September 25, 1998 Vol. 37, No. 19

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

A decade has passed since the Olympics were in Seoul, South Korea; since George Bush debated Michael Dukakis before the November presidential elections; and since Americans witnessed their nation's historic Return to Flight more than two years following the Challenger accident.

Not only did KSC workers help put America back into space, reviving the spirit of a country after a heartbreaking setback, but they made Shuttle launches appear routine.

KSC workers continually made history by putting the most scientifically and technologically advanced payloads into space (Galileo, the Hubble Space Telescope and the Gamma Ray Observatory, to name but a few); broke their own records (Columbia processed for reflight in 56 workdays in the OPF); and charted a course for the future by processing and launching the upgraded Shuttle for Mir dockings and soon the International Space Station.

Ten years have passed in the blink of an eye, paving the way for dreams of a new era in space history.

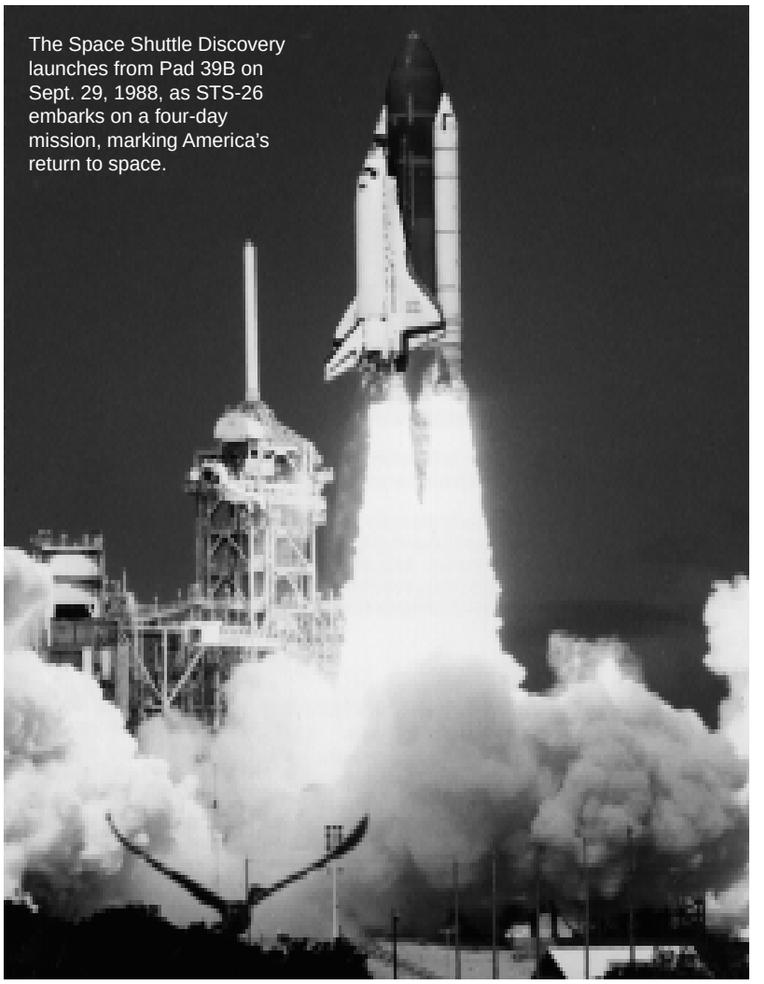
On the move?

Keep *Spaceport News* coming to your door! If you're a retiree and have recently changed your address, be sure to let us know. Send written notification of your new (and former) address and effective date to: Kathy McIntosh, NASA/John F. Kennedy Space Center, Att'n: HM-A-3/Kathy McIntosh, Kennedy Space Center, FL 32899.

Otherwise, if you work at KSC, send your new location by mail to *Spaceport News* Address Change, ATS.

Remembering Return to Flight:

A decade of determination, development and discovery



The Space Shuttle Discovery launches from Pad 39B on Sept. 29, 1988, as STS-26 embarks on a four-day mission, marking America's return to space.

The year was 1988. It was a time that would long be remembered by Kennedy Space Center workers as the year they helped put America back into space.

The September launch of Discovery that year occasioned a renewed sense of pride and accomplishment among KSC employees. With the following December launch of Atlantis, a reawakened confidence in themselves and the Space Shuttle program helped usher in the dawn of a new era.

The road back to space was a formidable, often frustrating task as Shuttle and payload teams wrestled with reviewing and rewriting procedures, upgrading and inspecting equipment and facilities, reassessing safety criteria and retraining personnel.

What has happened as a result in the past 10 years?

"We became smarter in the implementation of requirements," according to KSC Director of Shuttle Operations Bob Sieck.

Development

The orbiter tile system is an example cited by Sieck that demonstrates how KSC has evolved. In the early days of Return-to-Flight, onlookers could easily see scaffolding surrounding the launch pad as tile technicians and inspectors worked diligently on thermal protection system tile as the orbiter was on the pad.

"The requirements today have not changed significantly from what they were back then," Sieck said, "but our ability to accomplish requirements on the thermal protection system has been greatly enhanced.

"We found ways to meet requirements by using technology such as laser step and gap tools,

(See Decade, Page 4)

CFC kicks off October 1

The 1998 KSC Combined Federal Campaign (CFC) will officially open with a kick-off rally in the Training Auditorium at 9 a.m. on Oct. 1 and will run through Oct. 31. The theme this year is "Touch Somebody's Life."

The goal of this year's CFC is $210,000, which is a five percent increase over last year's goal.

A web site is already active to provide you with information on how your past and current contributions are touching peoples' lives.

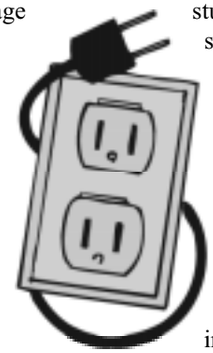
Through the site, located at http://ap03.ksc.nasa.gov/CFC/ or through the link provided on KSC's internal page, you can find out who your directorate representative is, read about local success stories, check out frequently asked questions and answers, and more!

An electrifying proposal

by Anita Barrett

NASA has selected 25 research proposals for negotiation of Phase I contract awards for NASA's 1998 Small Business Technology Transfer (STTR) Program. One of those proposals concerns power distribution at NASA.

For the most efficient use of power, the shape of voltage and current waveforms should be as closely matched as possible, according to KSC's Power/UPS System Engineer Chris Iannello, who wrote the proposal.



"In most AC/DC systems at KSC they are not," he said. "Where there are gaps, large amounts of current harmonic distortion are injected throughout the power distribution system. The traditional approach is to filter or isolate it, but with our proposal we would eliminate the problem at the source."

According to Iannello, the proposed power converter would not only have low input distortion, but has the potential to reduce heat losses through increased efficiency.

This in turn promises smaller weight and size.

Further, the converter promises to be more reliable and have a longer life as a result.

In Phase I of the project, which runs October 1998 through October 1999, the intent is to conduct a feasibility study aimed at building a cost-effective prototype — a converter that could replace portable computer and/or rack-mounted power supplies.

Iannello said that initially the study would focus on ground support equipment such as hardware interface device power supplies or orbiter power supplies.

Phase II would focus on commercialization; that is, manufacturing the converter.

And finally, Phase III would involve funding the implementation within KSC.

"The proposal," said Iannello, "furthers the KSC Road Map initiative to provide cutting edge energy reduction techniques and practices."

The proposal promises to evaluate the latest research in the field to produce a converter on the cutting edge of current science.

The STTR Program is designed to stimulate technological innovation, help small businesses become better-qualified to assist NASA in its research and development and increase private commercialization of federally funded research.

Safety tip: *Avoid shocking experiences; Replace damaged cords.*

Arthur Stephenson named to head MSFC

Arthur Stephenson, president of Oceaneering Advanced Technologies, Houston, was named to become the next director of NASA's Marshall Space Flight Center, Huntsville, Ala.

Stephenson has more than 30 years experience as a manager in spacecraft and high technology systems.

NASA Administrator Daniel Goldin said that Stephenson "will make sure this Agency has the best launch and in-space propulsion capabilities and technical tools in the world."

During his 34-year career, Stephenson worked on a variety of programs related to Marshall's activities, including the Orbital Maneuvering Vehicle in the 1970s and 1980s, the Gamma Ray Observatory, automated rendezvous and docking and the space welding inspection EVA tool.

Stephenson began his career designing digital test equipment for Project Apollo.

He progressed to management of spacecraft subsystems, then entire spacecraft and ultimately entire launch vehicles.

Putting FIRST things first

For the first time, Kennedy Space Center will host a For Inspiration and Recognition of Science and Technology (FIRST) robotics competition at the KSC Visitor Complex Mar. 4-6, 1999. This also will be the premier FIRST regional competition held in the southeastern United States.

FIRST is a non-profit organization that strives to create a world where science and technology are celebrated.

"FIRST is where kids think science is cool," commented KSC Director Roy Bridges, "and they dream of becoming science and technology heros. FIRST's vision is to combine the efforts of high schools, universities, government, businesses and private industry by forming teams that will provide students with a hands-on, inside-look at engineering and other professional careers."

For the competition, teams will be provided with a kit of materials and have six weeks to complete the challenging task of designing, manufacturing, assembling and testing a robot that will compete in athletic-like tournaments and regional and national levels. FIRST annually sponsors several robotics competitions attracting more than 10,000 people.

"This event at Kennedy Space Center will be open to every team in the nation that wants to participate," noted Bridges, "and is expected to bring more than 3,000 people to KSC."

Most of the teams have major sponsors, such as NASA, but the event also needs volunteers and local sponsors.

"I encourage all NASA personnel, contractor staff and the Central Florida community to join and provide support in sponsorship of this event to ensure its success," said Bridges. "We should all help to expose young minds to valuable career opportunities as well as to heighten their awareness of the importance of the space program."

For more information or to volunteer, contact Eduardo Lopez at 867-8005.

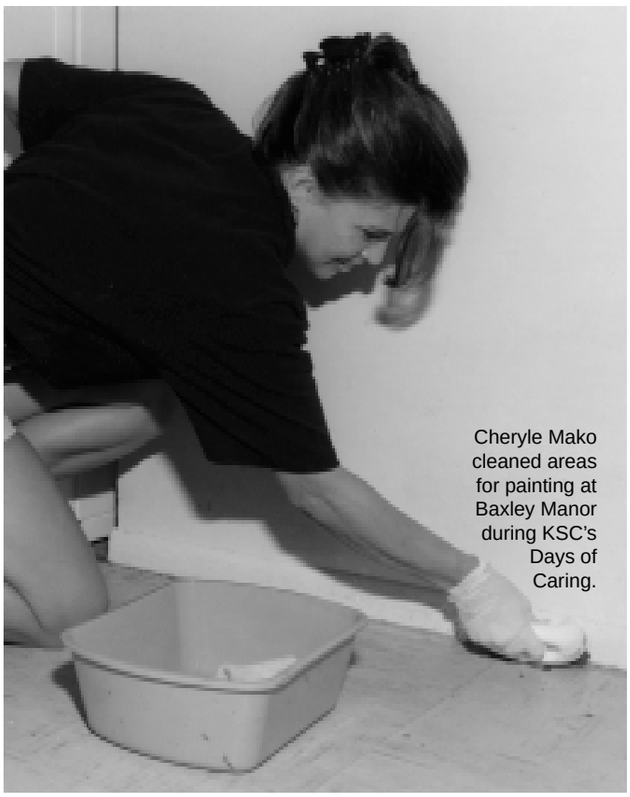
Hutchinson named industrial relations officer

Rechea Hutchinson

Rechea Hutchinson has been named KSC's new industrial relations officer, serving as principal advisor and consultant to center management on matters pertaining to industrial relations. In this position, Hutchinson plans and administers the center's Labor Relations Program. Her office serves as the center focal point for advice and assistance on labor relations and labor law matters.

Hutchinson joined KSC in 1980 as a contract administrator in the Construction Administration Branch of the Procurement Office. In 1988, she transferred to the Procurement Office's Equipment and ADP Branch as a contract specialist. She returned to the Construction Administration Branch in 1991 as the contracting officer and lead of the procurement team responsible for the Space Station Processing Facility construction contract. In April 1995, Hutchinson became a lead in Procurement's Engineering Support Office. Before joining KSC, she worked for the U.S. Army Corps of Engineers and Defense Contract Administration Services.

KSC employees chip in elbow grease for Days of Caring



Cheryle Mako cleaned areas for painting at Baxley Manor during KSC's Days of Caring.

The 1998 Days of Caring project was a great success for Kennedy Space Center and especially for some grateful senior citizens of Baxley Manor, a building of low-income apartments.

On Sept. 11 and 12, about 170 NASA and contractor employees participated in the centerwide project at Baxley Manor located on Merritt Island.

A cleanup crew prepared the rooms for painting by moving furniture, preparing walls and covering personal items, then a Prep Team washed walls, repaired holes and began cut-in painting. The Paint Team painted walls, while the Customer Service Team supported team leaders with other small repair and cleaning jobs. Additional KSC workers provided companionship to the residents during the commotion of the day.

The majority of the "wish lists" that the residents had prepared were accomplished and included everything from painting, spackling, cleaning, waxing floors, washing windows, vacuuming, washing curtains, cooking lunch, and escorting the residents.

A total of 34 units were painted and 27 cleaned, as well as the hallways and stairways, which were repaired and painted.

Oversight for the project was provided by the Brevard County Housing Authority and supplies were furnished by Prevent! of Brevard. Prevent! also provided breakfast and lunch for the volunteers on both days.

A total of 68 NASA and contractor employees supported various other United Way projects, such as Meals on Wheels, Central Brevard Sharing Center, Crosswinds, Community Services Council, Women's Center, and Yellow Umbrella, to name a few. Days of Caring is one of many community outreach endeavors of which KSC's Community Relations Council is proud to be a part. Each person's name who volunteered will have his or her name appear in *Florida Today* as a special 'thank you' for participating.

If you have questions about this project or other ways you can get involved through KSC's Community Relations Council, contact Liz Osborne at 867-4388 or Carol Cavanaugh at 867-2363.

KSC workers helped clean and prepare Baxley Manor apartments on Merritt Island for painting Sept. 11 and 12.

Long honored with Women in Aerospace award

Irene Long, M.D.

Irene Long, M.D., director of KSC's Biomedical Office, was presented with the 1998 Outstanding Achievement Award by Women in Aerospace Sept. 23 at the Rayburn House Office Building on Capitol Hill in Washington, DC.

The award recognizes Dr. Long's contribution to the fields of aerospace and occupational medicine, life sciences research, environmental health and operational management of life sciences support facilities.

Women in Aerospace is a nonprofit, professional society dedicated to expanding women's opportunities for leadership and to increasing their visibility in the aerospace community.

In a career where she has risen steadily to a position of senior management in the U.S. space program, Dr. Long is a role model for women embarking on careers in medicine and the aerospace sciences.

As director of biomedical operations at the center, she has encouraged people working in her office to pursue advanced education and opportunities for self-development.

Dr. Long has made many contributions to aerospace education.

Among them, she is active in the center's educational outreach agenda and is one of the founders of the Space Life Sciences Training Program.

The program introduces college students to the field of Space Life Sciences and also aims to increase the number of women and minorities in science and related fields.

Decade ...

(Continued from Page 1)

computerizing our logged reports and using technicians to disposition standard repair anomalies post-flight — essentially reducing workload so we have a more efficient process today," he said.

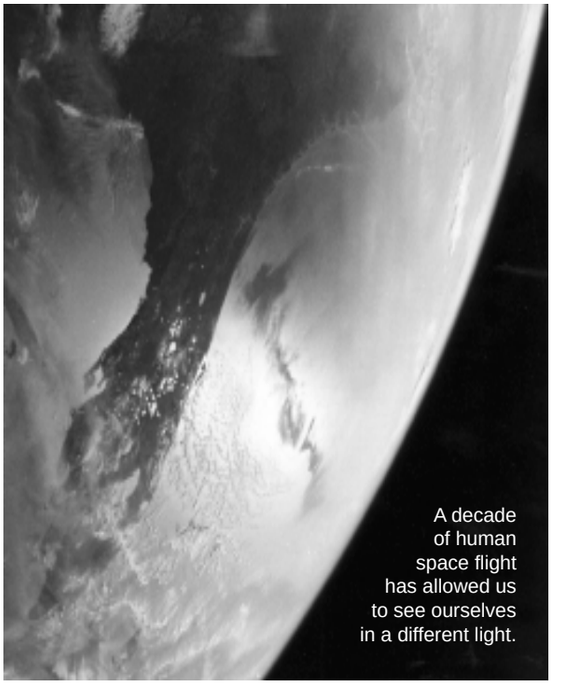
"The requirements didn't change; we still want a thermal protection system that's top-notch and that protects our national resource, but we're implementing those requirements a lot differently with visible results," Sieck explained. "That's one example of many across KSC where the government/contractor team has improved the process."

Other visible results over the years have included the evolution and expansion of facilities around the spaceport. Construction crews rebuilt the 40-foot-wide, seven-foot-deep crawlerway in 1993 — the first time the route was ever completely refurbished. Three years prior, during the rollout of the Space Shuttle Columbia to Pad 39-A for the launch of STS-35 in April, crawler-transporter number 2 passed the 1,000-mile landmark.

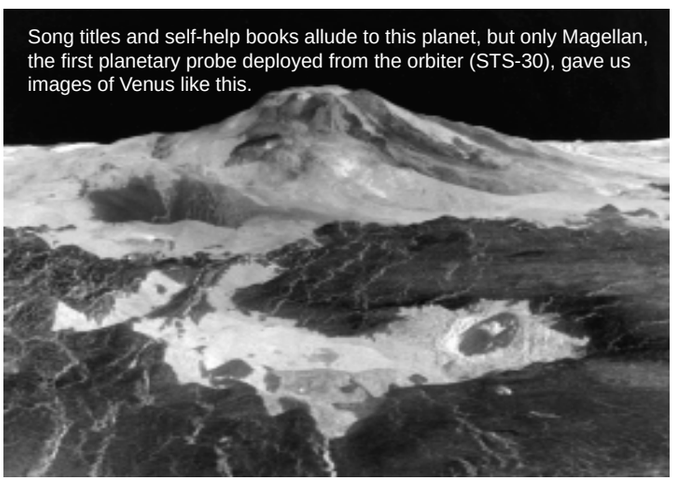
Other landmarks well known to the public were also added in the past decade. The Center for Space Education, the Space Mirror, the Saturn V facility, the Space Station exhibit facility, the launch pads observation gantry and the building of the orbiter Endeavour were all completed over the past 10 years.

Less well known by the public, yet critical to flight processing, are the Orbiter Processing Facility Bay 3, the Payload Canister Rotation Facility, the Operations Support Building, the new Payload Spin Test Facility, the Processing Control Center, the Hazardous Processing Facility, the Space Station Processing Facility and the Space Shuttle Main Engine Processing

Then Lockheed Space Operation Company technician Kristin Pisula gazes upon toughened uni-piece fibrous insulation tiles tested on Shuttle Endeavour during the STS-59 mission.



A decade of human space flight has allowed us to see ourselves in a different light.



Song titles and self-help books allude to this planet, but only Magellan, the first planetary probe deployed from the orbiter (STS-30), gave us images of Venus like this.

STS-37 Mission Specialist Jerry Ross peers into Atlantis' cabin. He joined Jay Apt in the payload bay to accomplish a repair task on the Gamma Ray Observatory.

Returning from STS-94, the orbiter Columbia's tiles are inspected by then KSC Shuttle Launch Director James Harrington, left, with Director of Shuttle Operations Bob Sieck and, at right, Center Director Roy Bridges, KSC's seventh center director.

Facility — all of which did not exist 10 years ago.

Determination

KSC workers forged ahead from processing and launching two Shuttles in 1988 to a high of eight launches in 1997, one of which was unscheduled in the original launch manifest.

From the beginning, it was a test of the mettle of KSC workers. Flying on the orbiter Columbia in 1990 were no fewer than 250 modifications since early 1986, in addition to the first tile produced at KSC. A record number of launch delays on STS-36 that same year kept engineers and managers on the edge of their seats.

Although early in Return-to-Flight, all landings were scheduled for Edwards Air Force Base, Calif., an unscheduled yet perfect landing was made at KSC during STS-38, demonstrating the ability of the KSC landing crews to prepare for a dramatic touchdown with little notice. Then, in 1991, KSC was scheduled as the prime landing site for several missions — for the first time since 1986. That same year, NASA announced plans to keep orbiters in space for longer periods of time; Columbia, with its new capacity for extended flight, was the first to fly a planned 13-day, 19-hour mission in 1992.

Workers celebrate hoisting the last steel structural beam for the Space Station Processing Facility (SSPF) in the spring of 1992. Opening its doors for operation two years later, the SSPF began processing components for the International Space Station before their launch into space, where the station will be observed from the ground as one of the brightest objects in the night sky.

The first night landing at KSC (STS-51) occurred the next year, thanks to enhancements made at the Shuttle Landing Facility in 1992. These included beefing up the shoulders, replacing the runway lights and adding conduit for future electrical needs.

Many primary payloads made their second and even third flights on the Shuttle in 1994, demonstrating the orbiters' capability as a research platform in space. For the first time in the spaceport's history, a KSC worker was named an astronaut candidate. Kathryn Hire was selected in 1994 and flew on STS-90 in 1998. Two other KSC employees, Joan Higginbotham and Frank Caldeiro, were also later selected as astronaut candidates.

Below, the STS-60 crew plant a tree in May 1994 between Headquarters and the Training Auditorium honoring the Russian tradition of planting a tree after a spaceflight. Mission Specialist Sergei Krikalev, in the foreground, was the first cosmonaut to fly on the U.S. Space Shuttle, paving the way for nine joint U.S.-Russian missions.

Columbia inches toward space, arriving at Pad 39B for STS-62. Workers spent most of 1993 stripping, reinforcing and rebuilding the road that carries the 17-million-plus pound load. The work of 1993 marked the first time the crawlerway was completely refurbished since 1965, when it was built to support the Saturn V rocket.

At left, the crew of STS-71 pose for the traditional, yet unconventional, inflight portrait with the Mir-18 and -19 crews. This photo was made possible by U.S.-Russian collaboration in the International Space Station program and by the flexibility and ingenuity of Shuttle workers to redesign the orbiter to dock with Mir. Below, then Shuttle Operations Mgr. Loren Shriver demonstrates a different type of flexibility and endurance as he lifts high the Olympic torch, having carried the flame to Launch Pad 39A. He was one of several runners who carried the torch 20 miles around KSC. Behind him is Atlantis, poised for STS-79.

Discovery

From STS-26 10 years ago through STS-91 earlier this year, the Space Shuttle and its supporting KSC team have made possible the discovery of countless advances for mankind. The Hubble Space Telescope has given the world a new look at the 'big picture,' as the Gamma Ray Observatory explored elusive mysteries of the universe. KSC assisted in Mars and Saturn missions, as well as every planet in the solar system, except Pluto. We launched planetary spacecraft such as Magellan and Galileo and were host to innumerable microgravity and life sciences experiments. One can only marvel, in fact, at how much has been done in such a short time and only imagine what the next 10 years and millenium will hold.

KSC's Open House is a blast to the past and a peek into the future

Have you ever heard comments about how cool it must be to work at America's spaceport or field questions on our astronomical missions? Now is the chance to share KSC up close with family and friends during the 1998 KSC Open House on Oct. 10 from 9 a.m. to 2:30 p.m.

Among many other KSC and Cape Canaveral Air Station (CCAS) facilities, the new Space Shuttle Main Engine Processing Facility will be open to KSC and CCAS badged employees and their families.

The event is also slated to feature a drive-by of the Space Shuttle Discovery at Launch Pad 39B, aircraft at the Shuttle Landing Facility, a special viewing of International Space Station flight hardware via the new International Space Station Center and dozens of exhibits and demonstrations in major facilities throughout the center.

Other attractions are a special tour package at the KSC Visitors Complex that will include an express bus to the Apollo/Saturn V Center and an IMAX movie and a 25 percent discount on all purchases at the Visitors Complex stores.

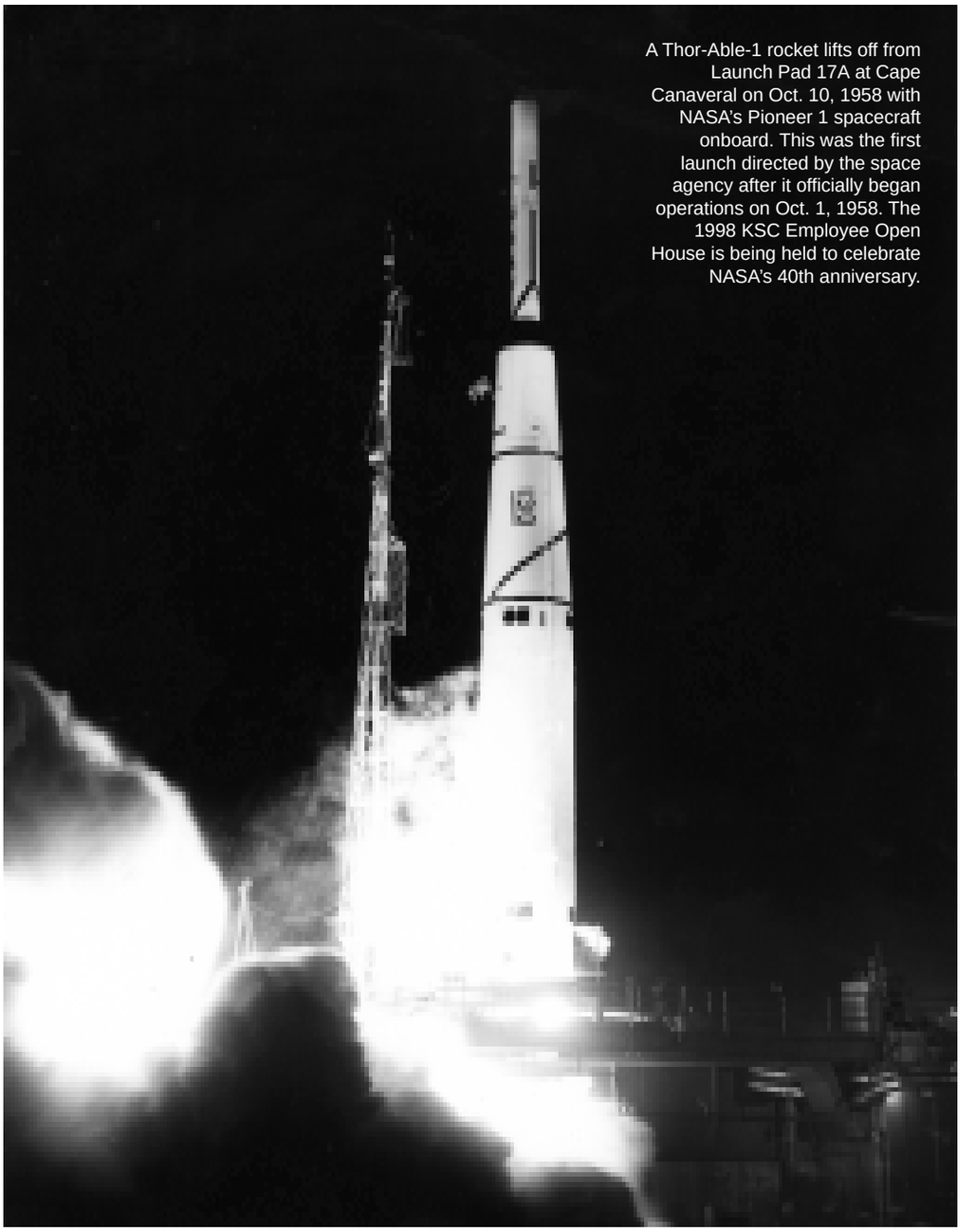
The event is being held in celebration of NASA's 40th anniversary.

The space agency's first official day of operation was Oct. 1, 1958. Just 10 days later, the first NASA-directed launch took place at Cape Canaveral from Launch Pad 17A as a Thor-Able-1 rocket lifted off Oct. 11 with the Pioneer 1 spacecraft onboard.

NASA's Deep Space 1 probe is slated to lift off from that same pad in October this year aboard a Delta II expendable launch vehicle.

The Open House map and brochure that describes the day's activities will be delivered to all employees the week of Oct. 5.

Information on the event is also available on a Web page at http://www.ksc.nasa.gov/events/1998/openhouse/ . More details about activities during the day will also appear in KSC *Countdown* and the next issue of *Spaceport News*.



A Thor-Able-1 rocket lifts off from Launch Pad 17A at Cape Canaveral on Oct. 10, 1958 with NASA's Pioneer 1 spacecraft onboard. This was the first launch directed by the space agency after it officially began operations on Oct. 1, 1958. The 1998 KSC Employee Open House is being held to celebrate NASA's 40th anniversary.

North Carolina State Military Environmental Issues Working Group visits KSC and 45th Space Wing

A subgroup of the North Carolina State Military Environmental Issues Working Group visited KSC Sept. 1.

Interested in how the X-34 program will impact their airspace and how sonic booms might impact their surrounding environment, the Special Use Airspace subgroup of the North Carolina Environmental Issues Working Group visited KSC Sept. 1. The Cherry Point Marine Corps Air Station in North Carolina is proposed as a contingency landing sight for potential mission aborts. Deputy Director of Engineering Development Warren Wiley welcomed the group, who were treated to a tour after a day of presentations, to KSC and the 45th Space Wing. Members of KSC's Environmental Program and the Future Vehicle and Advanced Program offices presented information on the X-34 program, Environmental Assessment (EA) process and the nature of KSC's unique operations and environmental requirements. The gathering was part of the EA process, which requires public involvement.

Silver Snoopies and Space Flight Awareness awards given in August

On Aug. 27, astronauts Joe Tanner and Heide Piper presented the prestigious Silver Snoopy Award to 10 KSC employees.

The recipients were:

NASA
Ronald Schlierf
Boeing
Doug Holden
Rocketdyne
Ralph Aaberg
Ensco, Inc.
Mark Wheeler

EG&G
Harry Binderup
Doug Duryee
Ken Hooks
Irv Stenner
Sue Tzareff
Tammy Williams

On Aug. 5, Bob Sieck, KSC's Director of Shuttle Processing, and Ed Adameck, USA Associate Program Manager, Ground Operations, presented three Space Flight Awareness team awards to the LC-39 Fiber Optic Replacement Team, the Flow Planning Team and the RPSF Crane Repair Team.

KSC firefighters honored

KSC firefighters were honored Sept. 10 by the Kennedy Labor Management Relations Council (KLMRC) with a plaque commemorating their hard work and dedication fighting Florida's flames earlier this year. The photograph on the plaque shows Fire Truck #50, seen here, that assisted the workers in battling raging fires in the heat of this summer's worst wildfires. Shown here with KSC firefighters are Larry Hall, division manager, Sherikon Space Systems, Inc. (holding plaque at left) and Gary Pritchard, assistant business manager, Sheet Metal Workers, Local Union 15 (fifth from right), both co-chairs of the KLMRC, who presented the award to the firefighting team. Rick English, standing left of Hall, represented KSC's Labor Relations Office during the presentation.

NASA honors outstanding minority contractors

NASA recognized three minority contractors Sept. 23 for their exceptional contributions to the nation's space program.

Dynamac Corporation, Rockville, Md., which won the Woman-Owned Small Business of the Year Award, was nominated by KSC.

Dynamac provides technical support for KSC's biological research and environmental monitoring programs, life science flight experiments, biomedical operations and Agencywide occupational health programs.

Dynamac was founded in 1970 by Diana MacArthur, CEO.

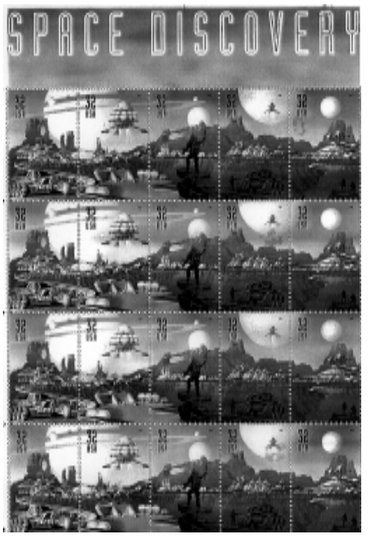
Symtech Corporation, Alexandria, Va., won NASA's minority contractor of the year, and Stanford Mu Corporation, Harbor City, Calif., was minority subcontractor awardee.

Awards are given annually to minority contractors who have demonstrated significant support of NASA's initiatives, but this is the first year that NASA has included the category for a woman-owned small business award.

Getting a lift before lifting off for Deep Space

The first stage of Boeing's Delta II rocket, which will be used to launch NASA's Deep Space 1 spacecraft, arrived at Pad 17A at Cape Canaveral Air Station on Sept. 11. Targeted for launch in October
, this first flight in NASA's New Millennium Program is designed to validate 12 new technologies for scientific space missions of the next century.

It's not airmail; it's space mail!



You can't yet send a letter to space, but you can witness history in the making when the United States Post Office celebrates its first day issue ceremony for the Space Discovery commemorative stamps at KSC's Visitor Complex Oct. 1.

The event will take place in the Shuttle plaza area at 11 a.m. The unveiling marks the beginning of National Stamp Collecting month and coincides with NASA's 40th anniversary.

Astronaut Donald Thomas will offer comments regarding his interest in stamp collecting and his four missions into space to about 200 students attending. Two students will share winning essays titled "What Space Will Be in Twenty Years."

The fleet reveals a new look

At left, morning shadows frame the orbiter Discovery on her rollover from the Orbiter Processing Facility (OPF) Bay 2 to the Vehicle Assembly Building on Sept. 14. After spending three months in the OPF undergoing prelaunch preparations for STS-95, the orbiter proudly displays the recently painted NASA “meatball” on the left wing and both sides of the fuselage. Discovery is the first orbiter in the fleet slated to launch with the official NASA insignia. The insignia on the wing measures 6 feet in diameter and the insignias on the left- and right-side mid-fuselage are 28 inches in diameter.

A worker paints the NASA logo on the port wing of the orbiter Endeavour, scheduled to launch in December for mission STS-88. The paint is a special pigment that takes 18 hours to dry; the whole process took approximately two weeks to complete. The NASA logo, termed “meatball," was originally designed in the late 1950s, and it symbolizes NASA’s role in aeronautics and space. The original design included a white border surrounding it, but the border was dropped for the Apollo 7 mission in October 1968 and replaced with royal blue to match the background of the emblem. All the orbiters in the fleet now bear the logo.

At left, Space Shuttle Discovery makes her final journey before launch as she rolls out from the VAB to launch pad 39B during the early morning hours of Sept. 21. The Shuttle is scheduled for its 25th flight on Oct. 29 at 2 p.m. The launch window is two hours and 30 minutes.

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 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, AB-F1. E-mail submissions can be sent to Susan.Maurer-1@ksc.nasa.gov

Managing editor. . . . . Bruce Buckingham
Editor. . . . . Susan Maurer

Editorial support provided by Sherikon Space Systems Inc. Writers Group.
NASA at KSC is on the Internet at http://www.ksc.nasa.gov

USGPO: 633-112/80015