

# Space News Roundup

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No.43

## Try another gate to avoid traffic jam

Saturn Lane improvements necessitate flexibility, patience

JSC security officials are asking employees to exercise patience and flexibility in dealing with traffic congestion at the intersection of Saturn Lane and Second Street, particularly in the mornings.

Although JSC turned over jurisdiction to the City of Houston just before Metro began its massive construction project, JSC officials are talking with local authorities to try to ease the congestion.

The electronic loop system that automatically adjusts traffic priori-

ties has been disabled because of the construction and is not expected to be reactivated until the work is completed after the first of the year. In the meantime, employees are urged to use alternate entrances to the site.

Less congested access may be available at the main gate on NASA Road 1, open 24 hours a day; at the NASA Road 1 and Third Street entrance, open from 6:45 a.m. to 6 p.m.; at the Space Center Boulevard and Avenue B east

entrance, open from 6:45 a.m. to 6 p.m.; and at the Space Center Boulevard and Avenue B west entrance, open from 5:45 a.m. to 8 p.m.

In the near future, the old Avenue E between Second and Third Streets will be closed and the new Avenue E just north of Bldg. 110 will be opened. This could cause additional congestion in the afternoons for outbound traffic if employees do not take advantage of other available gates.



JSC Photo by Benny Benavides  
Traffic backs up at Saturn Lane and Second Street as JSC employees head for work Tuesday morning.

## Goldin names three to high level positions

NASA Administrator Daniel Goldin has named three people to fill high level positions, two of them after a nationwide search.

Charles Pellerin becomes associate deputy administrator for strategic planning, John Dailey joins NASA as associate deputy administrator and Ralph Thomas becomes the first assistant administrator for small and disadvantaged business utilization.

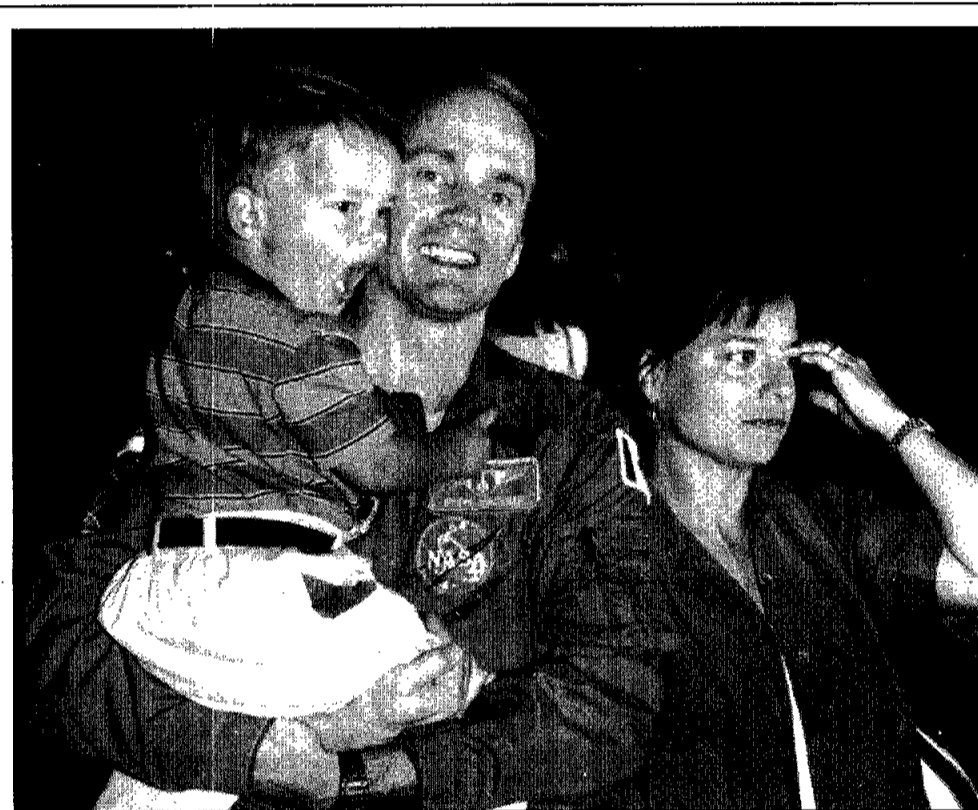
Pellerin, who will be responsible for creating a strategic plan to implement the agency's vision, mission and values, was most recently the deputy associate administrator for safety and mission quality and previously had been director of the Astrophysics Division. Dailey and Thomas were selected after a nation-wide search and review.

Dailey, who will plan and manage the institutional operations of NASA, was most recently the assistant commandant of the Marine Corps.

Thomas, who was executive director of the National Association of Minority Contractors, will be the first administrator of what only recently was a division. Goldin said the new office will ensure that NASA reflects the full diversity of America and that Thomas will "spearhead a determined effort to see that small and minority-owned businesses play a significant role in America's civil space and aeronautics programs."

Pellerin, who has been with NASA for some 25 years, first came to NASA Headquarters in 1975 to assist in the planning for shuttle utilization. He later managed the integration of payloads for the shuttle. In 1982, he moved to the Astrophysics Division, where he helped initiate a series of astrophysics telescopes called the "Great Observatories."

Dailey, who retired from the Marine Corps, Please see GOLDIN Page 4



JSC Photo by Mark Sowa  
Payload Specialist Steve MacLean is greeted by his 2-year-old son, Jean-Philippe, and wife, Nadine, during Sunday's welcome home ceremony at Ellington Field.

## Crew proud, but glad to be home

By Kelly Humphries

The crew of the Space Shuttle *Columbia* told friends, family and coworkers who gathered Sunday night at Ellington Field that their just-completed flight was anything but boring.

Rainy weather cleared up for the homecoming ceremony, which followed *Columbia*'s 8:05 a.m. CST Sunday landing at Kennedy Space Center's Shuttle Landing Facility by about 12 hours, and the crew arrived back home in Houston shortly after 8 p.m. All told, the crew spent 9 days, 20 hours, 56 minutes conducting a wide range of science experiments in orbit.

"We were not bored, we were working

pretty hard," said Commander Jim Wetherbee. "Shep (Mission Specialist Bill Shepherd) would be down there in the boiler room shoveling coal as fast as he could. He had a CVTE (Crystals by Vapor Transport) experiment with a computer up on the airlock door and he's be monitoring me in the LBNP (Lower Body Negative Pressure device) and making entries into another computer with the other hand and sliding over and doing something with this experiment. It was pretty amazing to watch — and everybody was doing the same thing."

"The best part about it is working with the

Please see STS-52, Page 4



## NASA adds veterinarian to SLS-2 crew

NASA has selected veterinarian Martin J. Fettman as the prime payload specialist for the second SpaceLab Life Sciences mission set for launch in August 1993.

"NASA's series of SLS missions play a central role in our program of space biomedical research," said Dr. Lennard Fisk, associate administrator for the space science and applications. "The experiments that Dr. Fettman and his fellow SLS-2 crew members conduct will give us valuable information on how living and working in space affects the human body."

Fettman, a professor in the Department of Pathology in Colorado State University's College of Veterinary Medicine, will join the previously named STS- 58 crew

consisting of Commander John Blaha, Pilot Richard Searfoss, Payload Commander Rhea Seddon and Mission Specialists Bill McArthur, Shannon Lucid and David Wolfe.

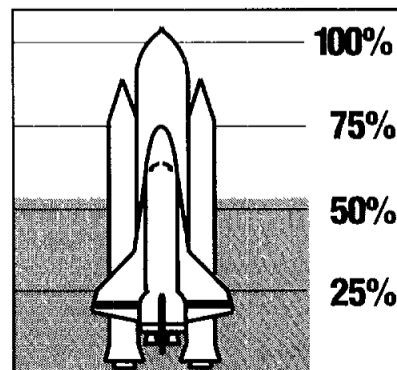
Jay Buckley, M.D., assistant professor at the University of Texas Southwestern Medical Center in Dallas, and Laurence Young, Sc.D., professor of aeronautics and astronautics at Massachusetts Institute of Technology, will serve as backup payload specialists and primary communicators with the payload crew during the 13-day mission.

SLS-2 is the second in a series of life sciences flights. In June, SLS-1 provided an opportunity for scientists to study the effects of weightlessness in a comprehensive inter-

related fashion using both human and animal subjects.

Most of the experiments assigned to SLS-2 are extensions of the data collection started on SLS-1. A total of 14 experiments will be flown, concentrating on the cardiovascular/ cardiopulmonary systems, neuroscience, regulatory physiology and the musculoskeletal system.

Several NASA centers and organizations are involved in the development of the SLS-2 payload. Human experiments are being developed by the Life Sciences Project Division at JSC. Gary McCollum is program manager, and Dr. Frank Sulzman is program scientist. Dr. Howard Schneider is mission scientist, and Kathryn Newkirk is mission manager.



## ISD worker wins first pair of CFC airline tickets

The winner of the first pair of Combined Federal Campaign airline tickets to anywhere in the continental U.S. went to Anne Modisette of the Information Systems Directorate.

Two more names will be drawn from a hopper containing the names of employees who have decided to contribute 1-hour's pay or more a month to the CFC. The tickets are provided at no cost to JSC by Continental Airlines.

So far, JSC employees have contributed more than \$223,000, or 53 percent of the \$440,000 goal. This year's CFC ends Nov. 10.

## Discovery rolls to pad on Sunday

By James Hartsfield

With *Columbia* home, attention at the Kennedy Space Center is now focused on *Discovery*, which is scheduled to be moved to Launch Pad 39A early Sunday.

*Discovery* was rolled from its processing hangar to the Vehicle Assembly Bldg. to be attached to the fuel tank and solid rockets for STS-53 Tuesday morning. It was hoisted vertical and attached in place Wednesday. Today, technicians are making a final check of electrical and mechanical connections between the solid rockets, fuel tank and spacecraft.

The crew of STS-53 — Commander Dave Walker, Pilot Bob Cabana, and Mission Specialists Guy Bluford, Jim Voss and Rich Clifford — will travel to KSC Thursday for a dress rehearsal countdown aboard *Discovery*. STS-53, a Department of Defense mission, is currently targeted for a launch during the first week of December, perhaps as early as Dec. 2. Shuttle managers are scheduled to meet for a final review of mission preparations Nov. 19.

Elsewhere at KSC, the fuel tank for STS-54, currently targeted for a mid-January 1993 launch, was attached to the twin solid rockets this week. *Endeavour* is scheduled to be rolled out of its hangar Nov. 20 to be lifted vertical and attached to them. This week, the STS-54 cargo, a NASA Tracking and Data Relay Satellite and inertial upper stage booster, was loaded into a protective payload canister to await loading aboard *Endeavour* once it moves to the launch pad around Dec. 1. The STS-54 crew — Commander John Casper, Pilot Don McMonagle, and Mission Specialists Greg Harbaugh, Mario Runco Jr. and Susan Helms — will travel to KSC this weekend to inspect *Endeavour*'s cargo bay.

Following landing last weekend, *Columbia* has been rolled to its processing hangar where experiments are being unloaded.





# Fundamental Successes

**STS-52 research surpasses many scientists' expectations as commercial experiments share spotlight with NASA's**



**Left: Mission Specialist Bill Shepherd works with the CVTE on Columbia's mid-deck. Below left: Pilot Mike Baker holds up a sketch made by Shepherd showing scientists on the ground how one of the crystals in the CVTE experiment was growing. Below right: An extreme close-up shows the coils used in the CVTE furnace to process cadmium telluride crystals.**

NASA Photo

All of the experiments performed on STS-52 may not have been as flashy or easily understandable as the crew's deployment of a satellite to measure the movement of the Earth's crust, but *Columbia's* mission was just as big of a success in other areas.

While the "telescience" experiments of the first United States Microgravity Payload beamed down real-time data on fundamental physics questions, commercially sponsored experiments examined medical and materials science questions that could lead to new treatments for diseases and faster computers.

"We were not bored, we were working pretty hard," Commander Jim Wetherbee said after landing. "Shep (Mission Specialist Bill Shepherd) would be down there in the boiler room shoveling coal as fast as he could. He had a CVTE (Crystals by Vapor Transport) experiment with a computer up on the airlock door and he's be monitoring me in the LBNP (Lower Body Negative Pressure device) and making entries into another computer with the other hand and sliding over and doing something with this experiment. It was pretty amazing to watch — and everybody was doing the same thing."

Both of the primary USMP-1 experiments in the payload bay — the Lambda-Point Experiment and the MEPHISTO directional solidification furnace — far exceeded their science objectives.

"The mission has been an unqualified success," Mission Scientist Sandor Lehoczky said. "Results obtained from these experiments are expected to make major contributions to the fields of condensed matter physics and materials science."

The Lambda-Point Experiment gleaned three times as much high-resolution data as was needed to test the Nobel Prize-winning theory that provides a mathematical explanation of how interactions at the atomic level can translate into large phenomena, said Principal Investigator John Lipa of Stanford University. The liquid helium used in the experiment made the transition from its mysterious superfluid state to a normal liquid state more than 90 times during the course of the flight as scientists on the ground used extremely precise thermometers to measure the change at the -456 degree Fahrenheit level.

"Our equipment and our ability to command it are even better than we had hoped they would be," said co-investigator Dr. Talso Chui. "This experiment is proving to be something of a pioneer in its field, and other condensed matter physicists already are

becoming interested in designing space experiments based on our success."

Dr. Jean Jacques Favier of the French Atomic Energy Commission said his MEPHISTO team obtained the first real-time data on directional solidification process in microgravity, and that the ability to command the instrument from the ground resulted in an extra three days of data collection.

The MEPHISTO team was able to take advantage of crew sleep periods to make final solidification on a part of its sample, then continued to make real-time measurements on another part during the day. This allowed the team to monitor the effects of shuttle maneuvers and crew movement on solidification.

The additional operating time rewarded the team with more than 30 melting and solidification runs instead of the planned 10.

And as the Lambda-Point and MEPHISTO scientists were collecting their data, the Shuttle Acceleration Measurement System team was providing a running account of just how much vibration was being created by maneuvers and crew activity. This was the first time that SAMS, which has flown five times before, was able to receive real-time and convey that information to other experiment teams.

"The way in which the science teams, Marshall Space Flight Center and Johnson Space Center engineers, and the STS-52 crew have worked together to accomplish the science goals of the mission has once again demonstrated the true NASA spirit of teamwork," USMP Program Manager Dave Jarrett said.

The commercially developed experiments onboard *Columbia* worked on equally important problems such as a potential treatment for osteoporosis, crystals that could increase the speed of computers or determine the molecular structure of a drug used in some cancers treatments, and the effects of microgravity on the human body.

"These experiments reflect the increasing interest and willingness of U.S. industry to invest and participate in commercial research using the benefits of microgravity to develop superior products and services," said Assistant Administrator for Commercial Programs Jack Mannix.

NASA's Office of Commercial Programs sponsored the experiments to support the agency's Commercial Development of Space initiatives.

The Physiological Systems Experiment-2 was a collaborative effort of Merck & Co. Inc., West Point, Pa., and the Center for Cell Research, a NASA

Center for the Commercial Development of Space at Pennsylvania State University, University Park, Pa.

"The goal of the experiment is to see if an experimental compound we're developing will prevent or slow osteoporosis from developing in microgravity during space flight," said Roy Walker, manager of scientific information with Merck & Co. "If it does, the compound may be a useful treatment for many people on Earth who suffer bone loss from being bedridden for long periods of time due to accidents or paralysis."

The experiment also may have direct application in space as a preventive measure for bone loss that might effect astronauts on extended flights.

STS-52 also was the first flight of the CVTE crystal growth furnace, which used a vapor transport process to produce cadmium telluride crystals that are expected to be as big as a dime. Previous crystal-growth facilities have been able to grow samples only as big as a pencil eraser.

"For the first time, shuttle astronauts are able to watch the crystals in the furnace and make adjustments during the process to grow the largest, purest and most uniform crystals possible," said Cindy Naucler, a member of the Boeing Defense & Space Group, Missiles & Space Division, Kent, Wash., team that developed the CVTE payload with NASA.

"This experiment is important to the semiconductor industry because the ability of semiconductors to process and store information is dependent on the quality of the crystals used," said Boeing CVTE Program Manager Barbara Heizer. "Large, uniform crystals grown during space flight may lead to greater speed and capability of computers, sensors and other electronic devices."

The Commercial Protein Crystal Growth experiment used a Protein Crystallization Facility to obtain high-quality crystals for drug research.

Using the PCF data, researchers studied the crystallization of the biologically important molecule, alpha-2b interferon, an anti-viral, anti-cancer agent with approval pending for several novel therapeutic uses, such as hepatitis, multiple myeloma and as an adjunct to AIDS therapy.

The results of research through Commercial Materials Dispersion Apparatus Instrumentation Technology Associates Experiments-1, which focused on how cell structure and function are altered in microgravity, could contribute to remedies for some physiological problems experienced by astronauts during space flight.

The problems include bone demineralization, muscle atrophy, cardiovascular deconditioning, reduced immune cell response and decrease in red blood cell count, according to Dr. Marian Lewis, a senior research associate at the University of Alabama in Huntsville and manager of CMIX-1. The CMIX-1 experiments were developed by the Center for Materials Development in Space, a NASA CCDS at UAH.

Some of the CMIX-1 experiments are using human, mouse and frog cells to learn how the human body responds to living in the weightless environment of space flight. The cells were maintained at a constant temperature and chemically stimulated to grow in microgravity.

"The information obtained from cell tests such as these may be crucial in preparation for Space Station *Freedom* where astronauts will have long-duration stays in space," Lewis said. "The results also may give clues about cell structure and function which potentially could improve treatment of osteoporosis, anemia and immune deficiencies on Earth."

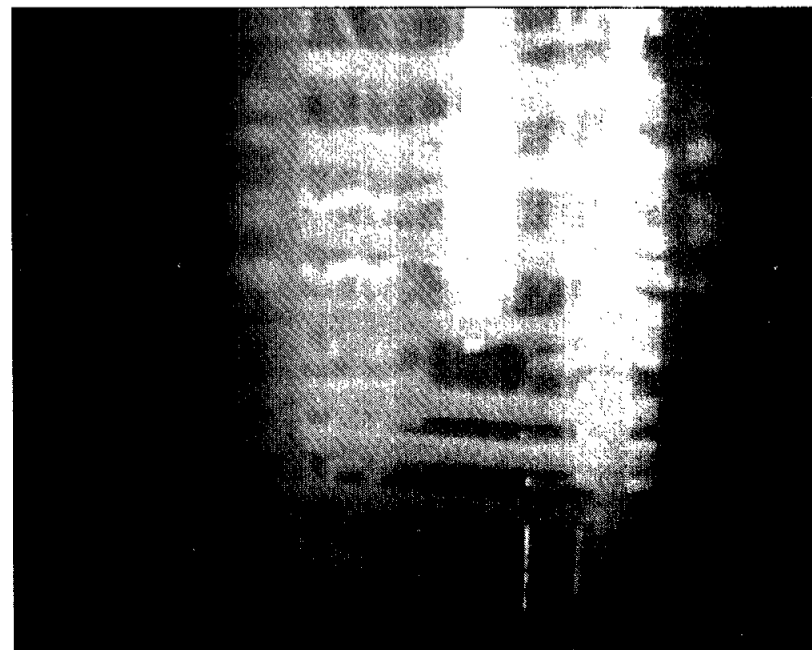
The UAH CMDS will conduct the majority of its experiments in two minilabs. The MDA, developed by Instrumentation Technology Associates Inc., Exton, Pa., is a brick-sized, automated device capable of mixing up to 100 separate samples of multiple fluids and/or solids at precisely-timed intervals.

In addition to the two MDAs used by the UAH CMDS, two others were used by ITA and its commercial customers. Their experiments include protein crystal growth, inorganic assembly, biomaterials processing, dye and yeast cell diffusion and engineering tests of the MDA.

Potential commercial applications of the ITA experiments are expected in environmental sciences, drug research and development, electronics and cell pharmacology.

ITA also is donating 5 percent of its MDA capacity to high school students in Florida, New Jersey, Pennsylvania, Virginia and Washington, D.C. The students hope to learn how the clotting process occurs in microgravity and how microgravity affects the early development of brine shrimp.

The UAH CMDS also conducted live cell investigations designed to gain information on how cells of the human immune system may be induced to grow when exposed to certain compounds. Once scientists discover how cells respond to these compounds in microgravity, techniques may be developed to select desirable cell types. □



# Stars in distant galaxy may be long-sought protogalaxy

A distant radio galaxy once thought to contain old stars — older than some estimates of the age of the universe — may instead be a very young system caught in the act of formation, astronomers report.

The finding, by Dr. Peter Eisenhardt of NASA's Jet Propulsion Laboratory, Pasadena, Calif., and graduate student Mark Dickinson of the University of California at Berkeley, was reported in the Nov. 1 issue of the *Astrophysical Journal* (Letters).

According to Eisenhardt and Dickinson, radio galaxy B2 0902+34

in the constellation Lynx previously mystified astronomers because its stars seemed to be much older than the universe itself.

The universe was about 1 billion years old when the light seen today left the galaxy, the astronomers say. Light from stars within the galaxy, however, suggested the stars were much older than 1 billion years at the time.

Astronomers believe the universe is about 13 billion years old.

"Our new finding resolves the problem of how these stars possibly could be older than the universe," said Eisenhardt.

"In fact," he added, "it now appears that this object may be a protogalaxy — one of the holy grails of astronomy." Since the 1960s, astronomers have been searching for examples of galaxies in the process of forming.

The previous estimate for the age of the stars in galaxy B2 0902+34 came from 1988 observations by Dr. Simon Lilly, then an astronomer at the University of Hawaii.

Lilly's measurement set the record for the most distant galaxy then discovered. At more than 10 billion light-years, B2 0902+34 is still among the most distant known

galaxies today.

Because astronomers were looking back across nearly 90 percent of the age of the universe in observing the light from the galaxy, B2 0902+34 should have been a very young galaxy. Yet Lilly found that the galaxy had a very red color, a sign of old age.

In their new observations at Kitt Peak National Observatory, Eisenhardt and Dickinson measured a color 10 times bluer for the galaxy, indicating its age is much younger than previously thought.

"The galaxy's color is so blue, as a matter of fact, that it is a good

candidate for a protogalaxy still in the process of forming the bulk of its stars," said Eisenhardt.

He said that the discrepancy between the new observations and Lilly's measurements is due in part to a problem with the infrared camera used by Lilly in 1988. In addition, Eisenhardt says the starlight is contaminated by emission from hot oxygen gas, which Lilly's report on the galaxy did not take into account.

Eisenhardt's and Dickinson's work is supported by funding from NASA Headquarters Office of Space Science and Applications.

## Grumman wins JSC information systems support contract

Grumman Technical Services Division of Titusville, Fla., has won the right to negotiate for JSC's five-year, \$300-million Information Systems Contract for all non-mission computing services.

The subsidiary of Grumman Corp., Bethpage, N.Y., will provide data systems maintenance and operations, personal workstation installation and maintenance, networks and telecommunications services and program integration and

development for the institutional requirements of the center beginning Jan. 1, 1993.

The contract will be awarded on a cost-plus-award fee basis.

The contract work covers Federal Information Processing resources in support of institutional systems at JSC and includes virtually all computing work other than direct mission support.

Computer Sciences Corp. currently holds the contract.

## Total Quality programs to be shown next week

Shuttle Management and Operations Director Jay Honeycutt will host a NASA Continuous Improvement Colloquium next week.

Honeycutt's discussion, at noon Thursday in Teague Auditorium and on JSC Television Distribution System Channel 4, will focus on shuttle processing improvements at Kennedy Space Center.

Also beginning next week is a two-week series of videos from the W. Edwards Deming Tape Library that will be shown in various locations. The educational series by one of the leading Total Quality implementation philosophers, will be shown daily at noon starting Monday. All civil servants and contractors are invited. The schedule is as follows:

Monday — "The New Economic

Age," Bldg. 12, Rm. 256.

Tuesday — "The 14 Points," Bldg. 1, Rm. 360A.

Thursday — "Corporate Leadership," Bldg. 30 Auditorium.

Friday — "Adoption of the New Philosophy," Teague Auditorium.

Nov. 16 — "Communication of the New Philosophy," Bldg. 30 Auditorium.

Nov. 17 — "Application of the New Philosophy," Teague Auditorium.

Nov. 18 — "How Managers and Workers Can Change," Teague Auditorium.

Nov. 19 — "Cooperation — The Key to Quality," Teague Auditorium.

Nov. 20 — "The Dangers of Burying on Price Alone," Bldg. 30 Auditorium.

For more information, call E. Edwards at x34228.



JSC Photo by Robert Markowitz

**DIRECTORS ALL** — A packed house at the NASA Alumni League-sponsored Space Exploration '92 conference listens to a panel discussion featuring the leaders of all eight NASA field centers. From left are Victor Peterson, deputy director of Ames Research Center; Dr. John Klineberg, director of Goddard Space Flight Center; JSC Director Aaron Cohen; Robert Crippen, director of Kennedy Space Center; Pual Holloway, director of Langley Research Center; Lawrence Ross, director of Lewis Research Center; Thomas Lee, director of Marshall Space Flight Center; and Roy Estess, director of Stennis Space Center.

## Space Station Control limits access

### Security card readers to be activated Monday

The new Space Station Control Center will become a controlled access area effective Monday, according to JSC security officials.

Card readers in Bldg. 30S will be activated and CAA cards will be required for access past the lobby of the building. Conference Rm. 1352 will remain accessible from

the lobby without a CAA card and will be used for meetings scheduled by the Flight Director Office.

Anyone who now has unescorted access to the Mission Control Center or the Space Station Computer Facility will have SSCC access added automatically to their CAA cards.

Anyone else who requires access to the building must present a completed JSC Form 722 to the Bldg. 30 badging office for processing.

A list of those who are authorized to sign as the approving official on JSC Form 722 is available in the Bldg. 30 badging office.

# STS-52 crew thanks co-workers for helping carry fire

(Continued from Page 1)

people and getting ready for the flight," he added. "Even the meetings were fun because we had a purpose, we had a mission. And I'm looking forward to going back to some more meetings."

*Columbia's* picture-perfect landing at KSC capped a mission that went to the fundamental heart of research in superfluid dynamics, crystal growth, human physiology in zero gravity and machine vision systems.

After launching Laser Geodynamics Satellite-II early in the flight, the crew turned its attention to a host of middeck investigations and to a detailed evaluation of the Canadian-developed Space Vision System that is the precursor of

robotic vision that will help build and maintain Space Station *Freedom*, as well as lunar and Mars bases of the future.

"We had a great crew, a great flight, and as usual I've got to say that we owe it to the great team here at JSC and KSC and throughout the country," said Pilot Mike Baker. "We obviously could not have done it without you and we appreciate your help."

Mission Specialist Lacy Veach guided what Canadian Payload Specialist Steve MacLean called the "Canada arm" and the domino-like Canadian Target Assembly through a series of movements that will be used during space station assembly and Hubble Space Telescope repair missions as

MacLean followed along with the SVS, sending life-like computer graphics back down to the ground. They released the CTA early Saturday morning and tracked it as it drifted away from *Columbia* toward an atmospheric reentry and destruction about a day later.

"I see happy faces out there in the lights, and there are a lot of happy faces here behind me, too, and I know thousands of other happy faces all over this country and other countries tonight" Veach said, "because once more we've gone into harms way and come back with a lot of good science."

"All of us will always remember that we all pulled together and carried fire just one more small step in this fantastic adventure, the

greatest adventure that humankind has ever undertaken," he added.

"It really was something special," said Canadian Payload Specialist Steve MacLean. "I really feel proud of what we did and what we achieved, and I really look forward to using the systems that we have on station and perhaps on the Moon and Mars in the future."

Mission Specialist Bill Shepherd shared his experience of looking at the vast expanse of Africa from 113 nautical miles up with its huge red sand dunes stretching out for a hundred miles in every direction. Wetherbee and Baker had taken *Columbia* to the unusually low orbit to maximize lighting conditions for landing and to facilitate studies of Orbiter Glow as it passed through

high-velocity atoms.

"There wasn't a thing on there that I could see that I could look at and say man made that or man's here. It struck me at that moment that this could be some other planet. This could be some other place in the universe, Shepherd said. "I think great things are possible in the space program, and I'm proud to be part of the team that makes that happen. These things are within our grasp and let us go reach for them."

"I'm very proud of what we accomplished on STS-52, but it is really nice to be home," said Mission Specialist Tammy Jernigan.

The crew is scheduled to brief employees on the mission at 1 p.m. Nov. 16 in Teague Auditorium.

## JSC expo to court small businesses

JSC and its major contractors will host a Small Business Expo on Nov. 20 to learn what small, small disadvantaged and women-owned small businesses can do for them.

The expo, which will run from 9 a.m. to 2 p.m. at the Gilruth Center, is designed to create new markets for suppliers and new sources for buyers and JSC organizations. The expo will allow small businesses to identify current business opportunities and who they should contact, and explain NASA purchasing procedures.

It also will help the hosts identify and screen new competitive sources of quality products and services to help NASA achieve its goal of awarding at least 8 percent of its contracts to socially and economically disadvantaged businesses by the end of fiscal 1994.

Thirty-eight booths will be manned by representatives from JSC and its prime contractors. The expo is free and all small businesses are invited to attend.

For more information, call Barbara Kirkland at x34512.

## Space News Roundup

The Roundup is an official publication of the National Aeronautics and Space Administration, Lyndon B. Johnson Space Center, Houston, Texas, and is published every Friday by the Public Affairs Office for all space center employees.

Editor ..... Kelly Humphries  
Associate Editor ..... Kari Fluegel

## Annual pecan harvest next week

The Employee Activities Association will sponsor its annual harvest of the pecan grove along JSC's south side from 9 a.m. to noon Nov. 14.

Free tickets will be available at the Bldg. 11 Exchange Store starting Monday, with one ticket per NASA

badged civil service or contractor employee being distributed on a first-come, first-served basis. The tickets will be exchanged for collecting bags at the pecan orchard the morning of the harvest. For more information, call Ginger Gibson at x30596.

## Goldin announces high-level appointments

(Continued from Page 1)

Corps in September, served as president of the Armed Forces Staff College from 1987-89.

Thomas received a degree from

Harvard Law School in June 1978. After working in a law firm for two years, he became an instructor in clinical law at George Washington University National Law Center.