

Space News Roundup

Vol. 24 No. 21

November 22, 1985

National Aeronautics and Space Administration



Members of this flying human chain are the prime and backup payload specialists for two upcoming Shuttle missions. The group shared some 40 parabolas in the KC-135 aircraft Nov. 20. Left to right are Gerald Magilton, RCA backup PS for 61-C; Sharon Christa McAuliffe, citizen observer on 51-L; U.S. Rep. Bill Nelson, an observer on 61-C; Barbara Morgan, backup to McAuliffe; and Robert J. Cenker, RCA PS for 61-C. (Photo by Otis Imboden)

NASA solicits OMV ideas

A request for proposal has been issued by the Marshall Space Flight Center inviting the three aerospace companies involved in previous definition studies — LTV, Dallas, Tex.; Martin Marietta, Denver, Colo.; and TRW, Redondo Beach, Calif. — to compete for the design, development and manufacture of an Orbital Maneuvering Vehicle (OMV).

Often called a "space tug", the vehicle would be used to transfer satellites and other objects between Earth orbits. The maneuvering vehicle is expected to extend the reach of the Space Shuttle by about 1000 miles.

The companies have until Dec. 20, 1985 to respond to the request. From the proposals submitted, NASA will select one of the three companies to build the vehicle. The first contract is expected to be awarded June 1986 with the first flight planned for early 1991.

The contract includes provisions for testing and hardware flight test-
(Continued on page 2)

Contracts to study station power

The Lewis Research Center has awarded a total of \$8.7 million in four advanced development contracts in support of the definition and preliminary design (Phase B) of the power system for the Space Station.

A major technical issue in Phase B is a determination of whether solar-generated power for the Space Station will be best supplied by photovoltaic arrays or by a solar dynamic (heat engine) system. Photovoltaic arrays are the accepted system used to produce electricity for both manned and unmanned space missions. How-

ever, the electrical power requirements for the Space Station are 10 times higher than any mission flown to date and would require arrays of approximately one half acre for the initial station. Interest in solar dynamic systems lies in their higher overall efficiency and relatively smaller size.

In a solar dynamic system, electricity is produced by an alternator driven by a turbine in a heat engine cycle. Heat for these cycles is provided by focusing the sun's rays, by means of a concentrating mirror, into a heat receiver where the engine gas or liquid is then heated.

The system operates as a closed-cycle heat engine and a radiator cools the working fluid and rejects the waste heat to space.

Under a \$1,010,303 cost-plus-fixed-fee contract awarded to Sundstrand Corp., Rockford, IL., two issues of an Organic Rankine Cycle engine will be studied. The Rankine is a vapor cycle using the boiling and condensing of an organic fluid such as toluene. The magnitude of possible chemical and thermal degradation of the working fluid will be studied. The contract will run for 36 months with performance at Rockford.

A \$1,010,000 cost-reimbursement contract to Grumman Aerospace Corp., Bethpage, NY, will study the solar dynamic waste heat radiator technology. The contract will run for 27 months with performance at Bethpage.

A \$3,117,059 cost-plus-fixed-fee contract to Boeing Aerospace Co., Seattle, Wash., will study the heat receiver/storage unit and identify and recommend testing required for concept verification. The contract will develop tooling and fabrication processes, perform detailed engineering design and analyses, fabricate test hardware, and con-

duct verification and demonstration tests. The contract will continue for 36 months in Seattle.

A \$3,619,870 cost-sharing contract to Harris Corporation, Melbourne, FL, will generate conceptual designs for the solar dynamic dish concentrator. The contract will further identify and test materials, identify and recommend testing required for concept verification, perform engineering designs, fabricate the concentrator and conduct verification and testing. The contract will continue for 36 months in Melbourne.

'Tis almost the season

A sampling of upcoming Yuletide events

Women's Christmas Dinner is slated for Dec. 10

Tickets are now on sale for the annual dinner for JSC women, which will be held at 5 p.m. Dec. 10 at the Gilruth Recreation Center. The dinner, open to all women on site, will be limited to 200 persons. Reservations are required by Dec. 3, and should be made with directorate or program office secretaries, according to Betty Sue Fedderson, coordinator of the event. For the first time, the JSC Exchange Council will be subsidizing a portion of the party expenses. The event will consist of a social hour from 5 to 6 p.m., with a Chicken Kiev dinner beginning at 6:15 p.m. A gift exchange will follow the dinner. For more information, contact your directorate or program office secretary.

EAA sponsoring Christmas tree sale at Gilruth

This may be the best bargain around when it comes to shopping for a Christmas tree this year. For \$16, employees will be able to choose from a large selection of trees, ranging in size from four feet to eight feet, at the Gilruth Center

beginning at 9 a.m. Saturday, Dec. 7. The trees will be on display within the boundaries of the tennis courts at the Rec Center. Tickets will go on sale at 9 a.m. sharp for \$16 each. The ticket buys admission to the tennis courts. Twenty shoppers will be allowed in at a time, first come, first served. There will be a limit of two trees per customer. A refund is available if no tree is selected. The sale is open to all Civil Service and contractor employees. For more information call Ann at x2948.

Boat Lane Parade on Clear Lake is Dec. 7

The annual Clear Lake Christmas Boat Lane Parade, sponsored by the NASA Area Shrine Club, will be held beginning at 7 p.m. Saturday, Dec. 7. Billed as the world's largest Christmas boat parade, the event will feature "more than a million dollars worth of brightly lighted boats," according to George Glauner, a spokesman for the event. Viewing sites include the Kemah-Seabrook Channel, Harris County Park, Watergate, Glenn Cove and Clear Lake Shores Park. For more information, call Glauner at 333-3526 or 326-1054. Live coverage

of the event will be carried on KYND-FM, 92.1 on the dial.

EAA has tickets for Dickens on the Strand

Discount tickets are now available from the Employees Activities Association for Dickens on the Strand, the annual Victorian Christmas celebration in Galveston. The celebration runs from 10 a.m. to 10 p.m. Saturday and Sunday, Dec. 7 and 8. The tickets are \$3 and are available at the Bldg. 11 Exchange Store. The Strand is located between 20th and 25th Streets. The event is being sponsored by the Galveston Historical Association.

EAA Santa Clause to visit at Children's Christmas party

The EAA will sponsor a Christmas party for children of JSC employees from 10 a.m. to noon Dec. 7 at the Gilruth Recreation Center. Activities will include pictures taken with Santa Claus. Tickets are on sale for \$1.50 in the Bldg. 11 Exchange Store.

NARFE to hold Christmas dinner Dec. 3

The NASA Area Chapter of the

National Association of Retired Federal Employees will hold its annual Christmas dinner meeting beginning at 6 p.m. on Tuesday, Dec. 3. The meeting will be held at the Harris County Park Bldg. on NASA Road 1. For more information, call Dick Jacobs at 532-1075. The local NARFE chapter also holds monthly meetings throughout the year.

EAA sponsoring Christmas dances Dec. 13 and 14

The Employees Activities Association will mark the holiday season with two Christmas dinner dances for employees on Dec. 13 and 14. Both dances will feature the music of the Mark Davis Orchestra and Sunshine Festival. The Dec. 13 dinner, roast beef with trimmings, will be \$10 per person. The Dec. 14 dinner, prime rib with trimmings, will be \$15 per person. Both events begin with a social hour at 6:30 p.m., followed by dinner at 8 p.m. and dancing from 9 p.m. to 1 a.m. Tickets are now available at the Bldg. 11 Exchange Store and will be on sale through Dec. 11, limit 8 tickets per person. For more information, call Barbara Fawcett at x6251.

M. D. Anderson cards available locally

Christmas cards designed by the young cancer patients at M. D. Anderson Hospital have been a Houston tradition since the 1970s. The cards are available again this year at a variety of locations in the Clear Lake area. Proceeds go to benefit the Pediatric Department at the hospital. There are eight designs to choose from, drawn by children aged 11 to 17. A package of 20 cards is \$7. The cards are available at Joske's in Baybrook Mall, Sakowitz on NASA Road 1, all Pizza Huts, Dorothy Stall & Associates Realtors at the Nassau Bay Shopping Center, and at all Allied Bank outlets. For more information, call 792-CARD.

New Year's Eve dance planned by EAA

Although details were incomplete at press time, the EAA is now planning for the annual New Year's Eve dinner dance at the Gilruth Recreation Center. Employees interested in the event should consult the next issue of the *Roundup* (which will be dated Dec. 6) for details.

Space News Briefs

Voyager 2 closing on Uranus

The venerable deep space probe Voyager 2 is closing on the planet Uranus and its moons, with a closest approach scheduled for 8 a.m. CST Jan. 24. Voyager has already imaged the planet and its five known moons and, at a distance of almost 50 million miles, was able to send back a faint image of the outermost, or epsilon, ring of Uranus. Since the rings are believed to be composed of some of the darkest material in the Solar System, scientists were somewhat surprised that an image, however faint, was possible at such a distance. At 11 a.m. CST Nov. 26, Voyager will be 1.82 billion miles from Earth and 46.8 million miles from Uranus. Voyager's geocentric velocity (its speed relative to Earth) is 101,070 miles per hour. Images of Uranus to date have shown no features in the atmosphere of the planet. The moons show up as tiny points of light, and the planet itself resembles, in the words of one scientist, "a fuzzy blue tennis ball." Voyager 2's sister ship, Voyager 1, is now 11 Astronomical Units above the Ecliptic Plane, traveling at a velocity of about 1.5 A.U. per year. One A.U. is the mean distance between the Earth and the Sun, or about 93 million miles.

JSC to build Station thermal test bed

Plans are in work for the construction of a test bed at JSC for determining thermal loads on components of the Space Station. The Center has selected Rockwell International Corp. of Houston for negotiations leading to the award of a contract for the design and test sequence studies on the test bed. The goal of the facility will be to determine what thermal loads will be placed on the habitation modules and structure of the Station by the space environment. The \$6.1 million cost-plus-fixed-fee contract will run from Jan. 1, 1986 through Dec. 30, 1990 and will be performed at JSC and at Rockwell facilities in Clear Lake.

Nelson to conduct crystallography test

Rep. Bill Nelson, D-Fla., the Congressional Observer who will fly on STS 61-C in December, will attempt to grow protein crystals in space for the cancer research program at the University of Alabama at Birmingham. Researchers are trying to understand the molecular structure of proteins as they look for ways to combat cancer in the body. Knowing the structure is the key to understanding how the molecules carry out their biological functions. If the molecules can be linked to cancer, their behavior could then be altered with drugs so as to inhibit the growth of cancer cells. But researchers need a relatively large and well formed crystal for X-ray diffraction studies, and such crystals are difficult to grow on Earth. Nelson will be building on a new procedure for seeding the crystals that will first be tried by Payload Specialist Charlie Walker during the STS 61-B flight next week.

Austria and Norway become full ESA members

Austria and Norway were unanimously approved as full member states of the European Space Agency at the 71st meeting of the ESA Council in late October. The agreement between the Republic of Austria and the Kingdom of Norway will be put forward for governmental approval and parliamentary ratification as both nations move toward full membership status by Jan. 1, 1987. That would bring the total number of nations within ESA to 13. The two countries have been associate member states since 1981.

Bulletin Board

JSC blood drive is Dec. 5

The third JSC blood drive of 1985 will be held from 8:30 a.m. to 4 p.m. Dec. 5 at the Gilruth Recreation Center. Appointments for donating blood can be made by calling Helon Crawford, x5238, Jim McBride, x6226, or Bob Jones, x6251.

Comet discussions highlight brown bags

The two remaining noontime discussions in the JSC Astronomy Brown Bag series will focus on viewing Comet Halley and on comet nuclei morphology. The seminars are held Wednesdays from noon to 1 p.m. in Conference Room 193 of Bldg. 31. On Dec. 4, Mark Lardas of the JSC Astronomical Society, who is editor of the Society's newsletter, "Starscan," will discuss telescopes and what to look for when choosing something with which to view Comet Halley. On Dec. 11, Jim Zimbelman of the Lunar and Planetary Institute will describe what is known about the nuclei of comets. The Dec. 18 meeting will be an open discussion and no meeting is scheduled for Dec. 25. Persons interested in giving presentations in the fields of astronomy and spaceflight should call Al Jackson at 280-2285.

BAPCO meets Dec. 17

The Bay Area PC Organization, BAPCO, the local IBM-PC user's group, will hold its next monthly meeting at 7 p.m. Tuesday, Dec. 17, at the Holiday Inn on NASA Road 1. BAPCO meets regularly on the third Tuesday of each month. For more information, call Earl Rubenstein at x3501 or Jack Galvin at 326-2983.

"Planet Earth" to air in January

"Planet Earth," a new public television series produced by WQED/Pittsburgh and the National Academy of Sciences, will air on PBS beginning January 22. The series, featuring stock footage from the JSC film archives, explores geoscience on Earth and throughout the Solar System. The eight-episode series runs for one hour each Wednesday and concludes March 5.



The four JSC employees named as the Outstanding Employees of 1985 by the Federal Business Association gathered recently for a group photo. Pictured are, back row, left to right, Jesse T. Adkins, Jr. and William J. Nunnery, and front row, left to right, Lillian M. Hudson and Freda M. Lowe.

EAA to be restructured

When the 24th General Assembly of the Employees Activities Association convenes Jan. 1, it will be amidst an effort to revitalize the organization with new people and ideas.

For the first time, representation in the EAA will be based on organizational structure, rather than the physical location of JSC employees.

"We're trying to get a little better visibility for the EAA," said Harvey Hartman, Chairman of the Exchange Council, which oversees EAA and other NASA Exchange operations. "In the past, the EAA has drawn its representatives from districts, with the districts based on floors and buildings. That repre-

sentation went across organizational lines, but information tends to flow more logically among employees within an organization."

New districts have been created which are based on employees within a division. The districts are grouped by location.

Another change will be the way in which representatives are chosen. In the past, elections were the uniform method. Beginning with the 24th General Assembly, representatives will be selected by whatever method the organizations choose appropriate.

"Our goal is to try to make the EAA a little stronger," Hartman

said. "We are looking for other ideas, on how to expand outdoor facilities for instance, and we want to hear from people around the Center. The hope is that this change will revitalize the EAA."

The EAA is one arm of the employee oriented programs at JSC, all of which are overseen by the Exchange Council. Other elements of the NASA Exchange are the Cafeteria, the Gilruth Center and Exchange Operations. The Exchange Council is appointed by the Center Director, and includes three primary officers of the EAA. The EAA budget this fiscal year is \$110,000.

Diversity pleases this secretary

For Kochetia Morman, no two days are ever the same as secretary to the Director of Center Operations.

Morman, named JSC's Outstanding Secretary for October, works in an office where phone calls, visitors and out of the ordinary situations abound.

Since the Center Operations Directorate is responsible for the multitude of support services that keep JSC running, public and employee relations are important and frequent. "The directorate is tasked daily with unusual requests as well as routine requirements," said Center Operations Director Kenneth Gilbreath. "We often receive suggestions and complaints on how to make JSC better. As a result, Mrs. Morman gets many visitors in the



Kochetia L. Morman

director office. She is usually the first person that a visitor sees when contacting Center Operations."

For Morman, that diversity is welcome. "It's really made the job

interesting," she said. "There is something different every day." Comments and suggestions, she said, range along a wide variety of topics, from the beauty of the grounds at JSC to the quality of the Center's toilet paper. "You name it, we hear about it," she said.

As with other directorate secretaries, Morman's duties are extensive. She has full responsibility for office management and procedures, correspondence for the directorate and division offices, action items for the organization, administrative management of all training, Equal Opportunity reporting, awards and personnel status.

"She can always be counted on to give 100%," Gilbreath said. "And she has made herself a very vital part of this organization."

OMV proposals sought

(Continued from page 1)

ing prior to its actual operational missions. One maneuvering vehicle will be built with an option by NASA to build a second.

The vehicle would be an element of the present Space Transportation System, the heart of which is the Space Shuttle. Although the Shuttle already has proven to be an effective ferrying system in moving satellites and other equipment to space and back, the range-extending capabilities of the maneuvering vehicle make it a valuable addition to the Space Transportation System.

The OMV would have the ability to retrieve satellites from high orbits, bring them back to the Shuttle for maintenance and repair, then return the repaired satellites to their operational orbits. It also would serve as a means of reboost-

ing satellites as their orbits gradually decayed.

The maneuvering vehicle will be an unmanned spacecraft, 15 feet in diameter and approximately 4 feet in length. Its life will be approximately 10 years with refurbishment and on-orbit maintenance included in the design.

Plans call for the maneuvering vehicle to be deployed from the Shuttle for short duration missions. Later it will remain in orbit for extended periods for use in both Shuttle-based and Space Station-based modes of operation. Its role in support of a future Space Station is viewed as one of the maneuvering vehicle's essential attributes. The OMV is expected to be available for assembly and buildup of the Space Station in the early 1990s. The maneuvering vehicle then would become an essential element of Space Station operations.

F-8 oblique wing planned

NASA has awarded a \$400,000 contract for the preliminary design of a pivoting wing for an F-8 supersonic aircraft.

The contract went to North American Aircraft Operations, Rockwell International Corporation.

The pivoting wing is set in the conventional aircraft flight position for take off and landing operations. For faster flight speeds, the wing is pivoted so that one side is swept forward and the other side is swept aft, forming an oblique angle with the aircraft's fuselage. In the oblique wing configuration, the aircraft encounters less air resistance in high-speed flight.

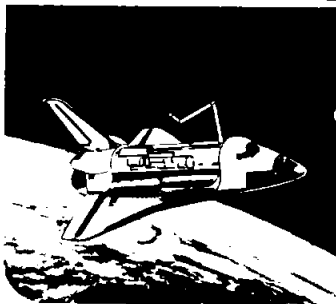
This contract covers Phase "B" of a joint NASA/Navy program.

NASA
Lyndon B. Johnson Space Center

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 other Friday by the Public Affairs Office for all space center employees. Roundup deadline is the first Wednesday after publication.

Editor.....Brian Welch



Das Leben auf dem Spacelab D-Eins



Life aboard Spacelab D-1 on STS 61-A was a busy, around the clock effort on behalf of an international collection of over 70 experiments. The first mission to be chartered by another nation, it was also the first to have a remote payload control center overseas. The results were *ausgeseichnet*, according to the Germans. Scenes from the mission included, above, a crowded Spacelab module during shift handover and, above right, with Wubbo Ockels as the test subject, a series of experiments designed to understand bodily adaptations to micro-gravity. Halloween was celebrated, at left, by Commander Hank Hartsfield in a do-it-yourself mask, while, below center, Ockels tried out a new sleeping restraint of his own design. Views of the Earth included a dramatic shot of Houston on Nov. 5, clearly showing the towering cloud from the explosion at a refinery in Mont Belvieu, below left, a view of the 61-A landing site at Edwards Air Force Base, right, and an oblique view of Hurricane Juan, below right. At bottom, the largest spaceflight crew in history gathered for a group portrait.

