offered assistance to NASA public affairs since the first Space Shuttle launch. Some served during the Mercury, Gemini and Apollo programs, and even earlier.

FIRST inspires stude

The For Inspiration and Recognition of Science and Technology (FIRS
Center Visitors Complex drew an enthusiastic crowd of students, ment
those from as close as Brevard County and as far as Puerto Rico.

ents, adults

ST) regional robotics competition held March 7-9 at the Kennedy Space
ors, teachers, parents and other team supporters. Participants included

Competition spurs interest in science, math and technology

If bleachers full of teenagers waving spirit banners, sporting animal costumes, and cheering on their favorite team sounds like a high school sporting event, then think again.

Forty-seven groups of high school students came to the Kennedy Space Center Visitor Complex to put their unique mechanical inventions to the ultimate test at the For Inspiration and Recognition of Science and Technology (FIRST) robotics competition.

While some future-engineers only made a short trek from local Brevard County areas to compete in the event, which took place March 7-9, others came from as far away as Puerto Rico.

Local competing teams include students from Astronaut, Bayside, Cocoa Beach, Merritt Island, Palm Bay, Rockledge, Satellite, Titusville and West Shore high schools.

Founded in 1989, FIRST is a national robotics competition that challenges high school students by giving them the opportunity to gain first-hand engineering experience outside of the classroom. During the process, students are able to learn more about science, math and technology as well as teamwork.

David Brown, executive director of FIRST, motivated the crowd by explaining the significance of the event. “It’s what you’ve learned in the process that’s important, not the robots,” he said. “You will look back at this as one of the most formative moments in your life.”

FIRST provides the teams with a standard set of rules and a kit of assorted parts to assemble their creations. Once teams receive the materials, students spend six weeks before the regional contests working with professional mentors to design and construct a robot until it reaches perfection.

Zone Zeal, this year’s theme, required students to design their robots to race around a playing field gathering balls, putting the balls into goals, and placing those goals in their scoring zone in less than two minutes.

“I like the time I get to spend with my friends,” said Jamie Joiner, a Rockledge High School senior, who competed for the third time with the Space Coast First Team. “I also like seeing all the different robots. If there’s a local team near me when I go to college, I may stay involved.”

A veteran of five FIRST events, Scott Strickland worked with Team No. 21 as a professional mentor.

“There’s the sport of it, but I also enjoy showing them different engineering ideas,” said Strickland, a mechanical engineer who serves as a design manager for Boeing. “The students come up with great ideas and figure out what works and what doesn’t, and then they take those great ideas and make them into real working robots.”

The energy exerted during these trials doesn’t seem to stop students, mentors, volunteers and parents from participating time and time again.

“This is my fourth year being involved in FIRST. The first three were as a student, but now I’m a mentor,” said Jared Cooper, a Florida Institute of Technology student and volunteer with Team No. 386. “I like being at the competitions because I get to see how everyone comes up with different designs from the same equipment and how successful they are.”

After a demanding three days, The Alliance (Team No.186), Metal-In-Motion (Team No. 343) and Spam (Team No.180) walked away as the big winners. They’re work is just getting started though.

Not only are students trying to get recognition for their robots, but they’re also hoping to receive part of the $1.7 million in scholarships from leading educational institutions and companies.

The winning teams, from the 17 regional competitions, will meet at the Championship Event to be held at EPCOT Center in Orlando April 25-27. Visit **www.usfirst.com** for more information.

NASA safety, health managers meet

The NASA 2002 Safety and Health Managers Meeting, themed "As We See It – The New Paradigm for NASA Safety and Health," was held March 4-8 at the Cocoa Beach Hilton.

These NASA managers hold periodic meetings to share best practices and help create cooperation and mutual support between safety and health programs and among NASA centers.

The meeting of managers from across the Agency was held jointly by the Office of Safety and Mission Assurance and the Principal Center for Occupational Health.

Coordinating the managers' meeting in representation of safety and mission assurance was Jim Lloyd, director of the safety and risk management division of NASA's Office of Safety and Mission Assurance at Headquarters, and Dr. William Barry, manager of NASA's occupational health program at Kennedy Space Center. Barry represented NASA's occupational health component of the Chief Health and Medical Officer.

"As a special focus this year, the safety and health meeting offered a good forum for discussion of the changes in safety and health measures taken in the wake of the Sept. 11 terrorist attacks, the anthrax attacks and threats to each NASA center," Lloyd said. "In recent years we have discussed the possibility of terrorist attack, but now our discussions and preparations are far more serious.

"We've had a fruitful exchange of ideas on the inclusion of the hazards of terrorism and the continual improvement of safety and health programs at NASA."

Barry concurred with Lloyd, saying "By working together we can ensure that the programs at all the centers benefit from lessons learned at each center. Each center's experience is a tremendous resource to the other centers."

The conference will help NASA managers achieve their mission goals, said NASA Chief Health and Medical Officer Rich Williams, who spoke to attendees about the nature of NASA's broad health care system and provided insight into future direction.

Catherine Angotti, director of occupational health, speaking for the Office of the Chief Health and Medical Officer, Headquarters said "We are here to ensure the physical and mental health and well-being of NASA employees in all environments. In safety and health the employee is a primary customer.

"If we do our jobs successfully, when NASA employees retire, they will be at least as healthy or healthier than the average American."

NASA safety and health managers from across the Agency met March 4-8 at the Cocoa Beach Hilton to share information. From left are Jonathan Mullin, manager of operational safety with the Office of Safety and Mission Assurance at NASA Headquarters in Washington, DC.; Catherine Angotti, director of occupational health, NASA Headquarters; Jim Lloyd, director of the safety and risk management division of NASA's Office of Safety and Mission Assurance, NASA Headquarters; and Dr. William Barry, manager of NASA's occupational health program at Kennedy Space Center.

Safety and quality conference held

Improving strategies for enhancing safety and quality was the focus of the 2002 Conference on Quality in the Space and Defense Industries (CQSDI).

The conference opened March 1 at the Radisson Resort in Cape Canaveral.

The annual conference is chaired jointly by government and contractor representatives.

It provides an open forum for participants to address key safety and quality issues of import to all facets of the aerospace and defense industry.

Manufacturing and service contractors working on space programs, members of the defense industry, suppliers and government personnel attended the conference to share thoughts and ideas to promote safety and quality.

Larry Tucci of NASA KSC and Sam Boyd of SAIC co-chaired the conference for the government and industry, respectively.

"The 2002 CQSDI conference featured key presentations by leaders in the industry," Tucci said. "The committee works very hard to provide topics that are timely and speakers that can discuss issues that are key to both government and industry."

Senior representatives from NASA Headquarters, Marshall Space Flight Center, Department of Defense and the aerospace industry were keynote speakers.

This year's conference also featured a unique forum, chat rooms.

"We tried to incorporate something new in which each conference participant would have the opportunity to take an active part in focused discussions that were facilitated in six chat rooms, each addressing a specific theme or topic: education, process management, quality leadership, knowledge management, risk assessment and retaining quality personnel," Tucci said.

On the second day of the conference various workshops were offered to the participants.

Workshops included such topics as ISO 9000 Standards and Probabilistic Risk Assessment.

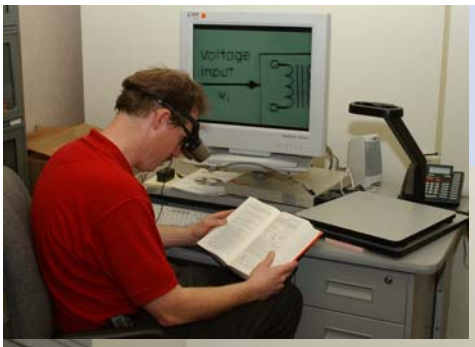
They involved experts from these disciplines who interacted with the audience.

The conference was called to a close by Sam Boyd of SAIC on March 5.

The committee has already begun setting the stage for next year's conference.

Improved NASA technology aids sight

Project manager receives upgraded vision tool, Jordy2



At left, Paul Mogan, NASA project manager, reads a book with the help of the Jordy2 vision tool. His computer screen displays the enlarged text. Below, Mogan and Dr. Scott Hearing of the Stuart Eye Institute demonstrate the device.

For decades, engineers have used tools to do their jobs – as in the slide rule and calculator – but for Paul Mogan the premier tool is the one that helps him see.

Mogan, a project manager in the Spaceport Engineering and Technology Directorate, is considered legally blind due to macular degeneration. Mogan currently works in the Project Management Office.

The vision-enhancing tool he uses is called "Jordy," after the character in the Star Trek television series who wore special apparatus that enabled him to see.

Mogan was one of the first in Florida in 1999 to use the "Jordy," manufactured by Enhanced Vision Systems of Orange County, Calif., and provided by the Stuart Eye Institute in Florida.

The original Jordy was a somewhat bulky headpiece that fit in front of his eyes, with straps around the head to hold it in place.

It increased his vision level – estimated, he said, at about five percent of the average person's vision – to the standard 20/20.

The device provided a magnification of 24 times the actual image and automatic focus. But the device weighed close to 10 ounces, which, according to Mogan, would feel heavier and heavier over the course of a day, putting a strain on his neck.

In January of this year, Mogan received an updated version, Jordy2, with several improvements.

Streamlined from the original version, the Jordy2 now looks more like a small pair of binoculars. It weighs a third less, which reduces the strain on the user's neck.

The device runs via a battery pack that can even be strapped to a belt. Like the previous version, it also can be placed on a stand.

Mogan said, "It is smaller, lighter weight, has a brighter image for me to see, image stabilization (highly magnified images are less shaky),

Streamlined from the original version, the Jordy2 now looks more like a small pair of binoculars. It weighs a third less, which reduces the strain on the user's neck.

brightness and contrast controls … and a button that zooms out all the way – it lets you spot something at low magnification where I have a bigger field of view, and then when I release the button, it zooms in so I can see it better."

Mogan finds the Jordy2 very helpful with certain specific uses, he said, such as "filling out paper forms. Wearing Jordy . . . allows my face to be far enough back from the paper to write on the form easily. With a normal magnifying glass, I need to be so close to the paper that I cannot get a pen under it to write very easily.

"I also use it to read out of heavy books, like engineering reference books. The books are usually too heavy to hold up close to my face.

"Another problem is that the pages curve in toward the binding of the book. It gets very hard to get a magnifier in there close enough to see. I use the Jordy to give me magnification and the auto focus keeps the text in focus even as it curves toward the binding."

This improvement also allows Mogan to read labels that curve around a container, such as a prescription bottle.

Other benefits of the Jordy, said Mogan, are when reading a long report – he doesn't have to bend down to read the paper so it saves on neck strain – and when reviewing a drawing, with typically very small print – the Jordy lets him see it much better.

Potential uses of the Jordy, which Mogan has not yet tried, are viewing presentations and viewing video training tapes because "I can plug the TV output directly into the Jordy to see it "up close," he said.

An old cliché says "What goes around comes around," and in this case it is NASA technology returning to empower a NASA engineer to be a more productive employee.

The first development of the visual aid, called LVES, used "real-time" image processing for analysis of remote sensing data.

The Jordy2 is a refinement, partly because of Mogan's involvement with "eyes-on" applications and suggestions for improvement.

Mogan frequently shares his experiences with the community, and on May 1, he is hosting a Macular Degeneration and LV Technology Seminar in Orlando.

May 1 is Macular Degeneration Awareness Day.

For more information about the development of the visual aid, see visit **www.drhearing.net** and the Jan. 14, 1999, issue of *Spaceport News* or call the macular degeneration hotline (888) 482-9943.

STS-110 ...

(Continued from Page 1)

Technology directorate's Life Sciences program. Dynamac is KSC's Life Sciences contractor.

The KSC PESTO group worked with Orbitec and Ames Research Center (ARC) on the creation of Orbitec's Biomass Production System, the hardware for the PESTO experiment.

"The development of this experiment depended on the contributions of many team members at KSC, ARC, JSC, MSFC and Orbitec," Stutte said. "This project took a lot of coordination."

Although much of the experiment is automated, the astronaut crew will periodically monitor PESTO and will be called upon to harvest the wheat once on orbit and start up a second growth cycle.

After about 43 days on orbit, the experiment will be returned to KSC on the STS-111 mission.

While news of the plant experiment will be of particular interest to the community of Life Science research scientists, the payload processing team at KSC will be focused on the Station elements to be launched.

The S0 truss will be the first major U.S. component launched to the station since the addition of the Quest airlock in July 2001. It will attach to the U.S. Lab and be the center section of the Station's truss assembly.

As the center section, S0 is the only truss section that will be physically attached to the Station. The segment will take the electrical power generated by the Solar Arrays and channel it to the rest of the Station modules.

Members of the Kennedy Space Center PESTO (Photosynthesis Experiment System Testing Operation) science team are pictured. They are (left to right) Dave Chapman, project science coordinator, Dr Gary Stutte, principal investigator, and Dr. Oscar Monje, plant scientist. PESTO, which will be launched on STS-110, is slated to be the first plant experiment to be conducted on the International Space Station.

The Mobile Transporter creates a movable base for the Space Station Remote Manipulator System (the Station's robotic arm), allowing it to travel along the Station trusses after delivery of the Mobile Base System during STS-111.

When all the trusses are fully assembled, the Mobile Transporter will be capable of moving from one end of the truss structure to the other, over more than 300 feet.

Atlantis' flight on STS-110 will be the 109th Space Shuttle mission overall, the second mission of 2002 and Atlantis' 25th trip to space. It will be the 13th Shuttle mission to the ISS.

For web coverage of the mission, visit **http://www.ksc.nasa.gov/**

KSC Picnic a winner

The annual KSC All-American Picnic held at KARS Park March 16 proved to be popular with Kennedy Space Center employees, their families and friends. The picnic featured traditionally favorite activities, such as rock-wall climbing, chili cookoff and pony rides, in addition to new offerings, including an apple pie baking contest. Look for fuller coverage of the picnic in the April 5 edition of *Spaceport News*.

Environmental and Energy Awareness Week

Mark your calendars for Environmental and Energy Awareness Week, April 22-24.

This year's events will include a variety of exhibits, demonstrations, presentations and on-site field trips.

The opening ceremony will take place on April 22 at the KSC Training Auditorium and will feature David B. Struhs, secretary of the Florida Department of Environmental Protection, as guest speaker.

Demonstrations and exhibit displays will be located in front of the Headquarters building on April 23 and at the VAB parking lot on April 24.

To find out more about Environmental and Energy Awareness Week, visit **http://environmental.ksc.nasa.gov/eeaw/** or contact Barbara Naylor at 867-8453.

John F. Kennedy Space Center

Spaceport News

Spaceport News is an official publication of the Kennedy Space Center and is published on alternate Fridays by External Relations and Business Development in the interest of KSC civil service and contractor employees.

Contributions are welcome and should be submitted two weeks before publication to the Media Services Branch, XAE-1. E-mail submissions can be sent to Katharine.Hagood-1@ksc.nasa.gov

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Editorial support provided by InDyne Inc. Writers Group.
NASA at KSC is located on the Internet at *http://www.ksc.nasa.gov*

USGPO: 733-133/60004