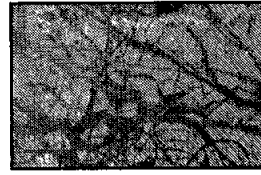




Surfing survey

The *Space News Roundup* conducts a survey on how the Internet helps employees on the job. Story on Page 3.



Icy Europa

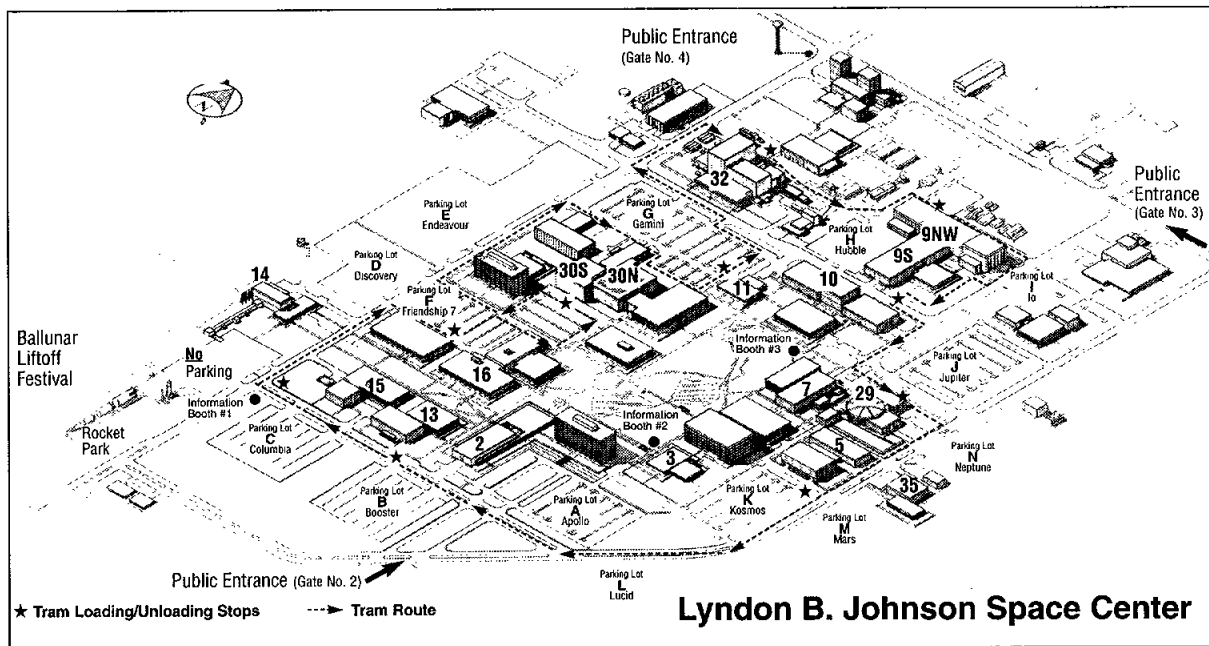
Images from Galileo spacecraft show possible liquids on Jupiter's moon Europa. Story on Page 4.

Space News Roundup

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No. 32



Lyndon B. Johnson Space Center

Visitors to JSC's open house will have access to more buildings this year. Buildings that will be open are numbered in the map above. Trams will circle JSC and stop at designated locations. Presentations in Teague Auditorium will focus on Americans in Space, Building for the Future. Guests also will have access to Ellington Field and the Neutral Buoyancy Laboratory at the Sonny Carter Training Facility.

Atlantis rolls to pad next week

Remating complete as crew gears up for dress rehearsal

With blastoff of the fourth Mir docking flight on track for next month, engineers at Kennedy Space Center this week finished remating the shuttle *Atlantis* to a new set of solid rocket boosters and fuel tank, setting the stage for its return to Launch Pad 39A next Tuesday.

Atlantis was outfitted with new boosters and a tank after NASA managers decided last month to delay the STS-79 mission to replace suspect boosters and increase the margin of safety. After it is rolled back to its launch pad, *Atlantis* will await the arrival of STS-79 astronauts on Aug. 28 for a dress rehearsal of the countdown that will lead to their launch around Sept. 12.

Commander Bill Readdy, Pilot Terry Wilcutt and Mission Specialists Jay Apt, Tom Akers, Carl Walz and John Blaha will fly to KSC on Aug. 25 for Terminal Countdown Demonstration activities.

Blaha spent the week back in Russia, brushing up on Mir systems and language training, as he prepared for a four and a half month stay on Mir to succeed Shannon Lucid, who is wrapping up her 21st week in space.

Blaha flew to Kazakhstan and the Baikonur Cosmodrome Thursday to view Saturday's scheduled launch of his future crew mates, Mir 22 Commander Valery Korzun and Flight Engineer Alexander Kaleri, who, along with French Researcher Claudie Andre-Deshays, will blastoff on a Soyuz TM-24 rocket for a docking with Mir on Monday.

Korzun and Kaleri will join Lucid aboard Mir and then will be joined by Blaha once *Atlantis* reaches Mir next

month. Andre-Deshays will return to Earth on Sept. 2 with Mir 21 Cosmonauts Yuri Onufrienko and Yuri Usachev after two weeks of scientific research. Lucid will return home with the STS-79 crew at the completion of *Atlantis*' joint docking mission, leaving Korzun, Kaleri and Blaha aboard Mir for the rest of the year.

Meanwhile, *Columbia* is receiving refurbished main engines as preparations continue for its launch around Oct. 31 to deploy a pair of satellites and to conduct a pair of space walks. *Columbia*'s five-person crew—Commander Ken Cockrell, Pilot Kent Rominger and Mission Specialists Tammy Jernigan, Tom Jones and Story Musgrave—will spend 16 days in orbit.

STS-80 will mark the third flight of the Wake Shield Facility that flew on STS-60 and STS-69 and the second flight of the Orbiting Retrievable Far and Extreme Ultraviolet Spectrometer, or ORFEUS-SPAS, satellite which flew on STS-51. The saucer-shaped WSF is designed to fly free of the shuttle, creating a super vacuum in its wake to grow thin film wafers for use in semiconductors. The ORFEUS-SPAS will study the origin and makeup of stars.

Astronauts Jernigan and Jones will conduct a space walk to test hardware aimed at refining assembly techniques for the International Space Station.

Discovery is undergoing routine work as technicians ready it for launch next February on the second Hubble Space Telescope servicing mission. *Discovery*'s astronauts continue space walk training and mission research, led by veteran Commander Ken Bowersox.



JSC open house provides close up look of space

By Steve Nesbitt

JSC employees will open the doors of NASA's laboratories, training facilities and Mission Control Center and welcome the Houston community behind the scenes of the nation's space program during the second annual JSC Open House on Aug. 24.

The JSC Open House is a once-a-year opportunity for the public to get a close-up look at the space program's activities and operations. This year, 18 on-site buildings, plus JSC's aircraft operations at Ellington Field and the new Sonny Carter Training Facility, will be open for inspection. Favorite activities from last year have returned and more interactive demonstrations have been added.

The Open House, scheduled for 9 a.m.-4 p.m., is free to the public. Visitors may enter the center through three gates not normally open to the public—on NASA Road 1 just east of Saturn Blvd., on Space Center Blvd. near Bay Area Blvd. and on Space Center Blvd. near NASA Road 1. Parking in JSC lots will be available at no charge.

Open House guests will be able to see the simulators where astronauts train to fly the space shuttle and work aboard the International Space Station; tour the new Mission Control Center; inspect aircraft at Ellington Field; see the new Neutral Buoyancy Lab in the Sonny Carter Training Facility where astronauts will practice space walks for future missions; watch a demonstration of the suits used in space walks by both the U.S. and Russian space programs; and view a Martian meteorite.

Also during the day, JSC astro-

nauts, engineers and scientists will give presentations highlighting JSC's achievements since the 1995 Open House. All presentations will be in the Teague Auditorium. The schedule is:

9:30 a.m. "Go for Orbit Ops: Shuttle Highlights from the Past Year." Astronaut crew members from six different shuttle missions discuss their missions.

10:30 a.m.

"Close Encounters in Space: Shuttle/Mir Rendezvous Highlights." Astronauts and flight directors discuss the most recent shuttle missions to rendezvous with the Russian Mir Space Station.

11:30 a.m. "Living and Working on Mir: Space Station Phase I." Program managers and crew members discuss

the first step toward the International Space Station—the flight of Astronauts on the Russian Mir Space Station.

1 p.m. "Life Out There: Findings from a Martian Meteorite." The scientists who recently discovered evidence of primitive life in a Martian meteorite will discuss their work.

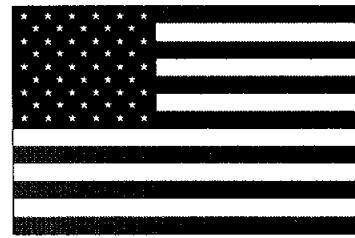
2 p.m. "Space Technology in Your World: Real-Life Applications of NASA Technology." Dr. Michael DeBaKey from the Texas Medical Center joins other scientists and engineers in discussing the impact of space technology on the field of medicine and in other areas of daily life.

3 p.m. "The Road Ahead: Exploration and Development." Space Veteran John Young and others discuss returning to the moon and future space exploration.

Other events include educational activities for children, autographing. Please see **OPEN**, Page 4

JSC Open House

TEAM NASA



JOHNSON SPACE CENTER

1996

Crew members named to life science mission

Two mission specialists have been named to a 16-day space shuttle mission dedicated to gather information on how humans and animals adapt to space and the ability of humans to survive in a microgravity environment for an extended period of time.

Astronauts Rick Linnehan and Dave Williams of the Canadian Space Agency are the first crew members named to support the STS-90 Neurolab mission, scheduled for launch in March 1998. The remaining crew members will be named at a later date.

Investigations during the Neurolab mission will focus on the effects of microgravity on the nervous system. Specifically, experiments will study the adaptation of the vestibular system and space adaptation syndrome, the adaptation of the central nervous system and the pathways which control the ability to sense location in the absence of gravity, and the effect of microgravity on a devel-

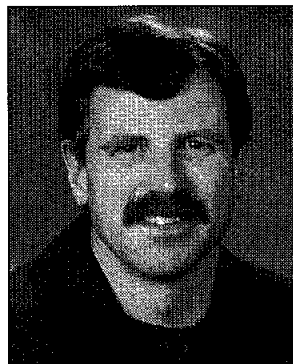
oping nervous system.

Selected by NASA in March 1992, Linnehan was assigned to flight software verification in the Shuttle Avionics Integration Laboratory. He was subsequently assigned to the Astronaut Office Mission Development Branch, working on payload and mission development flight support for future space shuttle missions. Linnehan flew previously on *Columbia*'s record setting 17-day Life and Microgravity Science mission in June-July 1996.

Williams was selected by the Canadian Space Agency in 1992 and appointed manager of the Missions and Space Medicine Group within the Canadian Astronaut Program. In January 1995, Williams was selected to join the international class of NASA astronaut candidates. Williams is presently working technical issues for the Payloads Habitability Branch. Williams will be making his first flight into space.



Linnehan



Williams

Mir 22 backup crew to launch

The Mir 22 backup crew will be pressed into service for a Saturday launch to the Russian Mir Space Station after doctors diagnosed a possible health problem in primary Commander Gennady Manakov.

Mir 22 Commander Valery Korzun and Flight Engineer Alexander Kaleri replaced Manakov and Pavel Vinogradov after Manakov failed to pass a preflight electrocardiograph test for unspecified reasons. Vinogradov now becomes the flight engineer for the Mir 24 mission next June and will be joined by veteran Mir Commander Yuri Gidzenko.

Korzun and Kaleri, along with French Researcher Claudie Andre-Deshays, will blastoff on a Soyuz TM-24 rocket approximately 8:18 a.m. Saturday from the Baikonur launch site in Kazakhstan, docking with Mir on Monday.

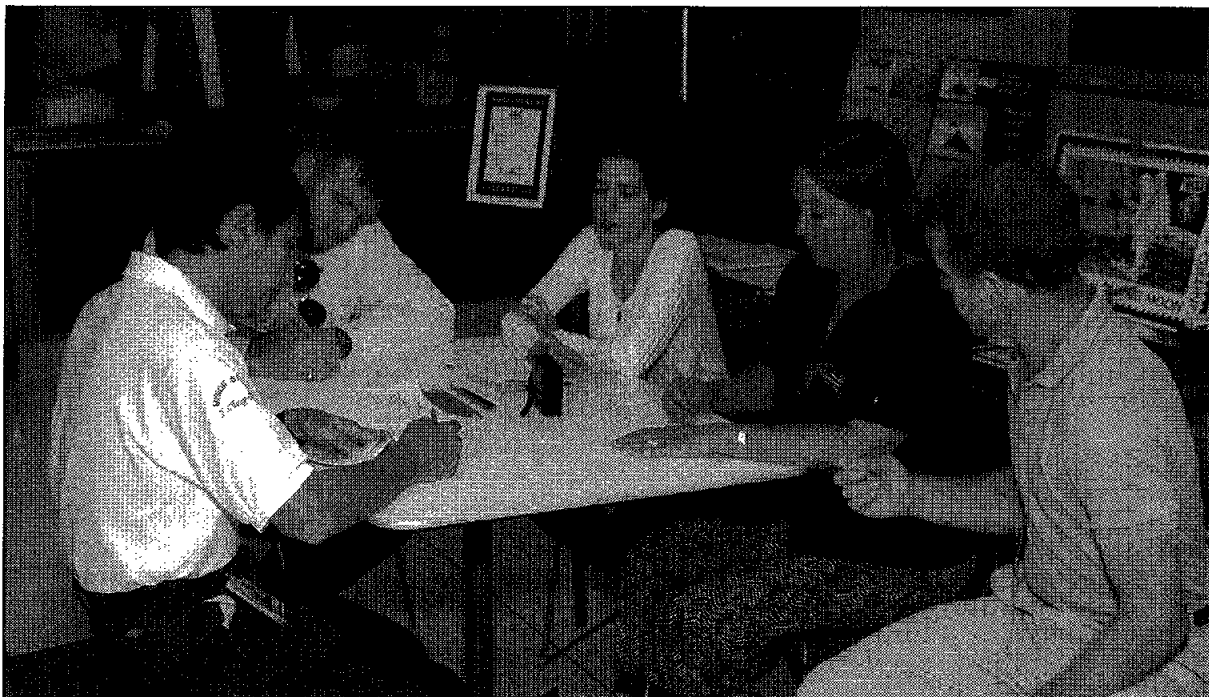
"That will be a very exciting time here on station Mir," said Cosmonaut Researcher Shannon Lucid in an interview earlier this week. "French Cosmonaut Andre-Deshays will be here and we will be doing all of the various French experiments, and that will be very exciting."

Astronaut John Blaha, who has been in Russia this week brushing up on Mir systems and language training, will join the Mir crews once *Atlantis* reaches Mir during STS-79. Andre-Deshays will return to Earth on Sept. 2 with Mir 21 Commander Yuri Onufrienko and Flight Engineer Yuri Usachev after two weeks of scientific research. Lucid will return home with the STS-79 crew at the completion of *Atlantis*' joint docking mission, leaving Korzun, Kaleri and Blaha aboard Mir for the rest of the year.

Please see **LUCID**, Page 4



LUCID



JSC Photos by Mark Sowa

The *Space News Roundup* editors conduct a survey in the Bldg. 3 cafeteria on how the Internet helps employees on their job. From left are Astronaut Franklin Chang-Diaz, Ken Jenks of Engineering, Natasha Calder and Karen Schmidt of the Roundup and Steve Sokol of the Spaceflight Meteorology Group.

Surfing Survey

Space News Roundup survey results show Internet helpful on the job

By Karen Schmidt

Surfing the net does increase productivity according to JSC employees who completed a recent *Space News Roundup* survey.

SNR editors spent time recently in the JSC cafeterias asking employees how the Internet helps them on the job. Results on the 75 surveys collected were overwhelmingly positive that the variety of Internet services help engineers, scientists, secretaries and managers perform their job tasks more efficiently than in the past.



supports Payload Operations in Mission Operations. "Using the Internet we had a very quick turn around with checklist updates, payload flight data file changes, experiment updates and procedure updates. It was much faster than the old

'I have to do extensive research on advanced imaging techniques. The Internet is where the latest technology information is. It is an extremely useful tool that dramatically speeds up research.'

—Dan Willett
Information Systems Office engineer

"I have quite a lot of contacts world wide," said Astronaut Franklin Chang-Diaz. "The Internet helps work payload and other space related issues quickly."

The majority of employees said they use the Internet for research on a wide variety of topics including emergency management, legal, directives, specifications, data bases and project status.

Surprisingly, the most popular feature at JSC is the electronic phone book. When asked how they use the net, "looking up phone numbers for JSC employees," was the most frequent answer employees gave. The second most popular item on the Internet with employees that were surveyed was the Shuttle Web Home Page. Employees use the web site to obtain information about past, current and future flights.

"I can check newspapers at remote locations and get first hand knowledge of emergency situations," said Bob Gaffney, emergency coordinator at JSC. "It's helpful to review other emergency response teams' incidents so that we learn from their experience."

A majority of employees surveyed use the Internet to exchange information with other NASA centers.

"During STS-78, payload support activities required fast coordination of documents with Marshall Space Flight Center," said John McKenna, a USA engineer that

rules for other managers and calendars for conferences. Other employees who took the time to fill out the survey gave specifics on their job and how the Internet helps to reduce time and provide the latest technological information on their discipline.

"I have to do extensive research on advanced imaging techniques," said Dan Willett, an engineer in the Information Systems Office. "The Internet is where the latest technology information is. It is an extremely useful tool that dramatically speeds up research."

"I no longer have to wait days or even weeks for new releases of evaluation software I am testing," said Tammy Hoke, an electronic forms specialist for Hernandez Engineering. "Now I can usually access vendor websites and download test software immediately. Here on site, I can also search an on-line listing of official JSC forms, and even download and fill in some of them right from the web. Internet access has tremendously enhanced my

work efficiency."

"I now have access to the most up-to-date electronics industry services and parts specifications," said David Smith, a printed circuit designer for Rothe Development. "By having this access, I can reduce or eliminate re-work by obtaining exact layout data for thousands of new components."

Other employees use the Internet for interactive discussions with others in their field, document storage and even use it as an encyclopedia. More than 50 different reasons were given for how the Internet helps employees do their job better.

The survey consisted of 11 questions pertaining to the employee and the Internet. The survey asked how many employees use the Internet, with only 19 percent responding they never use it. An overwhelming 81 percent use it in one



percent did not give a response. The survey also asked how often employees log on to other NASA centers and 22 percent said daily, 51 percent weekly, 7 percent monthly and 20 percent did not give a response.

Employees also were asked what other Internet services—besides the World

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—David Smith
Rothe Development printed circuit designer

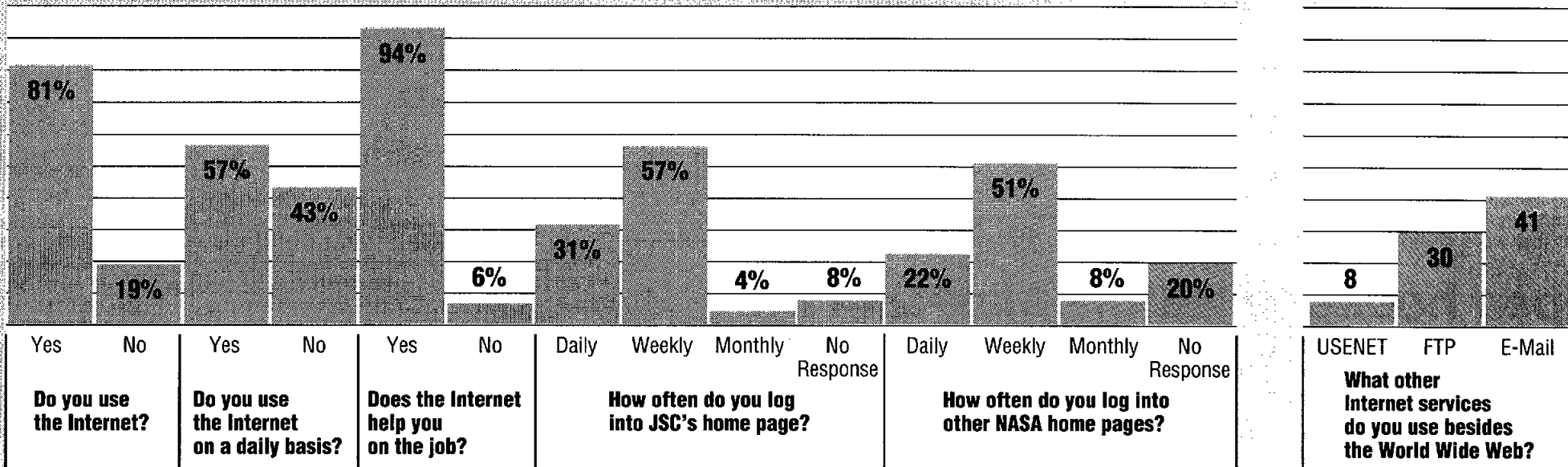
Wide Web—they use. The survey provided three choices—Electronic Mail, File Transfer Protocol and Usenet. Results showed the majority of those who use the Internet use e-mail, slightly less use FTP and only a few use Usenet. Some employees used more

than one of these services while others used none.

Employees also were asked to provide final comments at the end of the survey. Responses varied from requests that calendars, schedules and travel information be kept more up to date, to requests for updated equipment so that employees could more fully use the services the Internet provides. Employees also asked for direction and/or rules on how they can use the services without violating any laws or JSC directives, and get the most out of the time spent on the Internet.

The majority of survey responses were positive and employees commented that they may not have access to some information if it were not for the Internet. They also felt it saved time and money by increasing their productivity and research skills. JSC's Management Directives Officer Alice Ayala summed up her survey best, "Utilization of the Internet is helping us become a paperless office." □

Working on the NET



Europa harbors possible 'warm ice'

Tantalizing images of Jupiter's moon Europa from NASA's Galileo spacecraft indicate that "warm ice" or even liquid water may have existed, and perhaps still exists today beneath Europa's cracked icy crust.

"These fantastic new images of an icy moon of Jupiter are reminiscent of the ice-covered Arctic Ocean on our planet," said NASA Administrator Daniel S. Goldin. "The lack of craters, the cracks and signs of movement, all indicate that this might be young ice on a dynamic surface. It raises the possibility of a liquid ocean on Europa, the only other place in our solar system where we suspect such an ocean might exist."

"The pictures are exciting and compelling, but not conclusive. The potential for liquid water on Europa is an intriguing possibility, and

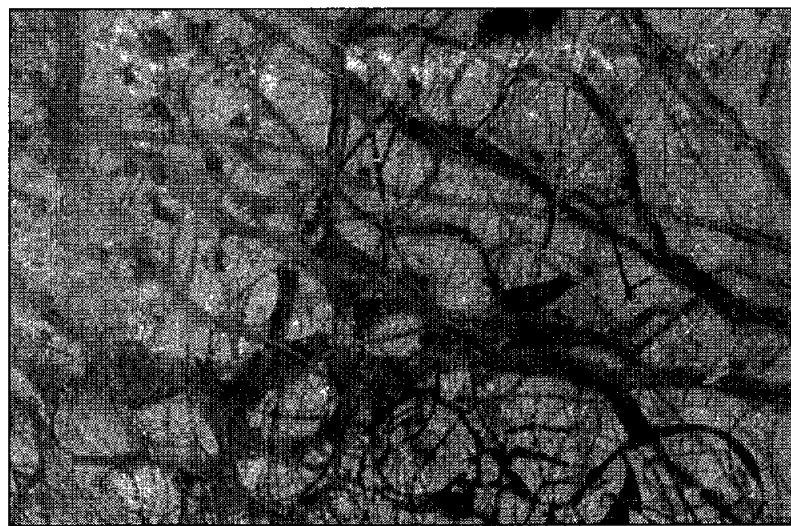
another step in our quest to explore the solar system, the stars, and the answer to the great mystery of whether life exists anywhere else in the cosmos," Goldin said.

Galileo scientists are poring over images that show places on Europa resembling ice floes in Earth's polar regions, along with suggestions of geyser-like eruptions and details of long dark bands centered with white stripes that stretch like interstate highways across Europa's face.

"This moon is a marvelous place," said Ronald Greeley, an imaging scientist and a geologist at Arizona State University. "We're seeing evidence of a lot of geological activity on Europa. In some areas, the ice is broken up into large pieces that have shifted away from one another, but obviously fit together like a jigsaw puzzle," Greeley said. "This

shows the ice crust has been or still is lubricated from below by warm ice or maybe even liquid water."

The results bring scientists closer to determining whether Europa has "niches" warm and wet enough to host life, Greeley said. Europa is about the size of Earth's Moon and is covered with smooth white and brownish-tinted ice, instead of large craters like so many other bodies in the Solar System. Scientists believe its cracked cue-ball appearance is due to stressing caused by Jupiter's strong gravity. They speculate that the warmth generated by tidal heating may have been sufficient to liquefy some portion of Europa's icy covering. Europa has long been considered by scientists as one of the handful of places in the Solar System where primitive forms of life could possibly exist.



Jupiter's moon Europa displays features in some areas resembling ice floes seen in Earth's polar seas. Europa, about the size of Earth's moon, has an icy crust that has been severely fractured, as indicated by the dark linear, curved and wedged-shaped bands. These fractures have broken the crust into plates and areas between are filled with material that is probably icy slush contaminated with rocky debris.

New training initiative to enhance secretarial skills

JSC has implemented a new training and development initiative for JSC secretaries.

Designed to focus on basic skills, this initiative outlines a comprehensive approach to training, enabling secretaries to become more versatile in their skills, remain proficient in leading edge office technologies and increase their competitiveness for future positions.

Members of senior staff, the secretarial council—comprised of directorate-level secretaries—and training coordinators were briefed in separate presentations on the newly designed training program. It includes a revamped training curriculum and a new program called the Communication Skills Building Blocks series. The new training curriculum emphasizes basic skills development, enhancement and refinement, and features required core courses as well as optional

supplemental courses.

The Communication Skills Building Blocks series is designed to ensure that secretaries possess the basic grammar and composition skills necessary to meet current and emerging demands. It consists of 14 three-hour modules, that all secretaries will be required to take. Those who feel they already possess the skills covered in one or more of the modules, may place out of courses by completing a skills assessment.

Nancy Garrick of the Human Resources Development Branch will be contacting organizations over the next several weeks to schedule secretaries for this series as well as to provide more information about the placing-out process. Employees who have questions regarding the new training and development initiative for JSC secretaries can call Garrick at x33076.

Two former employees die

Two former JSC employees, Scott Simpkinson and Carl Huss, died last week. Services for both were Wednesday.

Simpkinson died Aug. 8 after a lengthy illness. He was a former assistant program manager of the Apollo Spacecraft Program and author of several papers on the Apollo and Gemini programs. He received more than 30 awards for his extra efforts during the manned and unmanned U.S. space programs including NASA's Outstanding Leadership Award and Exceptional Service Medal. He retired in 1982 after 38 years of service.

Donations may be made on Simpkinson's behalf to Ed White Memorial Youth Center at P.O. Box

992 Seabrook, Texas 77586.

Carl Huss died Aug. 8 of natural causes in Nashville, Tenn., assisting the Confederate Air Force Gulf Coast Wing on its summer tour. Huss was the original retro fire officer in the Mercury Program. He also worked in the Mission Planning and Analysis Division. He retired from JSC as chief of the Institutional Data Systems Division in 1982. Huss earned many awards including the Presidential Medal of Freedom and NASA's Outstanding Leadership Medal.

Donations on behalf of Huss may be made to the Confederate Air Force, Gulf Coast Wing c/o Jack Amuny 16323 Craighurst Houston, Texas 77059.

Langley gets new director

Jeremiah Creedon has been named director of NASA's Langley Research Center.

"NASA is fortunate to have a man of Dr. Creedon's caliber to take the helm of the Langley Research Center," said NASA Administrator Daniel S. Goldin. "I am confident Dr. Creedon's extensive experience and first-hand knowledge of aeronautics research will serve him well in this new position."

Creedon succeeds Paul Holloway,

who after 36 years at Langley, announced that he would step down as director as soon as a replacement was found.

Creedon, 56, is the seventh director of Langley since the center was established in 1917. Prior to being named director, Creedon was director of the Airframe Systems Program Office. Until February 1996, he was director of the Aeronautics Program Group, a position he had held since February 1994.

NASA bowling league starts soon

The NASA mixed bowling league begins its 1996-97 season this month, running from Aug. 27-May 6.

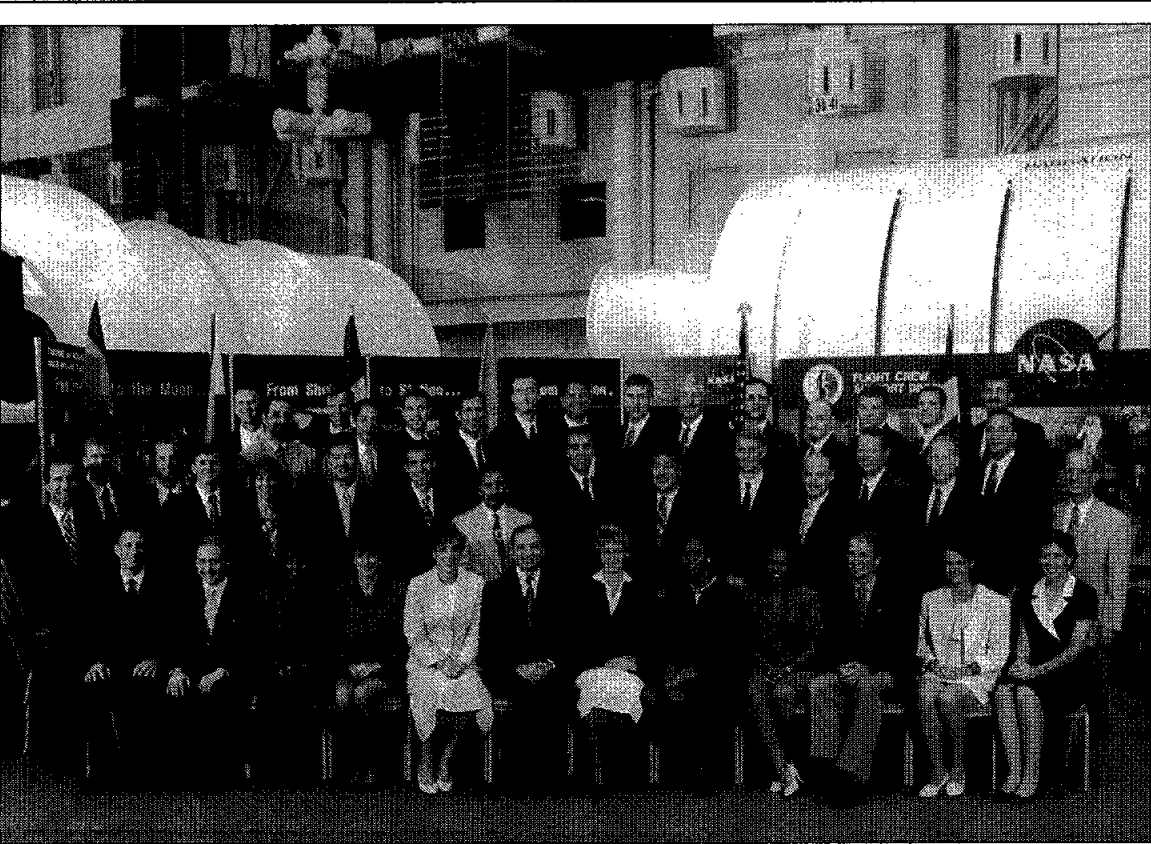
The league, which currently bowls at 6 p.m. on Tuesdays at the Alpha Bowl on Bay Area Blvd., has a split-season with two 17-week halves. The winners of each half of the season bowl in a play-off to determine first and second place.

Last season the league was comprised of 18 teams with five bowlers per team. The majority of the league members are active or retired NASA employees or immediate family

members or contractors.

In this handicap league, prizes are awarded to the first, second and third place teams and to individuals for high series and high game. Point money also is awarded to each team based on total points won at the end of the season.

For more information, interested bowlers may contact any of the league officers for the upcoming season: President Dennis Perrin at x33134, Vice President Vanessa Buster at 282-3642 and Secretary/Treasurer Leona Kain at 282-2544.



JSC Photo by Benny Benavides

ASCANS ARRIVE—Forty-four astronaut candidates arrived at JSC Monday to begin a period of training and evaluation. This year's class, the largest in the history of shuttle astronauts, consists of 10 pilot and 25 mission specialist candidates selected from more than 2,400 applicants. In addition, a cadre of international astronaut candidates, representing the Canadian, Japanese, Italian, French, German and European Space Agencies, are included in the '96 class. Following a year of evaluation and training, the astronauts will receive technical assignments within the Astronaut Office to further prepare them for shuttle flight assignments. Back row from left are, Christopher Loria, Umberto Guidoni of the Italian Space Agency, Christer Fuglesang of the European Space Agency, Mamoru Mohri of the Japanese Space Agency, Stephen Frick, John Herrington, Philippe Perrin of the French Space Agency, Paul Lockhart, Lee Morin, John Phillips, Donald Pettit, Scott Kelly, James Kelly, Paul Richards and Daniel Burbank. Middle row from left are Fernando Caldeiro, William McCool, Jeffrey Williams, Rex Walheim, Lisa Nowak, Soichi Noguchi of the Japanese Space Agency, Duane Carey, Charles Camarda, Richard Mastracchio, Daniel Tani, Piers Sellers, Mark Kelly, David Brown, Patrick Forrester, Michael Massimino and Gerhard Thiele of the German Space Agency. Front row from left are Charles Hobaugh, Edward Fincke, Stephanie Wilson, Laurel Clark, Heidemarie Stefanyshyn-Piper, Mark Polansky, Peggy Whitson, Yvonne Cagle, Joan Higginbotham, Steve MacLean and Julie Payette of the Canadian Space Agency and Sandra Magnus. Pedro Duque of the European Space Agency is not pictured.

Lucid, crew mates discuss life on Mars

(Continued from Page 1)

Lucid also said this week that the news of scientists discovering evidence of ancient life on Mars has her and her Mir 21 crew mates talking about the possibility of humans going there to investigate in person.

"When the ground told us, we were really excited," Lucid said in an interview with CBS on Monday. "It filled up our whole conversation at supper time. We talked about the possibility of life on Mars, and understandably, our conversation turned to the possibility of taking trips to Mars, and how we hoped Americans and Russians and other nations will be able to work together and develop a means of making a trip. We think that would be absolutely fantastic."

Lucid, Onufrienko and Usachev spent this week packing up their

experiments for the trip home and setting up experiments in preparation of the arrival of the Mir 22 crew.

Before Monday's interview, Lucid had a chance to reflect on her mission, now in its 21st week.

"Things are going real well here on Mir. We are beginning to think about wrapping up this mission and getting ready for the next mission," Lucid said. "We started off my phase of the flight with Quail eggs, developing little baby birds inside the eggs and watching the development, and we are ending up the flight growing wheat seeds. I think it is real interesting."

Over the past three weeks, the Mir crew has set up the greenhouse needed to grow wheat seeds, installing sensors and probes, watering and testing the unit. The crew

planted the seeds Monday, and is already beginning to see results.

"We got the wheat seeds planted and now we can see the tiny little plants beginning to grow," Lucid said.

The Mir 21 crew started work on the Greenhouse Experiment, originally planned for the next mission, so the plants can be harvested as originally scheduled. The experiment is designed to see how plants grow in microgravity.

Overall, Lucid and her crew mates are happy with the way their mission has turned out thus far.

"We finished up everything that was planned for this flight, and I think it always makes you feel really good to get everything finished up," Lucid said. "And of course, right now, we are looking forward to the Mir crew that's coming next week."

Open house to feature Max-Q in Bldg. 9

(Continued from Page 1)

sessions by JSC's astronauts, construction of a full-size model of a new generation moon lander and tours around the closed chambers where volunteers lived during a recently completed 30-day study to test methods of supporting human

life on long space expeditions.

The astronaut band, Max Q, also will perform amidst the shuttle mock-ups in Bldg. 9 at 1 p.m. and 3 p.m.

The JSC Open House coincides with the annual Ballunar Liftoff at nearby Space Center Houston. Ballunar Liftoff features dozens of

hot air balloons, parachute demonstrations and other attractions near JSC's Rocket Park. It runs over three days beginning Aug. 23. Last year more than 70,000 people attended both events.

For more information on JSC's Open House call x35111.