Vol. 36, No. 9 May 9, 1997

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

Mission Update

STS-84

Atlantis (19th flight)
84th Shuttle flight
Launch date: May 15
Pad: 39A
Mission: 6th Shuttle-Mir Docking
Duration: 9 days
Crew: Precourt, Collins, Foale, Noriega, Lu, Clervoy (ESA), Kondakova (RSA).

Atlantis rolls out to Launch Pad 39A on April 24.

STS-94

Columbia (23rd flight)
85th Shuttle flight
Target launch date: July 1
Pad: 39A
Mission: Microgravity Science Laboratory-1
Crew: Halsell; Still; Voss; Gernhardt; Thomas; Crouch; Linteris. Reflight of STS-83 mission. Same crew as first flight.

STS-85

Discovery (23rd flight)
86th Shuttle flight
Target launch date: Aug. 7
Pad: 39A
Mission: CRISTA-SPAS II

Foale ready for stay on Mir

His training behind him and his language skills honed, astronaut Michael Foale says he is ready for an extended stay aboard the Mir space station.

Foale will be one of seven astronauts embarking to Mir on STS-84, set to lift off at 4:08 a.m. EDT, May 15. The multinational crew includes Jean-Francois Clervoy, a European Space Agency representative from France, and Elena Kondakova from the Russian Space Agency.

The mission commander is Charles Precourt, who served as pilot for the first Shuttle-Mir

(See STS-84, Page 6)

GOES-K off to a good start

GOES-K, the third in a series of the most sophisticated weather satellites ever built, lifted off at 1:49 a.m. EDT, April 25, from Cape Canaveral Air Station. Over the past several weeks, the satellite has undergone several apogee motor firings and adjusting maneuvers to move it to its final station at 105 degrees west longitude, 22,240 miles above Earth's equator. Once checkout is complete, the satellite — which was designated GOES-10 on-orbit, will serve as a spare for the two GOES spacecraft already on-orbit.

1997 Savings Bond drive begins May 19

A flag flying in front of the KSC Headquarters Building stands as testament to the center's sustained commitment to U.S. Savings Bonds.

KSC Director Roy Bridges believes that commitment will be demonstrated anew during the 1997 Savings Bond Drive. The kickoff was held May 6, with Bridges and Treasury Department official John Janson the keynote speakers. The drive itself begins May 19 and continues through May 30.

This year's slogan is right to the point: *A Great Way to Save.*

Quality Assurance Director Chris Fairey, who is assisting Bridges with the campaign, has a challenge for NASA employees at KSC: To meet or exceed the 1996 level of support.

U.S. Savings Bonds are the world's most widely held security. Americans already hold some $187 billion in Savings Bonds, and each year 17 million people buy more. There are many advantages to buying a U.S. Savings Bond:

• **Affordability**. Denominations range from $50 to $10,000, and the purchase price is one-half the face value. Through Payroll Savings, bonds can even be purchased on an installment plan with $100 the smallest denomination.

• **Flexibility**. Bonds make money available when it is needed. They can be cashed at most financial institutions any time after six months from the date of purchase. The purchase price is redeemed plus interest earned through the last semiannual interest accrual date.

• **Safety.** Bonds are backed by the full faith and credit of the federal treasury. If lost, stolen or destroyed they can be replaced at no charge.

• **Tax benefits**. Interest earned is exempt from all state and local income taxes, and federal tax can be deferred until the bonds are redeemed or they stop earning interest after 30 years.

• **Financing education**. There are special tax benefits available to lower and middle income investors. Those who qualify can exclude all or part of the interest earned on Series EE bonds from income when the bonds are redeemed to pay for post-secondary tuition and fees.

Savings bond information is available on the Internet at:
http://www.publicdebt.treas.gov

Civil service workers can contact their directorate canvasser to set up a bond purchase. Call Linda Mullen, 867-3392, if you need your canvasser's name.

KSC taking on larger role in X-33 and X-34, says Wiley

Spaceport News *Editor Paula Shawa recently talked to Deputy Engineering Development Director Warren Wiley about the center's role in NASA's Reusable Launch Vehicle effort, which features the X-33 and X-34 programs. Excerpts from the interview follow in a question-and-answer format.*

Q: **Could you place X-33 and X-34 in a big-picture framework as far as the future of NASA space vehicles are concerned?**


Wiley

A: These vehicles are a series of technology demonstrators. First there was the Clipper Graham which demonstrated many new technologies. The X-34 is a small air-launched vehicle capable of flying to a speed of Mach 8. The X-33 is a larger vehicle which will fly at a speed of Mach 15 and will lead to the VentureStar. The VentureStar is the Reusable Launch Vehicle (RLV) which potentially represents the future of U.S. spaceflight. The goal of the program is operability: quick turnaround between launches with reduced ground crews. These demonstrators are suborbital; they lift off from one location and land in another. All are uncrewed and test the technologies that are required to develop a single-stage-to-orbit (SSTO) capability. The first flight of the X-34 is fall 1998 and the first flight of X-33 is March 1999. Even though the X-34 will fly first, it tends to get less attention because it is smaller than the X-33. X-33 is 63 feet long and 68 feet across, while the X-34 is about 58 feet long with a wing span of about 28 feet.

Q: **Let's talk a little about KSC's role in X-33 and X-34.**

A: I'll talk about X-34 first. Our role in X-34 is expanding. We've just been invited to become a partner with Marshall Space Flight Center in the program. One of the things we'll be doing is sharing with them the lessons we've learned from Space Shuttle operations.

Q: **How else is KSC involved?**

A: The X-34 program has two phases. The first phase calls for two flights. These will be from White Sands, N.M. The next phase calls for an additional 25 flights. Some of these will probably be from White Sands. One goal is to fly 12 flights in 6 months, with a 24-hour turnaround. We're looking at what we would need to do to be able to fly the high-speed tests off the coast of Florida and land at KSC. The X-34 is air-launched from an L-1011. One potential scenario would be to launch off the coast of North Carolina and land at the Shuttle Landing Facility or the Skid Strip on Cape Canaveral Air Station. We're looking at costs and other aspects of such a scenario.

Q: **Many of the goals of the RLV program were once goals of the Space Shuttle: Greatly reduced costs, quick turnarounds, small launch crews. Are these realistic objectives? Is reusable really cheaper than expendable?**

A: One must keep in mind that the Shuttle is a crewed vehicle, and there are multiple systems which must be included in its design to support the human presence. Also, the Space Shuttle went directly into production and operational changes were hard to make. X-33 and X-34 are experimental demonstrators which will prove the technology and provide lessons-learned that can be applied to a full-scale production vehicle. Another advantage of the demonstrators is that they are single stage, which means nothing is falling away from the vehicle as it completes its trajectory. And yes, reusable is cheaper than expendable if the operational costs are kept down.


VentureStar

Q: **What about KSC and X-33?**

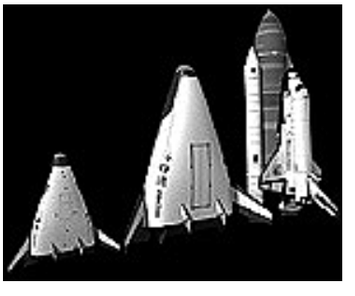
A: We are involved in the X-33 effort and hope to increase our role. KSC is designing the umbilicals and holddown posts for the X-33 launch site at Edwards Air Force Base. We're also designing vehicle positioning and handling equipment. These elements will be tested here at KSC in the Launch Equipment Test Facility (LETF). We're also assisting in the areas of hazardous gas detection systems and Operational Television (OTV) and Operational Intercommunication System (OIS) networks — areas that we as a launch facility have a great deal of experience with.

Q: **What technologies are the demonstrators testing?**

A: The X-33 will be powered by a unique engine called the Linear aerospike engine. It also will feature a metallic Thermal Protection System (TPS) and use oxygen and hydrogen for the Reaction Control System (RCS), a change from the toxic materials currently used in the Shuttle RCS. Both X-33 and X-34 will have advanced guidance and navigation and control systems that make use of the Global Positioning Satellite (GPS) system for autonomous flight and handling. X-33 has some command capability but it's limited. X-34 is completely on its own once it leaves the L-1011 except for range-destruct receiving capability. This technology is directly applicable to the liquid flyback booster being studied as part of the Shuttle upgrades effort. On X-34, there are embedded technologies inherent in its design, such as a composite airframe and advanced thermal protection, as well as hosted technologies that can be added on or taken off, such as a composite liquid oxygen tank.

Q: **What is the relationship between RLV and the Space Shuttle?**

A: The RLV could carry humans, but more in a passenger- than a command-capacity. The Space Shuttle is going to be around for a long time, and as far as human spaceflight in general is concerned, KSC will continue to be involved. I look at the X-33 and X-34 technology demonstrators as additional initiatives that we want to participate in. We have a breadth of experience in launch operations that is unique. We're already sending someone out to the West Coast on a fulltime basis this summer to support X-33. We can provide an excellent consulting role to support these activities. The first RLV launch would take place in the 2003-2005 timeframe. We're going to get KSC more involved and stay involved.


Comparison of X-33 (left), VentureStar and the Space Shuttle

NASA's Reusable Launch Vehicle Program

Goal: To develop and demonstrate new technologies for the next generation of reusable space transportation systems that can radically reduce the cost of access to space. RLV will be an all rocket-powered Single Stage-to-Orbit (SSTO). Means of transport only, not a science platform like the Shuttle. Government initially invests to reduce risk and later becomes a customer, not an operator. Progam philosophy: "*To spend a little on technology and save a lot in operations*."

X-34

Team: NASA, Orbital Sciences Corp., AlliedSignal, Oceaneering Inc., Draper Labs.
Specifications: 58 feet long, wing span is 28 feet.
Launch/Landing: Launch initially from White Sands, N.M.; land at various sites to test technologies.
Capabilities: Speeds to Mach 8, altitude to 250,000 feet. Propulsion, a 60,000-pound thrust version of the Fastrac LOX/kerosene engine being developed at Marshall. X-34 considered bridge between Clipper Graham and X-33. Less expensive and simpler to develop, operate and modify.
Technologies: Will test key technologies that can be integrated on RLV.

X-33

Team: NASA; Lockheed Martin Skunk Works, Rocketdyne, Rohr, AlliedSignal and Sverdrup.
Specifications: 63 feet long, 68 feet wide; takeoff weight is 273,000 pounds. Propulsion, two J-2S Linear Aerospike engines using LH2/LO2.
Launch/Landing site: Edwards Air Force Base, Calif. Landing, various throughout West Coast and Midwest U.S.
Capabilities: Maximum speed, Mach 15. Suborbital. Seven days between flights.
Technologies: Lighter, reusable cryogenic tanks; microelectronics; advanced ground and flight operations techniques.

VentureStar

Specifications: 127 feet long, 128 feet wide. Takeoff weight, 2.2 million pounds. Takeoff thrust, 3 million pounds. Seven RS2200 Linear Aerospike engines.
Capabilities: Orbital. Payload to Low Earth Orbit, 45,000 pounds.

KSC team honored for supporting X-33 environmental impact study

A team from KSC was recently recognized by Marshall Space Flight Center for supporting the X-33 environmental impact effort.

Mario Busacca, Gail King, Barbara Naylor and Dave Barker helped prepare the X-33 Environmental Impact Assessment (EIA) issued in June 1996 and are still supporting work on the Environmental Impact Statement (EIS) to be released in June. Both are mandatory federal requirements that must be completed before the X-33 launch site at Edwards Air Force Base, Calif., can begin construction and various landing sites around the Western United States can be selected.

KSC and other X-33 environmental experts had to travel to each site, study the area and prepare for public meetings to discuss the program. KSC was asked to participate because of its expertise in environmental aspects of launch and landing operations, said Burt Summerfield, acting chief, Environmental Program Office.

Rebecca McCaleb, director, Environmental Engineering and Management Office, at Marshall, called the KSC team a model for cooperation in the agency. A tabletop review of the EIS was recently completed at Marshall in preparation for a Headquarters briefing this month.

Astronauts and Klingons part of Space Week lineup

Astronauts and Klingons may bump into each other the the fourth week of May at the KSC Visitor Center, where a slew of events in honor of Space Week '97 are planned.

A highlight of the May 20–26 program will be the premiere of the newest IMAX movie, *Mission to Mir*, on May 21. The public premiere of the film is May 22 — National Space Day, so designated in honor of President Kennedy's speech at Rice University declaring the lunar landing mission as a national goal.

Astronauts expected to appear throughout the week for both book signings and briefings include Wally Schirra, Scott Carpenter, Gene Cernan, Edward Gibson, and Norm Thagard. Thomas Bopp, one of the co-discoverers of the Hale-Bopp Comet, also will be present.

The Klingons are appearing to mark the release of the *Star Trek: First Contact* video. Set for May 20, there will be a photo opportunity with the alien celebrities, video giveaways and a Star Trek memorabilia display.

Other highlights will include a Super Loki rocket launch May 23, with details available at participating McDonalds, and a Kids Club day sponsored by WMFE Channel 24. *Discover* magazine also will be on hand for a special space edition giveaway.

Daughters Day memories

THE FIFTH annual Daughters Day was held April 24. Astronauts Pam Melroy (left on T-38) and Kay Hire showed several daughters a T-38 jet trainer parked at the Shuttle Landing Facility. Melroy is a licensed pilot with more than 3,500 hours of flying time in 45 different aircraft and Hire was the first U.S. woman assigned to a combat aircrew.

KSC child care center plans summer program

The KSC Child Development Center is offering a summer program June 2 – Aug. 8.

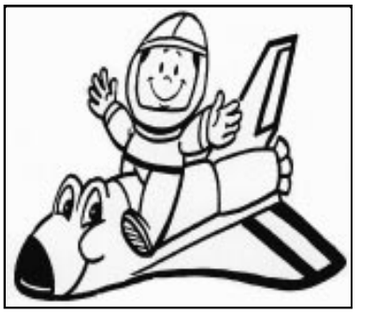
Hours will be 8 a.m. – 4 p.m., Monday – Friday. The program is open to children ages 5 – 12 years. The children will be divided into groups of 5 – 7 years and 8 – 12 years.

Slots will be filled on a first-come, first-served basis, so early registration is encouraged. A one-family registration fee of $25 will be charged to enroll in the summer program and is valid for one year. The weekly tuition rate is $80 and no discounts apply.

Due to the limited space and the high demand to participate, children must be enrolled for the entire 10-week period.

Breakfast, lunch and two snacks a day will be provided. Children will participate in rotational groups and special clubs are being developed to learn about computers, arts and crafts, and space and science. In addition, the children will take a weekly field trip except for week of the fourth of July.

For more information, contact Denise Johnson, 867-5437.



Fun for little kids …

CODY Coleman takes a pony ride with Erin Gast leading the way.

CHELSEA Richards gets her face painted by Giggles the clown as mother Shari looks on.

SAM Moore hops a carousel ride as Mom Pam Moore keeps him steady.

SISTERS Tenae (left) and Lenae Walton and friend Erika Bennett have their plates full.

DEPUTY Director of Shuttle Processing Dave King enjoys lunch with daughters Katie (center) and Bethany.

ETHNIC food booths drew a crowd. Doug Johnston (right) and daughter Darcey sampled the wares of the Hispanic Employee Action Working Group.

KSC Director Roy Bridges (center) was welcomed by new and veteran judges of the Chili Cook-off, including Mike McCulley (left) of United Space Alliance and Associate Director for Safety and Shuttle Upgrades JoAnn Morgan.

ALL AM
KSC PIC

The KSC All-American Picnic held April 26 drew an ethusiastic crowd to KARS I.

Ably managed by Acting Logistics Director Ann Montgomery and Logistics Directorate personnel and other volunteers, the picnic offered something for everyone, from pony rides and other entertainment for children to performing arts groups to classic car exhibits.

Center Director Roy Bridges — attending his first picnic — stepped in and helped out when astronauts from Johnson Space Center were held up by weather. The former astronaut teamed up with another former spaceflyer, United Space Alliance Ground

HOME RUN — The Red Hot Chili Booste
Off: First place in the demonstrations (a m
people's choice judging and first place in th
Space Alliance, Thiokol, USBI and NASA e
employees. Also placing in the cookoff wer
Chili Chefs, who won for best storefront as
and the Shuttle Processing PZ/CLCS Roa
official judging despite the team's alarming

ERICAN
NIC 1997

Operations Vice President Mike McCulley, to sign autographs.

Even early afternoon rain could not cool the fiery Chili Cook-off competition. Eight teams pulled out all the stops to win top place, and good-natured bribery attempts were rampant. Was it just coincidence that the first-place finisher offered free massages behind its chili stand?

Proceeds from the cook-off — held this year for the sixth time — go to the Florida Children's Home Society. More than $1,100 was raised at this year's picnic.

All in all, it was a great day of fun for the KSC employees and their families, and guests, who attended the picnic.

rs took home three prizes in the Chili Cook-
masseuse!) to garner votes; first place in the
he official judging. The team included United
external tank/solid rocket booster processing
re the Safety and Mission Assurance S&MA
s well as placing third in the official judging,
ad Kill Chili team that placed second in the
g name.

THE volleyball tournament was a popular event.

… Fun for big kids…

104 MISSION Lead Frank Newman from the Johnson Space Center KSC Resident Office dressed in appropriately patriotic attire and looked forward to an al fresco lunch.

TILE technician Barbara Wyles shows off her athletic form as the Orbiter Processing Facility Bay 1 team gives its best shot in the softball tournament.

COOL dude Eric Hanson (left) sells a cold one to Hispanic Employment Program Manager Oscar Gamboa.

… and fun for chili fiends at Chili Cook-off madness.

BEVERAGES flowed freely as chili cook-off team representatives conducted their own sampling of the chilis prepared by the eight teams. His duty as an official judge completed, Launch Director Jim Harrington was there to exhort them on.

Spring InterCenter Run results are announced

A rainy day couldn't keep away 119 runners and walkers for the 8th Spring InterCenter Run. The top finishers were:

10K — James Burnum, 36:19 minutes; Frank Kapr, 37:05; and Sean Black, 37:51.

5K — Wayne Walker, 20:00; Jimmy Juel, 20:28; Bill Lembke, 20:46.

2M — Jeff Myers, 12:26; Mark Stuckey, 13:04; Donna Boone, 14:15.

RAIN didn't soak the spirits of the 119 runners who participated in this year's annual Spring InterCenter Run at the KSC Shuttle Landing Facility. The popular event is sponsored by the KSC Fitness Centers and The Bionetics Corp.

Voided Drawing Team earns award for tackling paperwork problem

Computer-aided drawing may be a boon to the engineer but it also has led to an increased volume of voided drawing sheets at KSC over the past five years.

Drawing sheets must be filed and stored according to strict federal regulations, explained KSC Records Manager Judy Wheeler. The sheets in question typically are of facility layouts. Each time a modification is made to the building, a new drawing sheet is produced.

"In the past, the same drawing would have been changed," said Wheeler. "With computer-aided design, it's easier to print a new drawing."

Voided drawings were taking up to 700 cubic feet of space with no sign of the volume decreasing anytime soon, and the sheets could not legally be destroyed until silver microform copies were stored in an appropriate area. The Voided Drawings team was formed to tackle disposition, storage and destruction problems.

THE Voided Drawing Team's efforts will lead to the elimination of hundreds of cubic feet of voided drawings, such as those shown here. They marked their achievement with this "paper party" at the Technical Records Facility at Complex 37.

The team proposed that a building in the Industrial Area be used to accommodate microform copies of KSC drawings, including voided drawings, which could then be destroyed.

Called the Film Storage Facility, the building's temperature and humidity were adjusted to properly store the silver microforms, which is the official copy of a document.

The cost avoidance will be an estimated $16,000 per year. An estimated 2.6 million microforms are now held in the Film Storage Facility. Because the building is environmentally-controlled, the silver microforms need to be inspected only once every two years instead of every six months. No additional contractor personnel were needed to operate the facility, and space is being made available for centerwide use.

STS-84 . .

(Continued from Page 1)

docking in 1995. Pilot Eileen Collins flew in space for the first time as pilot of STS-63, the first Shuttle-Mir rendezvous.

Mission Specialists Carlos Noriega and Edward Lu are both first-time flyers in space.

Clervoy flew on STS-66. Kondakova had set a long-duration spaceflight record for women during her stay on Mir before Shannon Lucid's lengthy stay set a new record.

Foale, who is flying in space for the fourth time, says he is looking forward to speaking Russian and working with his colleagues, Commander Vasili Tsibliev and Flight Engineer Aleksandr Lazutkin.

Astronaut Jerry Linenger will return with the STS-84 crew. If Atlantis lifts off on schedule, the orbiter will return to KSC May 24 at 7:49 a.m. Linenger and Tsibliev recently completed the first U.S.-Russian spacewalk, during which Linenger wore a Russian-made spacesuit. Russian cosmonaut Vladimir Titov, who flew on STS-63 with Collins, will wear a U.S. spacesuit for an EVA during the seventh Shuttle-Mir docking in September.

Other objectives of STS-84 include transfer of supplies to and from Mir. About 1,400 pounds of water will be carried to the station.

Randy Rooker Golf Tournament set for May 31 – June 1

The 6th annual Randy Rooker Golf Tournament will be held May 31–June 1 at the Royal Oak Resort and Golf Club in Titusville.

United Space Alliance is sponsoring the tournament, with proceeds going to the American Heart Association in honor of the KSC employee who died in 1991 from a heart attack.

The cost is $60 per player, per day, which includes green fees, and other amenities. Early registration is encouraged. Signup forms are available from: Rachel Webb, KSC HQ, 7-7801; Clay Walker, OSB, 1-3471; Bob Osborne, OSB, 1-3455; John Kowaleski, OPF area, 1-7036; Jim Sullivan, LCC/VAB, 1-7400; Dave Sterrett, pads, 1-6767/1-0717; Don Eldred, complexes, 1-5964; Gene Payne, PCC, 1-7800.

FEW hosts coffee for senior managers

The Federally Employed Women (FEW) organization held a coffee April 28 to welcome new Center Director Roy Bridges. Members of the KSC Senior Management Council also attended.

FEW was formed in 1968. The acronym '*FEW*' was selected because at that time there were still relatively few women in federal service. It is the only national organization dedicated solely to eliminating sex discrimination in the federal government.

The Space Coast Chapter of FEW was chartered in 1970, and is a member of the 25-chapter Southeast region, the largest in the organization. A scholarship fund was created in 1976 in cooperation with Brevard Community College. The chapter also sponsors conferences and training seminars. For more information, contact Carole McCline, 867-2585.

THE EG&G-led Maintenance Management team was selected to represent KSC at the 12th annual NASA Continual Improvement and Reinvention Conference April 18.

KSC well-represented at NASA quality conference

An EG&G Florida/NASA team and KSC Director Roy Bridges attended the 12th annual NASA Continual Improvement and Reinvention Conference on Quality Management, held April 18 in Alexandria, Va.

The 14-member team was selected to represent the center based on its success in effecting a major cultural change in how KSC's many facilities are managed and maintained.

"Our goal is to sustain the availability and reliability of facilities and utilities in a cost-effective manner through use of the Reliability-Centered Maintenance (RCM) philosophy," said team leader Ray Tuttle, manager, EG&G Maintenance Management.

As the Base Operations Contractor (BOC), EG&G is responsible for maintaining about 600 permanent structures and 250 temporary. Many date back to the Apollo era in the 1960s.

The BOC oversees some 28,000 infrastructure elements, from water lines to roadways to the buildings themselves.

The team employed a complex but effective process to transition from a reactive maintenance culture to one that promotes proactive maintenance based upon facility-condition trending.

"The final solution was a comprehensive effort that addressed all areas identified during the root cause analysis," the team report states. "By electing to improve the existing program elements with internal resources, the team was supporting an 'inside-out' cultural change."

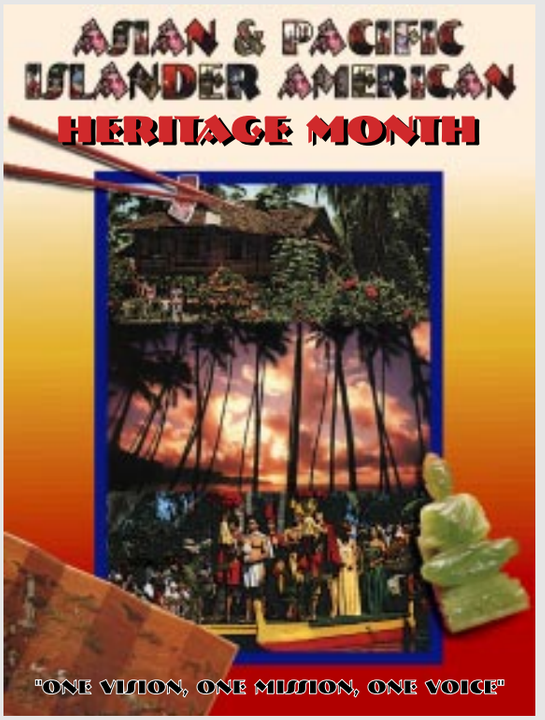
Organizational restructuring was one major aspect of the team's solution, as well as an implementation plan with specific milestones, a training program, and strengthened communication procedures.

A Proactive Maintenance Award to encourage a progressive approach to facilities maintenance also was created.

Since the program began, the team estimates it has generated approximately $250,000 in cost savings and about $1 million in costs avoided.

While the EG&G Florida team represented KSC at the conference, another NASA contractor with KSC operations was named as one of the four recipients of the 1997 George M. Low Award, NASA's highest quality and excellence award for contractors and subcontractors. Space Shuttle Main Engine contractor Rocketdyne, Canoga Park, Calif., was cited for the measurable improvements it has achieved in reducing engine-related delays.

Other recipients of the award were Dynamic Engineering Inc., Newport News, Va.; Hummer Associates, Cleveland, Ohio; and Scientific and Commercial Systems Corp., Moffett Field, Calif.



A variety of events are planned in recognition of Asian & Pacific Islander American Heritage Month.There will be poster displays, and an arts and crafts exhibit in the Headquarters lobby. Also, a different Asian entree will be served in the cafeteria each week.

A luncheon at the KSC Visitor Center Lunch Pad is set for 11:30 a.m., May 20. Entertainment will be provided by Kung Fu group Wah Lum Temple, and the Phillipine Performing Arts Company will perform native dances. The keynote speaker will be Defense Department official Belkis Leong-Hong, who is of Chinese descent.

Cost for the luncheon is $8. Tickets can be purchased May 5-15 in Headquarters from: Rebecca Young, Room 2644; Denise Pham, Rm. 3475; Divina LeClair, Rm. 1645; Oscar Gamboa, Rm. 2321; Hien Nguyen, Rm. 3384; Marina Harris, Rm. 2245; in the Operations and Checkout Building, Rupert Lee, Rm. 1237; and in the Space Station Processing Facility, Chris Chan, Rm. 3264U.

Honeycutt takes post with Houston firm

Former KSC Director Jay Honeycutt has returned to Houston to take a job with Lockheed Martin Space Mission Systems and Services.

Honeycutt began work May 5 as executive vice president, reporting to President Clinton Denny.

"I am looking forward to the new challenges and opportunities of corporate life," Honeycutt said. "I am very pleased to be able to continue to work and make a contribution to the space program and become a member of the Lockheed Martin team."

The Space Mission Systems and Services division, part of Lockheed's Information and Services Sector, has supported NASA for more than 30 years. It develops, provides and implements high-reliability command, control, communications and information processing and management systems to support both human and uncrewed space missions.

Honeycutt began his NASA career at Johnson Space Center in 1966 during the Apollo program, starting out as an engineer in Flight Operations. He held a number of positions in Flight Operations until 1988.

KSC community outreach finds new avenues

Robots and airplanes take KSC teams far afield in April

KSC's commitment to community outreach was demonstrated anew in April in two very different ways. A group of NASA and contractor engineers joined with students from two local high schools to participate in a robotic competition, while other KSC personnel attended the Sun 'n Fun Air Show in Lakeland to share information with attendees about NASA.

• Robotics Competition

Engineers from the Advanced Systems and Analysis Division, Mechanical Engineering directorate, I-NET; EG&G Florida; McDonnell Douglas; and the Florida Institute of Technology, visited Merritt Island and Satellite High Schools to invite students to participate in an innovative robotic competition.

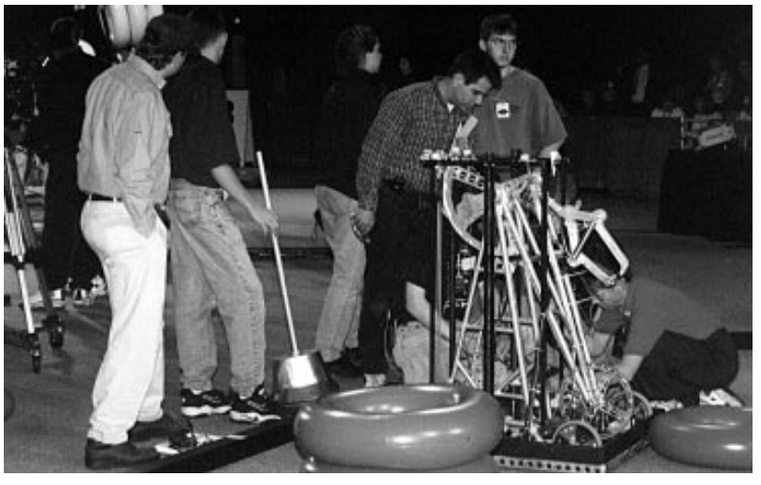
Now in its sixth year, the competition is sponsored by a non-profit organization called FIRST, which stands for *For Inspiration and Recognition of Science and Technology*. It promotes interest among students in science and technology. The robotic competition features a goal in the center of a playing field. Student teams build robots from kits that dunk or shoot colored inner tubes onto posts extending from the goal.

This year, the kit included such assorted items as window motors and seat motors from cars, said NASA engineer Eduardo Lopez Del Castillo. The Space Coast FIRST Team had six weeks to build their robot, which they named 4608. They visited KSC engineering labs and learned about computer-aided design software. They worked with a variety of machining tools at Florida Tech, and then split into groups to design and build 4608.

Many hours of long hard work paid off. The Space Coast FIRST Team first participated in regional competition in New Jersey, finishing 11th out of 35 teams and first of the NASA teams participating. The team placed 14th out of 113 teams in the national competition at Epcot Center and was again the top NASA team.

There also was an animation category. Despite being complete newcomers to the field of 3D animation, the Space Coast First team finished in the top 20 out of 90 entries.

The effort was immensely rewarding for both the students and the engineers who helped them, said Lopez Del Castillo, and KSC hopes to participate again next year.



TOP photo — NASA engineer Tom Bonner was among the KSC contributors to the Space Coast FIRST team. Below, Eduardo Lopez del Castillo (center) and students at the regional finals in Newark, N.J., in March. Funding from NASA in the form of a grant as well as an additional donation by McDonnell Douglas helped pay for the project.

ROBOT 4608 in action at the national finals at Epcot in April. The design featured an arm with an end effector referred to as jaws used to manipulate the tubes. With the arm fully extended, 4608 can reach a height of about 15 feet, manipulating tubes toward the goal in the middle of the playing field. Below, Andrea Tabacchi of Satellite High and David Thurlwell of Merritt Island High assemble the robot prior to the competition.

• Lakeland Fun 'n Sun Air Show

While 4608 was strutting its stuff at Epcot, another group of KSC employees traveled to Lakeland for the Experimental Aircraft Association's Sun 'n Fun Air Show.

More than 640,000 people attended the weeklong event. The NASA exhibit featured material about NASA-developed technologies that have contributed to the field of aviation.

Astronaut Richard Searfoss flew in on a T-38 jet trainer, and the KSC Visitor Center Spaceman paid a visit as well.

"This was an excellent forum to promote NASA's accomplishments in technology," said Jone Richards-Gruendel, KSC Technology Transfer and Commercialization Office. Photographs from the Lakeland show are posted on the Technology Transfer Office Web home page at:

http://technology.ksc.nasa.gov

John F. Kennedy Space Center

Spaceport News

The *Spaceport News* is an official publication of the Kennedy Space Center and is published on alternate Fridays by the Public Affairs Office 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, PA-MSB or sent via e-mail to the following SMTP: Paula.Shawa-1@kmail.ksc.nasa.gov

Managing editor. . . . . Bruce Buckingham
Editor. . . . . Paula Shawa
Editorial support provided by Sherikon Space Systems Inc. writers group.

USGPO: 532-112/20046