# Space News Roundup)

Vol. 27 No. 9

**April 22, 1988** 

National Aeronautics and Space Administration

## Fletcher says Moon, not Mars, may be better first step

NASA Administrator James C. Mars, may be the best initial destination for possible United States/ Soviet Union manned missions.

would give the two leading spacefaring nations in the world an opportunity to build a stable base for further cooperation, which could, one day, lead to a cooperative mission to Mars," Fletcher told participants at the National Space Symposium in Colorado Springs.

Fletcher stressed that any coop-Fletcher says the Moon, rather than erative manned activity should be preceded by a program of cooperative unmanned activities.

"Flying out to Mars together "Going to the Moon together before building such a foundation could, for several reasons, be less practical," Fletcher said in his April 14 address. In the last several months, a number of parties have advocated a U.S./USSR manned mission to Mars. Fletcher cited three crucial factors favoring the Moon for an initial cooperative

Related story, Page 3

manned mission:

★ Timing — A joint mission to the Moon would involve a relatively short timetable, while a Mars mission "would probably encompass four or five presidential administrations," Fletcher said. He said relations between the U.S. and the USSR have yet to demonstrate that degree of stability.

★ Cooperative experience — A

year ago, the U.S. and the USSR must be considered before Mars signed a space science agreement that established joint working groups in five areas. The efforts of these groups "could lay the groundwork for a strong bridge of mutual cooperation and mutual trust," he said.

★ Technical readiness — Both realize there are "many technical unknowns involved in a manned Mars mission," Fletcher said. Issues such as the effects of prolonged weightlessness on humans

mission pacts can be made.

In a more general vein, Fletcher labeled 1988 "perhaps the most critical year in the history of the U.S. civil space program," and he criticized those who say American leadership is a thing of the past.

"It's ironic that these doom-andgloom-sayers have emerged this year, just when the United States is poised to launch itself into a new era of development and exploration of space," he said.

## Solid rocket motor firing tests O-rings

The full-duration firing of Qualification Motor-6 (QM-6) on Wednesday appears to have been a success, according to initial test

The third in a series of five tests of the redesigned Space Shuttle solid rocket motor at Morton Thiokol's Wasatch Facility near Brigham City, Utah, went off without a hitch at noon CDT. The firing lasted two minutes.

The test included two intentional flaws. A "wave defect" was inserted in the surface of the center field joint's bonded insulation J-seal to test the capture feature O-ring, and a small blowhole was created in the polysulfide adhesive of the redesigned case-to-nozzle joint to test the new wiper O-ring.

Test officials said they would continue to analyze the test results, and prepare for the two tests remaining before STS-26. QM-7 and Production Verification Motor-

In a related development, NASA announced plans April 18 to issue a request for proposals in June or July for an Advanced Solid Rocket Motor (ASRM) that would make the Space Shuttle capable of lifting 12,000 more payload pounds and eliminate the need to throttle the main engines during ascent.

Design, construction and operation of a government-owned test and production facility are part of the request for proposals (RFP). A Site Evaluation Board has been government site for inclusion in the high quality and reproducibility, RFP as a common basis.

The ASRM acquisition plan submitted to Congress contains NASA's strategy for a full and open competition to introduce an ASRM into the Shuttle system. This is expected to substantially improve flight safety design margins, reliability and performance.

The RFP-for ASRM design, development, test and evaluation (DDT&E)-is being scheduled to achieve an earliest launch opportunity in fiscal 1994. The RFP release is compatible with the stipulations of the NASA Authorization Act of 1988 and the requirements for initiation of the necessary redesigned solid rocket motor follow-on procurements.

NASA plans to proceed with a segmented motor design that incorporates substantive design changes to improve the reliability and the design safety margins. In addition, the ASRM ballistic design precludes the necessity for throttling the Space Shuttle main engines during the period of maximum dynamic pressure, which reduces or eliminates about 175 criticality 1/1R failure modes for the Shuttle system.

The ASRM's design goal to provide a 12,000 pound payload increase will equate to an additional 2.4 equivalent Shuttle missions per year (at a rate of 14 missions a year) and will support Space Station deployment and other critical missions.

To achieve the level of process formed to recommend a tentative control and automation needed for

(Continued on page 2)



Interested faces watch as one of several motivational speakers addresses a large crowd of Manned Flight Awareness honorees and dignitaries in JSC's Bldg. 2 auditorium April 13.

## Locals accept awareness honors

Program ever held at JSC honored 215 people NASA-wide this month, including six from local contractor operations.

Honorees came from all of the NASA centers, Vandenberg Air Force Base and the U.S. Air Force Space Division, and from as far a way as Guam.

They received certificates and an all-expense paid trip to Houston, where they toured the city and the center, and attended a program and reception with top NASA management, astronauts and other dignitaries.

We tried to provide an awareness of the full extent of what is taking place at JSC," said Hank Williams, who represents JSC on the Manned Flight Awareness national panel.

Houston Mayor Kathy Whitmire, Houston Chamber of Commerce President Gerry Griffin and JSC Director Aaron Cohen met with the honorees at a get-acquainted social at the

Administrator Dale Myers, and Rear Adm. Richard centers.

The first Manned Flight Awareness Honoree Truly, associate administrator for space flight, Arnold Aldrich, director of the National Space Transportation System, and JSC Director Aaron Cohen were made April 13 in JSC's Bldg. 2 auditorium. Twenty-eight astronauts attended a reception at Brady's Landing following the presentation.

> Local honorees were John F. Gladu and Edward Lednicky of Boeing Aerospace Operations; Glenn Norman and Gary Smith of IBM Corp., and Cullen Wright and Lee Olson of Lockheed Engineering and Management Services Co.

> Lois Walker, who assisted Williams in coordinating the program at JSC, said it honors individual government and contractor employees who have exhibited outstanding performance and is one of the most coveted awards for work on the government/industry space team.

Manned Flight Awareness programs in the past have been held at Kennedy Space Center in Houston Museum of Natural Science on April 12. association with launches. During the standdown Motivational talks, featuring NASA Associate the programs are being rotated among NASA



The ultimate opportunity to have your name up in lights-well, at least one you've chosen—has arrived. NASA and contractor employees have been invited to help name the Space Station. For details, see Page 2.

## **Budget crunch to delay Station**

## Man-tended capability achievable by 1995

Budget constraints will postpone stones," Fletcher wrote. launch of the first Space Station NASA Administrator James C. Fletcher, but man-tended capability can be achieved by late 1995.

Fletcher reported the findings of "Space Station Program Response to the Fiscal Year 1988-1989 Revised Budgets" on April 12 in letters to leaders of congressional appropriations committees that had mandated the rescoping and rescheduling plan.

"The only sensible way to accommodate the Space Station funding profile inherent in the FY 1988 and 1989 budget reductions is to slip the major program mile-

"I believe that the current Station element by a year, according to configuration is the correct one, and that descoping the design would be extremely unwise.... It represents, in my view, the optimal balance between development costs, operations costs and satisfaction of user requirements in a safe Station.'

Fletcher said that to achieve earliest possible man-tended capability, the baseline assembly sequence will be changed to provide launch of the pressurized laboratory module on the fourth assembly flight of the Space Shuttle in the last three months of 1995. Such a capability can be provided

with minimal cost impacts, and will not delay the permanently manned capability.

The laboratory will be launched with useful capability but will not be fully outfitted until the sixth assembly flight, he said. User outfitting could be quadrupled if the Advanced Solid Rocket Motors were available for lab module launch, he added.

Before the laboratory can be accommodated, he said, the Station truss structure and basic power, propulsion, guidance and control, and Shuttle docking systems must be placed in orbit on the first three assembly flights.

(Continued on page 2)

## Space News Briefs

#### Ames develops perspective display system

A computer-generated display system, to aid close-in spacecraft maneuvers, has been developed at NASA's Ames Research Center. The display can precisely depict a spacecraft's position relative to other vehicles and objects, allowing rapid, accurate monitoring and response. Developed by Stephen R. Ellis and his colleagues, the system can be placed aboard spacecraft such as the planned U.S. Space Station. It would help in conducting and monitoring maneuvers within one mile of the Station.

## **Bulletin Board**

#### U.S. Savings Bond Campaign is April 25-May 6

JSC kicks off its 1988 U.S. Savings Bond Campaign on April 25. The campaign, designed to encourage employees to join the Payroll Savings Plan and invest in five-year bonds earning market-based interest, runs through May 6. Canvassers may call on you during the campaign and ask you to sign up or increase the amount you set aside from each paycheck. For more information, call x38970.

#### Secretarial video teleconference is April 27

The Human Resouces Development Branch and the Equal Opportunity Programs Office will participate in the "First Annual Secretaries Briefing" video teleconference from 1:30 to 4 p.m. April 27 in the Bldg. 2 auditorium. The program, sponsored by the American Management Association and Professional Secretaries International, is open to all JSC and contractor employees. For more information, call Joann Walgamuth, x33077.

#### Commodore users to meet April 28

NASACOMM, a Commodore users group, will conduct its next meeting at 7:30 p.m. April 28 at the Harris County Park Bldg., 5001 NASA Road 1. For more information, call Bill Moore at 335-6251 or x53462

Semiconductor lasers topic of May 4 video conference "Semiconductor Lasers and Light Emitting Diodes for Telecommunications," an IEEE Education Committee-sponsored video conference, will be downlinked to the Gilruth Recreation Center at 11 a.m. May 4. It will cover laser operations, technology, characteristics, telecom applications and future trends. For more information, call Nancy Marshall, x30174.

#### Galveston historical homes tours begin May 7

Tickets are on sale for the 14th annual Historic Homes Tours on Galveston Island, sponsored by the Employee Activities Association. Tours will be conducted May 7, 8, 14 and 15, from 10 a.m. to 6 p.m. Saturdays and noon to 6 p.m. Sundays. Admission costs \$9, and covers tours of seven private homes and admission to two informative talks. For more information, call x35350.

#### 'Back to the Future' JSC picnic set for May 7

A "Back to the Future" JSC picnic is planned from 11 a.m. to 5 p.m. May 7 at the Gilruth Center. Barbecue dinner will be served between noon and 3 p.m. Tickets may be purchased through May 4 at the JSC Exchange Store located in Bldg. 11

## Skylab 15th anniversary conference May 11

"Skylab Revisit," a conference recognizing Skylab's 15th anniversary, is planned for May 11 at the Von Braun Civic Center in Huntsville, Ala. An evening reception is planned at the Alabama Space and Rocket Center. Cost is \$65, and includes lunch, evening reception and all panel sessions. A \$25 fee is available to retirees and full-time students to attend only panel sessions. For more information call Karen Mack,

### Symphony presents 'Romantic Evening' May 14

The Bay Area Symphony League of the Houston Symphony Orchestra will present a "Romantic Evening" featuring music from variations of Romeo and Juliet at 8 p.m. May 14 at the University of Houston-Clear Lake Atrium. Guest conductor will be Niklaus Wyss. For ticket informa-

## Olympic and world ice skating exhibition is May 19

The next JSC-EAA night at the Summit will feature a "Tour of Olympic and World Skating Champions" at 7:30 p.m. April 18. Medalists from the 1988 Winter Olympic Games, including Debi Thomas, will perform. A limited number of tickets are on sale at the Bldg. 11 Exchange Store for \$18 each. For more information, call x35350.

## NACA Reunion IV coming up in September

Planning is complete for NACA Reunion IV, a reunion of former employees of the National Advisory Committee for Aeronautics. The reunion will be Sept. 30-Oct. 2, 1988, at the Red Lion Inn, San Jose, Calif. Activities will include a Friday night Western buffet, a Saturday night banquet and a farewell champagne brunch on Sunday. All former employees and military detailees and their spouses are invited. For more information, call John Dusterberry, 415-493-6846, or write the reunion committee at P.O. Box 6-1988, Mountain View, Calif., 94042.

## Gilruth Center News

Call x30304 for more information

EAA badges-Dependents and spouses may apply for photo I.D. badges between 6:30 and 8:30 p.m. April 26 or May 3.

Defensive driving—Course is offered May 21 from 8 a.m. to 5 p.m. and

Weight safety-This is a required course for those employees wishing to use the Rec Center weight room. The class will be on May 4 or 19. The

Softball tournament—Men's Open C & Mixed softball tournament will be May 14 and 15. Entry fee is \$95; entry deadline is May 11.

Physical fitness—Next session will be July 5-Sept. 23. Classes meet at 6:30 a.m. Mondays, Wednesdays and Fridays.

5K Fun Run—AIAA-sponsored run will begin at 8 a.m. May 14 at the Rec Center. Prizes for first, second and third place in each men's and women's age category. Entry fee is \$8 before May 3 or \$10 race day. For more information, call Scott Satterwhite, 282-7756.

Almost Anything Goes-Six coed teams are needed Saturday, May 7 at the JSC employees picnic. Teams consist of three men and three women. Entry fee is \$10; entry deadline is April 29. Every team member will receive a T-shirt.

## JSC hiring freeze eases slightly

The ice on civil service hiring at hiring so as not exceed a reduced. I'm pleased about that," he said. JSC is thawing, but the freeze remains officially in effect.

**Human Resources Director** Jack Lister said JSC was granted limited relief this month to begin refilling high priority positions. However, the center will be allowed to hire only in its most these guidelines to hire our gradcritical areas, and must phase its uate coops in May and June and

full-time equivalent (FTE) ceiling of 3,403 civil servants, he said.

"I'm pleased that we have the opportunity to meet our most critical needs right now," Lister

"We also have permission within

Lister said 38 graduating coops already working at JSC will be

hired permanently during those two months.

The hiring freeze was instituted Nov. 23, 1987, due to a sequestration of fiscal year 1988 funds under the Gramm-Rudman Hollings deficit reduction act.

## Seniors to see JSC managers in action

Managers at JSC have volun- which hopes to make the pilot interpersonal and leadership skills, teered to host 24 seniors and four teachers from local high schools for a "Management Experience Day" on April 27.

Each student and teacher will be assigned to accompany a manager or supervisor through his or her afternoon activities. The observers will be matched with managers working in their fields of interest, and will be authorized to be present during every business task.

The experience is being sponsored by the JSC Chapter of the mended by educators at their National Management Association, schools. They were chosen for their

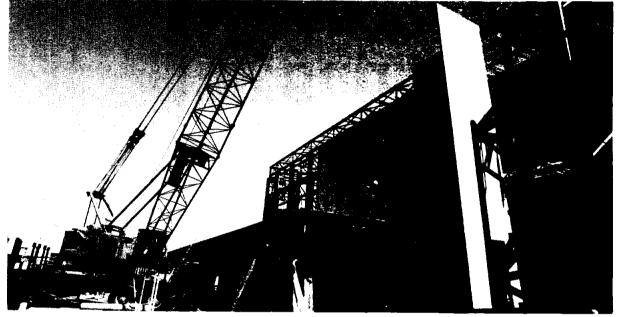
program an annual event.

"We hope that by bringing seniors into the program we can provide some exposure to what constitutes management within a government agency, and possibly influence their choice of future education and training," said Daniel A. Nebrig, executive assistant to JSC Director Aaron Cohen.

The students, from Clear Lake. Clear Creek, Pearland and Friendswood High Schools, were recom-

interest in learning about NASA leadership, and intent to attend college. Faculty members were chosen from each school for their leadership skills, interest in practical application of management theory and ability to share the experience with other faculty and students.

The experience day will begin at 8:30 a.m. with a welcome briefing and tour of JSC. After lunch, observers and managers will be paired from 1 to 4 p.m. A debriefing will be conducted at 4 p.m.



WALLS GO UP— Workers are putting up the exterior walls of Bidg. 9B this month. The building addition is 75 percent complete, said Mary O'Hearn, construction manager, and it is hoped that it can be occupied by Aug. 1.

## **Budget crunch limits contractor hiring**

(Continued from page 1)

payloads until the sixth and seventh assembly flights.

The full report notes that NASA has directed its four Work Package contractors (Boeing Aerospace, operating under letter contracts—

they may retain key personnel and add only the staff necessary to accomplish a Program Requirements Review.

Similar constraints have been placed on hiring to support programwide engineering and integra-McDonnell Douglas, General tion analyses through the Program Electric and Rocketdyne)—now Support Contract with Grumman Aerospace and the Technical and to constrain hiring of personnel Management Information System and subcontracting efforts so that and Software Support Environment

contracts with Boeing Computer Services and Lockheed Missiles and Space Co., the report states.

This program represents a critical element in the Nation's efforts to reinvigorate leadership in manned civil space endeavors,' Fletcher wrote. "The realization of the full scientific, technological and commercial potential of space requires the attention of men and women living and working in orbit."

## **Employees may suggest Space Station names**

The ultimate opportunity to have by Dr. Franklin Martin, Deputy your name up in lights - well, at least one you've chosen — has arrived. NASA and contractor employees have been invited to help name the Space Station.

Suggestions must reach Hess, public affairs officer, at Headquarters by the close of business, May 9. A JSC announcement with detailed instructions of how and where to send suggestions is being distributed.

"As the Space Station program prepares to enter its development phase. I believe it is an appropriate time to begin the process for selecting a name," James B. Odom, NASA Associate Administrator for Space Station, wrote in a recent

Odom has assembled a Space Station Name Committee chaired Associate Administrator for Space Station, which will make its selection in accordance with the NASA Management Instruction (7620.1C)

The international partners also will be involved in the process. The resulting assessment and recommendations will be presented to the NASA Administrator James C. Fletcher, who will make the final selection.

The committee has established criteria that must be satisfied by any suggestion: names must be simple and easily pronounced; names must not duplicate or be so similar to other NASA or non-NASA names that they create confusion; acronyms are to be avoided; names must be translat-

able and must not have ambiguous or offensive meanings in the languages of NASA's international partners; names of living people will not be accepted; and rationale on "Official Names for Major NASA for names must accompany

Although NASA does not plan to publicize the process or solicit suggestions from the general public, voluntary suggestions from the public will be accepted, provided they meet the above criteria.

A suggestion form, and a list of already suggested names to which the committee is requesting reactions, will accompany the JSC announcement.

Comments and suggestions should be sent to Mark Hess, Public Affairs Officer (Code S), NASA Headquarters, Washington, DC

## Advanced solid rocket motor request out

## (Continued from page 1)

NASA has concluded that a substantially new facility is required.

In keeping with the President's new space policy encouraging commercial initiatives in space, companies responding to the RFP will be required to propose a private-financing option for the new ASRM facility on a tentative

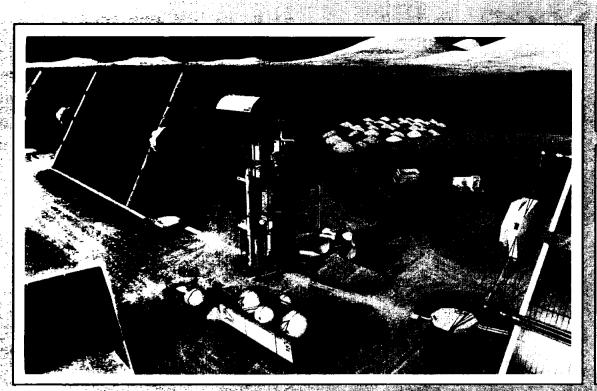
solicit optional proposals for a privately owned facility

All approaches must be structured to allow timely and economical recompetition of the SRM contract by the government.

The overall ASRM DDT&E cost is estimated at just under \$1 billion,

government site. NASA also will equipment, plus \$200-300 million for construction of facilities.

The planned ASRM development is critical to NASA and will provide substantive improvements in flight safety design margins and reliability, achieve full Shuttle payload capability, optimize program cost, encourage commercial initiatives including modern tooling and and promote industry competition.



Oxygen propellant derived from lunar raw materials could help reduce the amount of mass launched into low Earth orbit to support a lunar base, and thus cut costs. At left is a pilot plant producing liquid oxygen from ilmenite. Below, crew members shut down a Lunar lander's flight systems for layover. The pressurized vehicle in the foreground is waiting to take the crew to the lunar base, while other equipment supports the lander.



## MOON BASE: Lunar base symposium was 'a parade waiting to happen'

By Kelly Humphries

"We've come a long way, baby," said Wendell Mendell, long-time champion of a lunar base, as he looked at the new NASA Headquarters telephone book.

The new phone book, featuring a Moon base concept cover illustration, arrived about the same time as a statement by NASA Administrator James C. Fletcher supporting the Moon, rather than Mars, as the best initial destination for possible U.S./USSR manned missions.

"The statement is highly consistent with the stand I and my colleagues have been taking over the last five years," said Mendell, a JSC planetary scientist who has been talking lunar base since Apollo. "I think it's right on target. I think the President's space policy is an excellent basis on which to build a strong civil space program, and that Sally Ride's report plus Dr. Fletcher's statement start to set down specifics of what needs to be done."

The Fletcher statement also came on the heels of a successful second symposium on Lunar Bases and Space Activities of the 21st Century. Three things about the symposium stand out, according to organizers Mendell and Barney Roberts.

First, the number of people who attended the April 5-7 event at the Westin Galleria Hotel in Houston was unexpected, as were the amount of interest and enthusiasm they displayed.

"To our surprise between 550 and 600 people showed up," said Roberts, manager of JSC's Exploration Studies Office, who served as the symposium's administrative chairman.

"It was right at the limits of our most optimistic projections," said Mendell, technical program chairman. "We ran out of supplies because we hadn't anticipated that level of response. I had a lot of comments on the general level

of energy and enthusiasm. People were just amazed that so much was going on. They had anticipated a much smaller gathering."

Second, the make-up of the participants was different from that of the first symposium.

"When we held the first meeting in 1984, out of 100 papers presented there were probably fewer than five that represented funded work," Mendell said. "This meeting had a substantial NASA component. There were people from all the NASA centers here giving papers on work that they were doing that's related to future initiatives efforts."

Speakers included NASA Deputy Administrator Dale Myers; JSC Director Aaron Cohen; Mark Craig, manager of the Lunar and Mars Exploration Office at JSC; Gerry Griffin, president of the Houston Chamber of Commerce and former JSC director; Harrison Schmitt, Apollo 17 astronaut; former NASA deputy administrator Dr. Hans Mark; and Dr. H.H. Koelle, chairman of the International Academy of Aeronautics committee on international lunar base concepts.

This was also the first large meeting where the new Office of Exploration, its structure and plans were featured, he added. John Aaron, NASA assistant administrator for the Office of Exploration, spent all three days at the conference.

"The Office of Exploration is actually now funding studies and getting organized," Mendell said. "The management at the various NASA centers has a sense that something might be happening and they want to send people to learn more about it and are more willing to send people to give papers."

In addition, people from outside the aerospace community and the country attended and contributed. The Ameri-

can Society of Civil Engineers and the American Geophysical Union cosponsored the symposium.

"You really got a sense that this was a parade waiting to happen," said Alan Ladwig, director of program support and special projects for the Office of Exploration.

The question now, he said, is "how do we now make sure that we can sustain the interest and enthusiasm they have shown for this? How do we get beyond the study stage into the doing stage?"

The broader mixture of participants added a dimension to the discussions that isn't usually present at a technical symposium, they said.

"The people who are farthest removed from NASA tend to have the more visionary conceptions of what a Moon base might be like. People who are closest to NASA tend to have perceptions that are highly functional and limited and represent to some extent a Space Station on the moon," Mendell said.

"You get a cross-section of what people think a lunar base might be. Both sides temper one another and their sets of ideas. It was intended to be a conference of engineers, scientists, designers, students, professors, bureaucrats and managers all thrown together and talking to one another."

Third, although the organizers hope to have another conference in two years, this year's was the last to focus exclusively on the idea of a lunar base.

"This was the last lunar bases meeting," Roberts said. "The next meeting will be just Space Activities of the 21st Century. The purpose is to get away from the discussions of going to a place and keep in front of us a discussion of why we're doing these things—and let

the why determine the place." than debating whether we Mendell said that while he still Space Station," he said.

believes a lunar base is the best place to begin human expansion into the Solar System, there are many similarities in the living conditions, objectives and technologies associated with either a Moon or a Mars base. He said he's confident the Moon base will win out on the merits of its proximity to Earth and its known resources, such as ilmenite from which oxygen should be able to be extracted.

"We've always talked about the lunar base as being much more of an evolutionary follow-on to the Space Station and the whole space transportation capability."

Mendell said his lunar base studies assume that a manned Martian base will be developed next.

'People cannot exist on the surface of Mars without space suits. Your space suit for operating on Mars will not be a lot different than the space suits for operating on the Moon. People cannot work on the surface of Mars for long periods of time without accumulating a radiation dose which is hazardous, so you have the same kind of philosophy of trying to operate machines and automation as much as possible, saving actual physical human labor for special conditions. You are going to want to live under the surface on Mars, just like you'll live under the surface on the Moon, so construction techniques will be very similar.

"My claim is that it's much easier to learn how to do those things on the Moon. I see the Moon as the kindergarten for learning to live and work in space."

Mendell said he's happy with the current direction of the debate.

"I'd much rather be debating whether we go next to the Moon or Mars rather than debating whether we ever leave the Space Station." he said.



A deep drill team obtains cores for petrological studies of the young Aristarchus crater's floor. The peak is a few kilometers to the south of the drill rig. The crater floor shows prominent slump terraces of the crater walls and solidified impact melt rivulets that flowed down the steep inner wall immediately after the crater was formed.

## Roundup Swap Shop

All Swap Shop ads must be submitted on a JSC Form 1452. The forms may be obtained from the Forms Office. Deadline for submitting ads is 5 p.m. the first Wednesday after the date of publication. Send ads to Roundup, AP3, or deliver them to the Newsroom, Bldg. 2 Annex, Room 147. No phone in ads will be taken.

#### **Property & Rentals**

Sale: Clear Lake, 1-1/2 story, 4-2-2, near schools, park, large yard. 282-3479 or 532-1112.

Lease: University Place townhouse. 1 mile to NASA, 3-2.5-1, refrig., microwave, W/D, FPL, ceiling fans, miniblinds, \$650/mo. David, x32791 or 488-9768.

Lease: Nassau Bay townhouse, 2-2.5, microwave, fans, W/D con., carport, pool. avail. May 1, \$550/mo., deposit. x32864 or 335-1695.

Lease: Galveston, restored Victorian. 3-1-1.5, 2 car garage, two-story, \$775/ mo. Carodyne Holliday, 409-763-8030.

Sale: Near Tyler and Henderson, 13.5 acres, gently rolling wooded East Texas land, fronts county blacktop, assumable, low cost Texas veteran loan. McLeaish, 480-7445.

Sale: Lake Livingston lot, 160' x 50', all utilities avail., Impala Woods in Onalaska, \$1,800. Doug, x39376 or 337-3704.

Sale or lease: Pasadena, 3-1-1, den, large kitchen, carpet, fenced vard, vinvl siding, ex. cond., close to schools. \$31,900. Assume 8-1/2% VA loan at \$240/mo. Equity \$14,400. 941-5908.

Sale: Grapeland, TX, mobile home, 3-2, dining, utility room, air/heat, partially furnished, appliances, 5 acres, ex. cond., \$19,500 OBO. 214-729-6885 or 214-764-2183.

Lease: Houston, Brentwood Subdivision, 3-2-2, many extras. 15 min. from medical center, \$525/mo. utilities. Myron Johnson, x37194 or 438-0201.

Lease: Pensacola, FL, beachfront condo, 2-1.5, living/dining area, fully equipped kitchen, balcony overlooking gulf, pools, sauna, exercise room, jacuzzi. Weekly and weekend rates. Dean, x34132 or 486-5331.

Lease: Clear Lake condo, 1-1, studio, LR, all appliances, water view, \$385/mo., utilities. 481-5747.

Lease: Piper's Meadow, 3-2-2, nice, \$575/mo. plus deposit. 480-6516.

Lease: Alvin, 4-2-2, air/heat, den with FPL, 2 children maximum, \$450/mo. plus deposit, references, carpool to NASA, 331-1136.

Sale: University Trace townhouse, 2-2.5-2 CP, all appliances, FPL, security, assume Ioan, 333-4044.

Sale: East Huntsville, Acorn Hill Estates, 10 acres, \$3,000/acre, assume 8-1/2% note. 333-4044.

Lease: Friendswood, 3-2-2, formal dining, large kitchen, FPL, fence, new

paint, \$495/mo. 482-6609. Sale: Clear Lake, Oakbrook West, 4-2.5-2D, contemporary, large living/ dining, W/D, FPL, professionally deco-

rated, landscaped, security, garage door opener. 482-6609. Lease: Clear Lake condo, vaulted

ceiling, 2 BR, FPL, balcony, W/D conections, all appliances, pools, storage, \$350/mo. 486-0315.

Sale: Kirkwood South (near Dobie H.S.), large custom 2-story, 4-2.5-2, both formals, family room, FPL, intercom, walk-in closets, new 4-ton AC, oversized cul-de-sac lot, \$79,900. Al, 488-5210.

Sale: Lake Livingston, Highway frontage lot, wooded, located in Paradise Acres, on FM356. Roger, x30093 or 472-5650.

Lease: Bacliff, mobile home lot, \$85/ mo., \$50 deposit. 488-1758.

Sale or lease: Kirkmont Subdivision, 3-2-2, 1400 sq. ft., super clean, new roof, air, carpet, paint, 30 min. to NASA. Assume 7-3/4%, \$49,500 or \$475/mo. 481-6158.

Lease: Camino South, 3-2-2, family room w/FPL, recreation room 18' x 16'. dining room, garage door opener, trash compactor, \$600/mo. Richard, x34266 or 280-0689.

Sale: League City, Newport, 3-2, ranch style, new carpet, new appliances, fenced, trees, exceptional buy, \$67,400. Fred, 585-5946.

Sale or lease: Friendswood condo, 2-2-2, large loft, new carpet, swimming, tennis, wooded area, x32744 or 326

Lease: Piper's Meadow, nearly new, 3-2-2, FPL, walk-in closets, blinds, drapes, fenced yard, gas, outside grill, \$590/mo. Walter, 332-1609.

Lease: El Dorado Trace condo, 2-2, W/D, FPL, fans, wetbar, security, tennis courts, pool, sauna, avail. June 1,

\$395/mo. Pete, x36228 or 480-4525. Sale: Friendswood, Sun Meadow Estates, wooded lot, cul-de-sac, bordered by stream, golf course, 210' deep, gas/elect on site. Doug, x32860 or 486-

Lease: University Trace condo, 1 BD, study, W/D, disposal, fans, exercise

room, pool, \$200 deposit, \$375/mo. Lease: Camino South, 3-2-2, fenced,

FPL, deposit, references, no pets, \$550/mo. x39219 or 585-4427.

Sale: Angleton, town of Holiday Lakes,

70 x 100 corner lot, unimproved, \$700. Brenda, x37752 or 996-9738.

Sale: Center, TX, 420 acres, 300 timber, 120 pasture land, one-half mineral rights. 482-4365 or 1-409-254-

Sale: 4 Crystal Beach lots on Bolivar, lots 50' x 100', reasonable. 921-7212.

#### **Cars and Trucks**

'84 Ford Escort L, AC, 4-dr, 30K miles, gets approximately 30-35 mpg, like new, \$3,500 firm, OBO. Rick, x33036

78 Camaro, for parts only, 350 engine, heels, back windshield, etc., \$150. Bonnie, x34248 or 489-9007

'81 Ford Escort GL Hatchback, ex. cond, auto, AC, new radiator, hoses, oil seals, heater, \$1,595. Kathy, x34776 or

73 Grand Am, auto, AC, console, 400 ci engine, deluxe int., black on black, good cond., \$1,800. 337-3690.

75 GMC, 1/2 ton, 6 cycle, 87K miles, some rust, good mech. cond., camper top, \$900. Larry, x35437 or 482-8578.

76 280Z, 4 spd., sunroof, AC, 108K mi., blue, needs paint, body work. \$2,000 OBO. 479-2654.

'67 Mustang, 3 spd., 289-V8, new paint, AM/FM, good tires, airshocks, headers, mags, AC, runs good, \$2,995. Mike, x38169 or 482-8496.

'84 Jeep Wagoneer Ltd., all power, leather interior, tan, wood grain panels, low miles, good cond., \$8,300 negotiable. 470-0105.

71 turbo 350 auto, works fine, \$75 OBO. Randy, x34540 or 997-1558.

'67 Mustang Convertible, 6 cyl., new top and carpet, runs good, \$2,500 firm. Mary Lee Meider, x34386.

76 Ford Mustang II, white and red, 2 DR, 2300cc, 4 spd., AM/FM, cold AC, 94K, \$950. Brad, 282-3570.

74 Chevy Cheyenne Pickup, auto, air, PS, PB, AM/FM/Tape, glass camper cover, original owner, 50K mi., \$2,000. 486-8266.

82 Toyota Celica GT, 5 spd., manual overdrive transmission, approx. 8K mi., will fit on 20R and 22R Toyota engines, great cond., \$300 OBO. Tony, x34404 or 334-2365.

'68 Porsche 911, rebuilt engine, ex. cond., \$5,800. 326-1278.

'85 Honda Civic DX, AM/FM/Cassette, 5 spd., AC, 32,000 mi., ex. cond., \$5,200. Ruben, 280-1229 or 947-0697.

'84 Nissan Sentra, SR5, 2 DR, AC, PB, AM/FM/Cassette, new tires, BRN, like new, \$3,600 OBO. Ramesh, 484-3683. '81 Datsun 280-ZX, T-tops, auto, AC,

PS, PB, PW, loaded, \$3,950, Richard, x34266 or 280-0689. '74 Datsun 260Z, 4 spd., blue, louvers,

alpine stereo, needs engine work, 1,600. Victor, x35983 or 538-1658. '74 Chevy Luv pickup, 4 spd., never

wrecked, running, \$400. 471-5161. '83 Honda Accord, gray, 4 DR, 5 spd.,

AC, AM/FM/tape, \$3,900. 482-5048. '74 Camaro, orig. owner, PS, PB, auto, AC, AM/FM, good cond., needs engine,

\$1,200. Sharon, x35452 or 480-2313. 79 VW Rabbit, PS, PB, 5 spd., AC, AM. good cond., needs new head,

,200. Sharon, x35452 or 480-2313. '84 Honda LX, 4 DR, 5 spd., PW,

locks, cruise, ex. cond., \$6,500. x30092 or 481-3637

'85 Mallard 35' motor home, loaded, low miles, \$37,000, 337-4051.

'77 Toyota Corolla, 5 spd., 2 DR, AC, brown, 96K mi., good cond., \$975. Gayle, x31429 or 482-1909.

'76 Toyota Corolla, needs work, good tires. AM/FM. AC. \$375 OBO. 486-4229. '86 CRX-Si, black, fuel injection, stereo

cassette, electric sun roof, alloy wheels, \$8,000. David, 480-5132 or 644-0861. 86 RX-7, sports model, white/maroon,

AM/FM/cassette, 24K mi., ex. cond., \$11,995. Jeff, x31470 or 996-7097. '77 Ford Granada Ghia, 4 DR, 6 cyl., 4

spd., PS, AC, AM/FM, 100K mi., good cond., good tires, orig. owner, \$1,300. Allen, x35538 or 486-5740.

'85 Custom Ram 250 Dodge Van, V8, all power, 4 capt. chairs, rear bench converts to bed, AM/FM, TV, 36K mi., new tires, \$10,800. 996-1863.

83 Honda GL650 Silverwing, 4,800 miles, \$1,800 OBO. Jim, 335-8539 or

'82 Honda 110 3-wheeler, 482-1602. 83 Honda Shadow, ex. cond., tinted windshield, helmet, cover, low miles, 1,500. Moses, x35847 or 437-6727.

85 Suzuki GS700E, 2,500 mi., ex. cond., \$1,850. John, x36484 or 486-

### **Boats & Planes**

'82 25' U.S. Yacht, 3 sails and 9.9 OB. Ready to sail, \$12,000. 282-3029 or 326-

'83 16' Hobie catamaran, ex. cond., trailer, \$2300. Karl, x35067 or 333-3544.

18' Mahogany boat with trailer. No motor, \$350. 12' canoe, \$150. David, 282-4519 or 486-5732.

15' Chrysler Mutineer Daysailor, good cond., ready to sail, trailer, \$950. 333-6356 or 480-6340.

16.5' Sidewinder ski boat, 75 Hp Johnson, tow bar, pwr tilt, new paint, seats, carpet, AM/FM, galv. trailer, skis, \$3,400. Ben, x31588 or 488-1326.

18' Catamaran AMF trac sailboat with double trapeze, cat tilt trailer, extras, new cond., \$3,100. 333-3056.

'82 18' Prindle Catamaran, like new, adult orig. owner, stored in shed, galv. trailer, sail, box storage, \$2,950. CW, 282-1871 or 280-8796.

26' Pearson sailboat, OB, many extras \$8,000 OBO. Tom, 332-7048.

15' Chrysler Mutineer sailboat, trailer. carries 4 adults, \$995. Steve, x38651 or 480-9715.

#### Household

Wicker desk/dressing table, \$50; rattan loveseat \$85; wood desk, \$45; soloflex exercise machine, \$375. 474-

Baby furniture, Simmons crib, mattress; Strolee playpen, make offer. 870-

French provincial canopy bed. 996-

Large 6 drawer metal desk, chair, good cond., \$50, desk alone \$45. LaVon, 31129 or 486-1187.

Oversized contemporary couch, loveseat, white/taupe, exc. cond., \$250 each or \$450 for both. 488-7572.

5-piece formal Broyhill dining set w/matching lighted china cabinet, was \$1,800; now \$1,200 OBO. 339-2306. Solid oak bunkbeds, mattresses,

bunkie boards, ex. cond. \$395. Kim, x34824 or 554-2030. Sleeper sofa, striped earth tones, \$75; drafting chair, \$50; twin bed frame,

metal, rollers, \$15. Brenda, x30105 or 480-7111. Cream loveseat, sofa, contemporary, good cond., \$250; coffee table, Lane, walnut, \$50; J.C. Penney microwave,

487-0640 2 piece L-shaped sofas, beige, good cond., \$500 OBO, will sell separately. Kari, x35111 or 488-8919.

\$175; stereo cabinet, \$15. x39821 or

Men's small chest, honey colored, ex. cond., \$30. 488-0946.

Antique school desk, \$30; saddle seat foot stool, \$10; old wood highchair, \$45; large painting by Lee Reynolds, \$45; antique brass wall lamp, \$150; fluorescent desk light, \$12.50; two

straight matching chairs, \$20, 488-5564. Antique mantle clock, 1879 Gilbert, \$175; table lamp, 4' tall, \$25. 488-5564. King-sized motionless waterbed, solid wood frame, pedestal, heater, liner,

startup kit, \$200. 996-6929. Executive desk, \$150; 5'3" freezer, \$60. Richard, 538-1854.

Washer, 2 yrs. old, dryer, good cond., electric, BO, will sell separately or as a set. Marianne, 335-1668.

Bunkbeds, study oak, mattresses \$300. Billie, x38334 or 482-4365. Breakfast table, 4 chairs, \$75 OBO.

## **Audiovisual & Computer**

282-3494 or 484-3683.

Apple scribe, thermo, 4-color printer, \$75; AM/FM/Cassette, 8 track player, recorder, phono, pecan cabinet. 996-

1000, 512K, color monitor. Amiga mouse, NEC printer, software, word processor, graphics, misc. games, \$1,200 OBO. Ron, 779-4128.

Commodore 128, NEC color monitor, 1571 disk drive, joystick, assorted programs, \$600 OBO, 338-2620.

Microcomputer with 8086 chip, 256K RAM, full page CRT, dual 8" floppies, power supply needs repair, \$20. Jim, x35566 or 333-6232.

#### Wanted

Need help with a CORVUS flat cable pre-OMNIDRIVE. If you or someone you know can help. Jim, x36897 or 777-

Want 35-55 HP Chrysler OB motor for parts. Jerry, x39287 or 554-6093.

Want live-in sitter to care for 2 children, reliable, nonsmoker, must love children, mornings free for part-time student, room, board, nego. salary. 532-2128.

Want roommate to share 3-2-2 house in League City, Meadowbend, nonsmoker, \$300/mo., plus half utilities. Pat, x38456 or 334-3703.

Want little girls clothing, size 2 and Elaine, x31082 or 337-3239.

Want Astronomy magazine, Mar. 84 to Apr. 85, June 85 to Dec. 85, Aug. 86 to Jan 87. Will trade for issues of

Aerospace America, 1983 to present, or Aviation Week, June 87 to present. Chuck, x31701.

Want roommate for 3-2-2 with pool, \$225/mo., plus half utilities, non smoker only. 488-8029.

Want babysitting services in my home, Judy, 538-1854.

Want 35 to 45 Hp tractor with disc and brush hog, must be in good working cond. Jim Cooper, 484-0775.

Want body work on a 1979 Camaro. Bonnie, x34248 or 489-9007.

Want to join car pool, will share driving or pay for ride. Live in Bellaire/ Meyerland area, work hours 7:30 a.m.-4:30 p.m. Roy, x37185.

Want to buy electric trains, Don, x37832 or 996-1425.

#### **Musical Instruments**

Selmer Mark VI alto saxophone, ex. cond., \$1,100 OBO. Renee, 486-2188 or

Aria Guitar, \$80. Paul, x39218.

Five-piece black Tama drum set with right cymbal (camber) and high hat, ex. cond., \$500 OBO. 482-8088. Banjo, 5 string, includes case, book,

\$65. Steve x38651 or 480-9715. Gulbransen elect. organ, double keyboard, bench, \$700 OBO. 280-0958.

### **Photographic**

Pentax KX camera, manual, Sigma high-speed, 80-200mm telezoom lens, F/3.5, Velboa triped, electronic flash, \$250. Phil, x33035.

Minolta XG-1 camera, Minolta MD Rokkor-X 45mm lens, Minolta auto 118X flash, MC auto zoom CPC Phase 2 CCT Macro 75-200mm lens, carrying & travel case, \$375. Jana, x31653 or 532-3008.

Olympus OM2S program 50mm 1.8 zukio, auto winder I, 200 mm F4 telephoto 35mm 3.5 wide angle, ex. cond., \$465, 488-0946.

Telephoto lens, 2 lenses for spotting scope, metal carrying case, can adapt to any camera, \$200. x38497 or 488-

#### **Pets & Livestock**

Free kittens, 8 wk. old, yearling black cat, house broken, Joyce, x30829 or 480-3535.

Free, mixed breed medium sized 5 vr.

old dog, blond, good watchdog. Marianne, 335-1668. 2 yr. old AKC red Cocker Spaniel male for stud. fee = pick of litter, M.C. Ball, 282-4686.

## Lost & Found

Lost, NASA 25 yr. service pin, meatball design, blue enameled, goldplated, somewhere between Bldg. 2 parking lot, Bldg. 1, and Bldg. 30. Jim Bates, x31347 or 944-4687.

## Miscellaneous

Popup camping trailer, sleeps 6-8, sink, 3 burner stove, ice box, propane tank, canopy, 1650 lbs can be towed,

\$750. David 282-4519 or 486-5732. '85 Wilderness Travel Trailer, 25' sleeps 5, full double bed, AM/FM cassette stereo, AC, \$7,400. x33124 or 482-1348.

'74 Ford truck bench seat, ex. cond... \$100 OBO. Randy, x34540 or 997-1558. Large drafting table w/scale, \$50; center console for boat, gauges, steering, glass windshield, \$100. Doug,

X39376 or 337-3704 '75 Pontiac 400 ci short block rebuildable, \$75; Trans Am Posi rear end, \$100; 2 spd. power glide "59" original, \$25; Firebird-T/A doors, \$25; various T/A parts, 337-3690.

Spare tire and wheel, 13" fits Honda Civic, \$40. LaVon, x31129 or 486-1187. Toyota truck alum. camper, carpeted bed liner, built in spkrs, BO. Audra,

x39174 or 534-3837. 9 mo. old washer, dryer, \$350; 44 piece Avon Cape Cod collection, \$400; lawn mower, \$75. Bev, x33151.

Combination, gooseneck horse/stock trailer, \$1,250. 554-2627.

April 22, 1988

Heavy duty metal frame, outdoor, 10' 17' trampoline, \$50, OBO, 488-0719. '79-81 new AC compressor, \$200. Vincent, x30874 or 333-1316.

Cordless phone, Uniden EX3000, autosecure, redial, paging, mute, adjustable volume, make offer. 870-0990.

2 party dresses, black, size 7, 1 velvet bodice, taffeta shirt, spaphetti straps, 1 long waisted, pleated short skirt, lace trimmed sleeves, \$30/ea. Jana, x31653 or 532-3008.

Golf clubs 1, 3, and 5 personalized woods, Persimmon heads, extra stiff graphite shafts, \$200. Will, 280-5225.

30" round breakfast table, 2 swivel chairs, \$30; portable zig-zag sewing machine, \$30; 21" lawn mover, \$10; weedeater, \$15; 15" auto wheels (2), \$10, 19" Magnavox RC color tv, needs minor repair, \$20. 481-9697.

Rugs, 2 lt. blue, shag, 11 x 16, \$60/ea.; green shag, 9 x 12, \$25; stainless steel kitchen knobs, 24, \$2 ea.; typewriter, portable, manual, Torpedo, \$50. x30550 or 333-2985.

1980 popup camper, Coleman Legionier, sleeps 6, heater, water hookup, gas range, 2 LP bottles, \$1,200. 486-

New riding lawn mower, 12 Hp, MTD, 38" cut, slight head damage, \$750 OBO. 991-5576 or 485-2289.

Window A/C, Wards 115V, \$100. Julie,

Leading Edge XT, 20MHD, hi-res. color monitor, EGA, microsoft mouse, otus 1-2-3, pro design, WP, \$1,995 OBO; Colt python, bright SS, holster, case, ammunition, \$550. John, x36484 or 486-1186.

Sanyo car stereo, \$40; 5-1/4" spkrs, \$15; weight bench, weights, \$30; amp & pre-amp, \$40; stereo mixer, \$10'8 track player, 2 sets queen sized satin sheets, \$20/set, 338-2620. Mini truck camper shell, boot, cabi-

nets, carpeting, removable bed, black/ white, complete paneling, \$300 OBO. 280-0958. 1980 Honda 750, mags, ex. cond., \$1,250; IBM PC XT color graphics,

640K, hard disk, \$1,350. x30092 or 481-2 9.50 x 16.5 tires mounted on steel wheels, fits on Chev/GMC 3/4 ton pickup or Suburban, \$75. Jim, 486-8564.

Shredder, bagger, mulcher, 8 Hp engine, runs good, \$100. Jim, 486-8564

Compound cross bow, 15 special made arrows, leather pouch, hunting heads, \$200. x38497 or 488-1044. Two person inflatable raft, \$20. Jim,

x35566 or 333-6232. Datsun 260Z parts, bumper, grill, carburetor, bumper struts, apron, hub-

caps, small towing wheels. 280-8796. 8' flourescent light fixtures. Jerry x39287 Theft proof motorcycle lock, \$50:

mobile home cinder blocks, \$10 ea. 280-0016. Rear std. chrome bumper for '83 Ford Van or later, ex. cond., \$50. Myron

Johnson, x37194 or 438-0201.

4 VW rims, good cond., \$5/ea. Karl, x35067 or 333-3544. Ladies Longine watch, stem needs repair, \$40; stereo console, tuner knob needs repair, \$35. Brenda, x37752 or

996-9738. Craftsman 22" 4 Hp self-propelled mower, side bagger, ex. cond., \$125; Ariens 4 Hp tiller, ex. cond., \$225; 2 Hp Briggs & Stratton engine, cast iron body, \$40. 921-7212.

Trade, \$12,000 electronic organ for land, car, truck or boat of equal value.

4 Datsun 280Z wheels, orig. wheel covers, \$75 OBO. Brian, 333-7315 or Heavy duty utility trailer, 8' x 4'

truckbed, new tires, new wheel bearings,

current license plates, \$300, 996-6929. If you witnessed accident involving blue Honda and government vehicle at 7:30 a.m., 4/07/88 at intersection of Ave. E and Second, please contact Vernell at x37431 or x37193.

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. Beverly Green