Space News Roundup)

News Briefs

Vol. 23 No. 22

3M praises DMOS resuits

The 3M Corp. last week described its Diffusive Mixing of Organic Solutions (DMOS) experiment aboard STS 51-A as "99 percent perfect and an unqualified success." Crystals grown in two football-sized chemical reactors aboard Discovery were shown to the public Nov. 20. A third reactor produced "technically significant amounts of crystals," 3M said, while the remaining three reactors produced no crystals, apparently because valves within the DMOS experiment did not open properly. "Despite concern over the unopened reactors, 3M scientists were decidedly bullish about obtaining results from three of four experiments conducted in the six reactors.' a company announcement said. Photo-optical properties of the crystals will be studied as part of a long-range 3M research program.

Miss Baker passes on

Miss Baker, who with another squirrel monkey named Able was launched 300 miles into space aboard an Army Jupiter missile in May 1958, died Nov. 29 in Auburn, Alabama. The 27-year-old primate died of kidney failure at the Auburn Clinic. The 15-minute suborbital flight of the two animals paved the way a year later for the first manned Mercury mission by Alan Shepard. Miss Baker had lived for years at the Alabama Space and Rocket Center in Huntsville. Able died shortly after the 1958 flight.

Arlane-3 boosts MARECS

The second launch of an uprated Ariane rocket, the Ariane-3, and the 11th launch of the European Space Agency's expendable rocket system, boosted the ESA maritime communications satellite, MARECS B-2, and an American satellite, SPACE NET F2, into orbit on Nov. 9. The first Ariane-3 launch, featuring a more powerful version of the basic rocket system, launched two communications satellites into orbit Aug. 4. Both launches took place at the Kourou, French Guiana launch site.

CU sets holiday closings

The JSC Federal Credit Union will be closed Monday and Tuesday, Dec. 24 and 25, and Tuesday, Jan. 1, in observance of the holidays. The 24-hour automated teller machine at the Credit Union will. however, be open those days.

BAPCO to meet

The Bay Area PC Organization will hold its next meeting at 7:30 p.m. Tuesday, Dec. 18, at the Sheraton Kings Inn on NASA 1. The program will feature a discussion of Wordstar word processing. For more information, call Earl Rubenstein at x3501. or Hattie Thurlow, x2213

Casa de Esperenza seeks aid

Casa de Esperenza (CDE) is a temporary housing facility for neglected or abused infants and toddlers that is dependent on donations in order to operate. Donations of clothes, food, toys, diapers, blankets, money, or volunteer services are needed. Contributions or questions about the organization may be addressed to CDE, P.O. Box 66581, Houston, TX 77006, or call CDE at 526-7269 or Bobbye Ann Landtroop at 482-6686 after 6 p.m

Children's Christmas Party

The annual JSC Children's Christmas Party will be held at the Gilruth Recreation Center on Saturday, Dec. 15. at 10 a.m. Party activities planned are pictures with Santa: a movie. "Babes in Toyland;" and Christmas stocking favors. Tickets, on sale at the Bldg. 11 Exchange Store, are \$1.50 each.



Astronauts Joe Allen and Dale Gardner, atop the highest and most versatile billboard in this part of the Galaxy, advertise the upcoming sale of two slightly used communications satellites in this picture from Mission 51-A. The photo was taken during the second EVA after retrieval and berthing of the Westar satellite. For more photos, see page 3.

Industry returns 13 proposals on Space Station RFP

NASA has received 13 proposals from U.S. industry for definition and preliminary design of a permanently manned Space Station to be operational in low-Earth orbit in the early 1990s.

A Request for Proposal (RFP), issued in September 1984, contained four "work packages" covering definition and preliminary design, or Phase B, of Space Station elements. NASA plans to let competing contracts for each of the work packages and has scheduled April 1, 1985, as the effective date of the contracts.

Proposals from the following groups of companies were submitted to the Source Evaluation Board on Nov. 15, 1984. Work packages and NASA Centers responsible are listed first with primary team leaders, other team leaders, subcontractors, and advisors submitting proposals following each work package.

Work Package One: Marshall Space Flight Center — definition and preliminary design of pressurized "common modules" with appropriate systems for use as laboratories, living areas, and logistic transport; environmental control and propulsive systems; plan for equipping a module as a laboratory and additional ones as logistics modules; and plan accommodations for orbital maneuvering and orbital transfer vehicles. Bidders were:

 Boeing - Teledyne Brown Engineering; General Electric; Vought; OAO; Thermacore; Garrett; Hamilton Standard; Life Systems; Lockheed; Umpqua; Perkin-Elmer; Fairchild; Aerojet; Rocketdyne; Rocket Research; Eaton; Sundstrand; Westinghouse;

(Continued on page 2)

Employee teams sold on NETs concept

"Results" is becoming a byword for JSC's NASA Employee Teams (NETS), as four teams have received overwhelming approval of their recommendations following presentations to management.

In the NETS program employees work in groups to investigate organizational problems and make recommendations for improvements. All team members are people who volunteer because they see a potential to make improvements. The four teams who have presented their recommendations to management are among the six original NETS teams formed at JSC last April. They include groups in Procurement, Technical Services, and Facilities Design, as well as a center-wide administrative/executive secretarial team. Although skeptical at first, team members, leaders, and facilitators now agree that employee involvement through NETS can result in worthwhile solutions for a variety of work area problems.

Helen Crawford, a member of the Procurement team who has been with NASA nearly 20 years, had early reservations about the program, as did many of the participants. "I have seen a lot of new things come and go here and I wasn't sure this one would be any different. We were not sure that we would be allowed to work on the things we felt needed to be changed; or that we could safely 'speak' our minds and work toward a solution for the benefit of all," Crawford said.

But management seemed sincere and Crawford said she decided to get involved. She and the others soon found that they could be honest in working on problems and that management greatly valued their input. "NETS are workable, lead to higher productivity, cost savings, and happier employees." Crawford said.

Seconding Crawford's enthusiasm for the NETS process, Procurement team leader Eleanor Der Bing pointed out that "this was the first opportunity that our employees have had to be participative in decision-making.

John Heckler, team leader from Technical Services and Quality Assurance was also skeptical at first, and said his team "came up with a whole list of concerns in our training about why the NETS program might not work." These early doubts, shared by the other NETS teams, included strong reservations about whether management would seriously consider team suggestions and a concern that uncooperative and overbearing personalities could cause teams to be ineffective. Today, however, Heckler said, most of these apprehensions have proven to be either unfounded or non-

"I think many people were skeptical that a program like this could work at Johnson Space Center," observed Jack Kochner, who facilitated two teams, "and I think many of these people have been surprised."

In fact, support for the NETS effort has been very strong, with enthusiasm and commitment coming from employees and managers throughout the Center. Grassroot level support comes from the team members who consistently chip away at problems week after week, striving for improvements in keeping with organizational goals. The reason for this dedication to the NETS effort was explained by Heckler, who said, "we should be at top efficiency to support the missions of the Center and if management and employees can meet halfway to solve the barriers that get in the way of top performance, we should do that.'

Team participants are not the only ones who support NETS. Management has been extremely pleased with NETS' results as well.

"I don't know what they learn in training, but I'm impressed with their teamsmanship and results," said J.D. Williams, Chief of the Technical Services Division. Dick Thompson, Facilities Design Chief, agreed that the team contributes to his division and also acknowledged its merit for employees, crediting NETS as being "valuable experience and training for the people involved.

Harvey Hartman, Deputy Personnel Officer who chairs the Center's NETS Steering Group, summarized, "the teams' work has been high quality. Not only have they done sound homework and not left any stones unturned, but they make pragmatic, realistic decisions." He attributed their success to two factors. "First, they have solved some real problems and, secondly, they've gotten real commitment to make their solutions work."

Positive response to the original NETS has been strong enough that four more teams were organized and trained in August. According to Alma Martin, the Center's NETS Coordinator, further expansion of the program is on the horizon. "I have gotten new requests for NETS and we'll be having another round of training sessions very soon," Martin said.

The process takes time and effort, but satisfaction at making a solid contribution is evident among team members, as is illustrated by the team stories which follow.

NASA-wide uses

The Space Center Operations Procurement team, comprised of contract specialists in the Base Operations Procurement Office, is led by Eleanor Der Bing and facilitated by John Duncan.

Known as the P.E.P. (Promoting Efficient Procurements) team, this group designed a new purchase order form (NASA Form 1429) to replace NASA Form 1379, now obsolete due to the relatively new Federal Acquisition Regulations (FAR). The team also developed new internal procedures to simplify procurement.

(Continued on page 2)

Opinion

The Fat Lady Sang

Throughout the most recent Space Shuttle mission, a flight which is already being labeled as among the most spectacular and important of the 14 mounted thus far, a certain tangible sense of caution could be perceived running through the collective mind of NASA management. Managers and members of the flight control team seemed to be saying to themselves, midway through the flight, "Okay, we've got Palapa. Let's wait and see how the Westar retrieval goes before we light any cigars." After Westar was hauled into Discovery's payload bay, it was a matter of awaiting a successful landing before that last long sigh of relief and exultation could be breathed. The mission, more than most, seemed to have a great many adherents to the old cliche that "the opera ain't over 'til the fat lady sings." The sense of having a great deal riding on the mission was palpable. But hasn't NASA done this kind of thing before? Doesn't the Agency have a solid record of venturing out to the edge of the envelope, snatching success out of the ether, then journeying home to build on that achievement? The answer to those questions is yes, but there was I members said that since there is more to it than that. Flight 51-A was something beyond a journey to . no such aid, employees who the edge of the envelope. It was a flight which defined an entirely new envelope, and then with no overwhelming assurance of success, went out to meet the challenges which had been set, all in something less than eight short months. NASA has said for some time now that the achievements of Apollo and later manned missions forever put to rest, in the most practical of terms, that old space age debate over man versus machine. It is now a question of man and machine, and Flight 51-A was the latest and perhaps the best demonstration of that. But the proof of the pudding was something more than just demonstrating the utility and flexibility of people in space. "The flexibility that people bring to the equation," JSC Director Gerald D. Griffin said, "has made what in several cases could have been the ultimate difference. We have proven that the flexibility of people in orbit allows us to respond in short order to unforseen circumstances." Spacewalkers Joe Allen and Dale Gardner, he pointed out, handled two large masses which were not designed to be handled. George Nelson and James Van Hoften performed repairs on Solar Max last April which were not originally designed into the spacecraft's tolerances. "Both flights taught us a great deal about what we can do with people in Low Earth Orbit, and this knowledge will prove useful to us as we construct the Space Station," Griffin said. But we also now can be sure of something else, he continued. "What we are now capable of doing in Low Earth Orbit will be carried to higher orbits. Using the Space Station as a staging point, we will eventually send people to Geosynchronous Earth Orbit." Once we achieve that capability, almost all satellites will be within reach of the repairman's screwdriver or the delivery system's transport back to Earth. With Flight 51-A, an entirely new book is about to be written in the space business, and the mission itself was but the first chapter.

Space Station proposals

(Continued from page 1)

Rockwell Autonetics; TRW; Computer Tech Associates; Hughes; Telephonics; Camus.

 General Dynamics - Grumman; Hamilton Standard; Life Systems; Ford Aerospace; TRW; Ball Aerospace; Computer Sciences; Otha C. Jean & Associates; Aerojet; Honeywell; RCA; Rocketdyne; SPAR Aerospace; Sperry; Telephonics.

 Martin Marietta - McDonnell Douglas Technical Services; Hamilton Standard; Honeywell; Hughes; Hercules; Wyle Labs.

Work Package Two: Johnson Space Center - definition and preliminary design of the structural framework to which the various elements of the Space Station will be attached; interface between the Space Station and the Space Shuttle; mechanisms such as the Remote Manipulator Systems; attitude control, thermal control, communications, and data management systems; plan for equipping a module with sleeping quarters, wardroom, and galley; and plan for extravehicular activity. The bidders were:

- Lockheed TRW; Bendix; Hughes.
- McDonneil Douglas IBM; Honeywell; RCA; Ball Aerospace; Computer Sciences; Design West; Communications and Data Systems Associates; Eagle Engineering; Essex; Fluor; Ford Aerospace and Communications; Hamilton Standard; ILC Space Systems; SPAR Aerospace; LTV Aerospace and Defense.
- Rockwell International Grumman; Harris; Sperry; Intermetrics; SRI International.

Work Package Three: Goddard Space Flight Center - definition and preliminary design of the automated free flying platforms and of provisions to service, maintain, and repair the platforms and other free-flying spacecraft; provisions for instruments and payloads to be attached externally to the Space Station; and plan for equipping a module as a labora-

 General Electric - TRW; Essex; Integrated Systems Analysis; Perkin-Elmer; SPAR Aerospace; Teledyne Brown Engineering.

· RCA - Lockheed; Ball Aerospace; Computer Sciences.

Work Package Four: Lewis Research Center - definition and preliminary design of the electrical power generation, conditioning, and storage systems.

- Garrett Acurex; Advanco; University of Houston; Electro-Space; Mechanical Technology; Thermo Electron; LTV Aerospace and Defense; EBASCO Services; GA Technologies; Lockheed.
- Rocketdyne Sundstrand; Ford Aerospace and Communications; Harris; Lockheed; Spectralab; Acurex; Georgia Tech.
- TRW General Electric; Grumman; General Dynamics; Perkin-Elmer; United Technology; Mechanical Technology; Life Sys-

Other proposals were submitted by Natural Energy Systems with ODC, Inc., and by J.C. Gadouy.

In addition to the study of the permanently manned system, the RFP requires contractors to study how those elements of the Space Station would change were the station initially man-tended rather than permanently manned. Contractors also will be expected to pay particular attention to recommendations of the NASA Advanced Technology Advisory Committee, which is identifying automation and robotic technologies that could be used in the Space Station.

Following completion of the 18-month definition and preliminary design contracts, NASA intends to move, in 1987, into final design and development of the Space Station. Proposers for Phase B must have the capability to perform and manage the design, development, and test phase, Phase C/D, of their appropriate work packages.

NETs concept draws praise

(Continued from page 1)

"The project required support and assistance from numerous JSC and contractor personnel and we want to express our appreciation to these individuals,' team members declared. James Neal, Director of Procurement, approved the implementation of the team's proposals and the team expects a substantial cost savings to the government as a result. The new purchase order form is

Since completion of their first proposal, the P.E.P. team has been concentrating on developing a one-page instruction for initiators of purchase requests. Team initiate purchase requests frequently supply inadequate or incorrect information.

Thirty-two proposals

The "STEP" (Solutions Through Employee Participation) team from Technical services and QA is led by John Heckler. Facilitated by Jack Kochner, the group developed 32 separate recommendations for

the Technical Services Division in the safety areas of training and education, equipment, and enforcement of existing rules and

According to Division Chief J. D. Williams, the team's solutions are realistic and will serve to keep the division's safety program active and viable. Williams was appreciative of the team's proposals, and responded with a letter and a personal presentation to the team, explaining the actions he intends to take as a result of their work. Among these actions is a complete rewrite of the Technical Services Safety Manual, which will incorporate the team's suggestions.

The STEP team's second project, determining potential improvements in work flow through the division, is now underway with Tom Baugh as facilitator. Heckler says this problem is a complicated one with many connections between people, divisions, and shops, all providing chances for work to get "hung up" on its way to completion.

The team is now identifying the obstacles to smooth work flow, after which they will decide how

to eliminate those congestions. Williams has a lot of faith in the team and is "confident they will come up with ideas to enhance work flow in our division.'

Efficiency improved

Employees on the Facilities Design team, led by Grady Owens and facilitated by Ginny Hughes, considered alternatives to having engineers fold construction draw-

On the surface, this may appear to be a petty problem. Team leader Owens, however, said that some 13,000 drawings per year are folded by project engineers, and time spent folding drawings could be spent more efficiently in managing projects or reviewing

Teams are told during training to start with a relatively simple problem, but this problem proved more complex than the Facilities Design team had anticipated. "Every issue we examined in solving the problem impacted other people and we had to consider those impacts," Owens

After exploring all alternatives, the team decided the best solution was to completely eliminate the folding requirement.

When the team presented the rationale for its solution to Division Chief Dick Thompson in August, he immediately approved the proposal and implemented it.

Members of the Facilities Design team have now turned their attention to the drawings themselves, with emphasis on identifying and eliminating unnecessary details, doing away with wasted drafting time and possibly reducing the number of required drawings per project. The team felt this effort would improve their division's productivity, enabling it to take on more assignments.



STEP Team members pictured, from left, are Herbert Mitchell, Norman DeLoof, Quinan Swing, John Heckler, Ralph Orwick and Hollis McDaniels. Not pictured: Greg Barbour, Tom Baugh and LaMarr Beatty.



PEP Team members pictured are, from left, Gerri Mason, Helon Crawford, Jerry Smith, Marsha Fuller, Eleanor Der Bing, Mary Youngblood, Mitzi Broyles, Carol Coats and John Duncan. Participants not pictured are Roy Field. Joyce Fields, Kateri Cummings and Erika Sharp.



Center-wide NET members are, from left, Ruth Hollen, Kochetia Morman, Sue Wilson, Freda Lowe, Lynn Ross, Jack Kochner, Hannah Thornton, Carolyn Lowrimore, Judy Wyatt and Marie McCright. Not pictured are Teresa Sullivan and Sylvia Salinas



Facilities Design NET members are, from left, Ron Williams, Sharon Cordes, Tom Conger, Grady Owens, Ginny Hughes, Joe Gardner, Kathy Rauch and Phil Callen. Not pictured is Tom Raines.

Training planned

Led by Carolyn Lowrimore and facilitated by Jack Kochner, an employee team of JSC administrative officers and executive secretaries has developed a five-day training course for new JSC

The group was first formed last January when the Employee Development Branch asked them to examine JSC's current secretarial training opportunities and make recommendations for improvement. After learning of the NETS concept, the group decided it provided a perfect forum for their work and became a NET in April.

With regard to their team effort, Lowrimore said, "currently there is no formal training and new secretaries are trained by other secretaries in their area." This means new employees may not get all the information they need.

In approaching this problem, the team interviewed representatives from other NASA centers as well as private sector companies to learn what secretarial training other organizations offered. Out of this information and their knowledge of JSC requirements, the group formulated the five-day training plan.

Following the team's management presentation, Center Personnel Officer Jack Lister approved the training program and took responsibility for implementing it. The training will eventually be offered five days every month.

No limits set

The limit of NETS expansion is only set by the level of employee interest throughout the Center, Martin said. Teams are available to any area of the Center that would like to form one. Any person or group who would like more information about the NETS program should contact Martin.

-- Patti Ferguson

The Eagle 6



he Eagle flew in more ways than one during STS 51-A, as payoffs came from planning, training and hard work in preparation for the difficult mission. Above, Dale Gardner makes it look easy as he closes on Westar for the retrieval phase of the second EVA. Below left, he then flies Westar back to the Orbiter. Below, Joe Allenwrestles with Palapaas Gardner gathers tools. One result of those exertions came during the second EVA, when this euphoric photo of Gardner, left, was taken by Allen, mirrored in the visorplate. Below, the meteoric streak of an Orbiter on reentry, accompanied by a sonic boom, was photographed and felt over Houston, but not before one last crew portrait. After the landing came the welcome at Ellington, including a reunion of the Fisher family — Bill, Kristin and Anna.









Roundup Swap Shop

Ads must be under 20 words total per person, double spaced, and typed or printed. Deadline for submitting or cancelling ads is 5 p.m. the first Wednesday after publication. Send ads to AP 3 Roundup, or deliver them to the Newsroom, Building 2 annex. No phone-in ads will be taken. Swap. Shop is open to JSC federal and on-site contractor employees for non-commercial personal ads

Property & Rentals

For lease: Small condo, all appliances furnished, near NASA & UH-CL, \$300/ mo. Call 480-9657 after 5 p.m.

For sale: 1982 14'x70' Nuway Mobile Home, 2-2 w/laundry room, composition roof and siding, storm windows, skirting and deck, exc. cond., \$16,950. Call 332-1423 after 5:30 p.m.

For lease: El Dorado Trace, 1-1-1 carport, great location overlooking pool, 2 balconies, F/P, icemaker, ceiling fan, miniblinds, sauna & whirlpool, like new, \$380/mo. Call Karen, 280-7272, after 6 p.m. call 554-2538.

For sale: Barringer Knoll Fourplex, fully rented, 11/2 years old, good tax shelter. Call 334-4395 after 5 p.m.

For lease: Nassau Bay Townhome, 3-21/2-2, courtyard, atrium, fans, F/P, available Dec., \$650/mo. Call Myron. x2386 or 333-5198 evenings.

For lease/purchase: Friendswood, 3-2-1, 800 Lochmoor, appliances include microwave oven, 1/4 mile to schools. fence, trees, \$475/mo. plus deposit. Call x3781 weekdays, 482-6816 nights and weekends.

For rent: Galveston Gulf-front condo, treat yourself to a 2-day to 1-month vacation, completely furnished, low seasonal rates. Call Nussman, 488-7762.

For sale: University Green, 2-2-2, patio home, 2 years old, cathedral ceiling, F/P, microwave, fenced, reduced for quick sale by owner, \$84,000. Call 488-0500 after 5 p.m.

For lease: Nassau Bay, 3-2-2, Culde-Sac. Call 482-0755.

For rent: Barringer Knoll 2-bedroom apartment, upstairs, F/P, W/D hookup, attic, \$350/mo. plus \$200 deposit, \$200 pet deposit. Call 480-6742.

For lease: Ellis Landing (League City), 4-2-2, great for children, near community park/pool/school, low utilities, \$650/mo. Call 554-2476.

For sale/lease: Forest Bend townhouse, 2-1-2 carport, one-story unit, \$395/mo. plus \$300 deposit. Call Cindy Williams, 333-6479 or 486-4109.

Free-standing office near new Kemah bridge, 1200 sq. ft., best offer over \$60,000. Call Horton, 332-1309 after 6

For lease: Baywind I, 2-2-2, on Saturn Lane, new carpet, A/C, F/P, \$400/mo. Call Mike Foale, x5331 or 538-4363.

For sale: Middlebrook II, 3-2-2D, beautiful Playa contemporary, atrium, garden bath, cathedral ceilings, sky windows, corner lot. Call 480-0909.

For rent: Fully furnished 1 bedroom condo on Clear Lake, utilities paid, very nice. Call 331-6111, x327, days or 482-7006 after 6 p.m.

For lease/purchase: The Wharf, 3-2½, waterfront, wrap around deck, F/P, all appliances, wet bar. Call 332-6702. For lease: Seabrook, 3-2-2, near

elementary school, \$500/mo. plus deposit. Call x4573 or 479-1004 nights. For sale: Beautiful wooded waterview lot at Pt. Lookout West on Lake Livingston, 75'x137', \$3,500 (assessed tax

value \$5,800). Call 946-7587. For lease/purchase: Beautiful Forest Bend Townhouse, 2-2-2 carport, apply 100% of rent to purchase. Call Glenn,

x4861 or 486-0462. For lease/purchase: Meadowbend, 3-2-2, fenced, drapes, appliances, convenient to NASA, apply 100% of rent to purchase. Call Glenn, x4861 or 486-

For sale: 1/8 acres in Friendswood, all utilities, \$29,500. Call Janice, x5867 or 482-6888.

For lease/purchase: Executive Townhome (duplex), 3-21/2-2, like new, 1739 sq. ft., 2 miles from JSC, NO PETS, \$650/mo. Call 333-2636 after 5 p.m.

For lease: Baywind II, 1 bedroom condo, F/P, kitchen appliances. W/D connections, pool, exercise room. Call Jim Wiltz, x5437 or 944-0451 after 5

For sale: Forest Bend, 4-21/2-2 conv., pool, formals, gameroom, F/P, ceiling fans, trees, mil move, \$82,500. Call 482-4145.

For lease: El Dorado Trace, 1-1-1 carport, great location overlooking pool, 2 balconies, F/P, icemaker, ceiling fan, miniblinds, sauna and whirlpool in clubhouse, like new, \$370/mo. Call Mark, x6301 or 554-2538 after 6 p.m.

For lease: CLC/Oakbrook, 3-2-2, energy efficient, corner lot, wooded, cedar fenced, interior just painted, \$550/mo. Call Savely, x4751 or 488-5590 evenings.

For lease: Friendswood, 3-11/2-1, near schools, fenced, F/P, clean, no pets, \$450/mo. plus deposit. Call 482-7546.

For sale: 3/4 acre waterfront lot with access to excellent bass fishing in Brazoria County, Call Don, 280-6307 weekdays before 5 p.m.

For sale: Heritage Park, 3-2-2 attached, enclosed utility, fenced, \$51,500, assume \$27,200 FHA fixed 81/2% with \$10K down, owner/agent will carry second at 12% for 10 years. Call

For rent: Condo on Bay Area Blvd., completely furnished, available immediately. Call Dan, x6471 or 333-3925.

For lease: 10 acres (Alvin area), fenced, on paved road - horses, cattle. Call Damewood, 482-5572.

Cars & Trucks

1974 Porsche 914, 2.0 liter, black, camel interior, Alpine AM/FM/cassette, 73K miles, great condition, \$5,500. Call 488-2148 or 480-4253 evenings.

1978 Olds station wagon, A/C, AM/FM stereo, electric locks, good condition, \$2,500. Call 334-4395 after 5 p.m.

1978 BMW 733i, leather, sunroof, AM/FM stereo, excellent condition, \$12,900. Call 334-4395 after 5 p.m.

1977 AMC Matador, 65K miles, \$1,300 or best offer. Call 996-0401 after 5 p.m. 1970 1/2 Trans Am, \$3,200 firm. Call 996-0401 after 5 p.m.

1979 Pontiac Grandprix LJ, 57K miles, AM/FM, new tires, mag wheels, power door locks, clean, exc. cond., \$3,500.

Call Michael, x4991 or 484-7527. 1977 Cadillac Sedan DeVille, blue and beautiful, \$3,995. Call 481-6222 or 644-3666

1974 Toyoto pickup, 119K miles, engine/trans. overhauled at 111K, \$1,795. Call 334-4172 after 6 p.m.

1971 VW Bug, good transportation, needs paint, buy it for your kid. Call Joe, x2838 or 486-6662

1974 Oldsmobile Cutlass, 96K miles, runs good, body condition fair, \$650 or best offer. Call Rick, x4457 or 488-8623 evenings

1966/71 VW convertible, rusty, needs work, runs good, \$750. Call Max, x5425 or 488-4135 after 5 p.m

1979 Mazda RX7GS, beautiful car, many extras, must see to believe, \$6,000. Call Rick, x5266 or 480-5911.

1980 Chevy Malibu, V-8, A/C, 4door, AM/FM stereo, \$3,300. Call 485-

1971 Chry Town & Country wagon, V8-383, A/C, needs body work, \$400 or best offer. Call John, x4007 or 2800366.

For rent: Mini-motor home, fully selfcontained, onboard power plant, roof air, tub and shower, daily or weekly rates. Call Dave, x5111 or 480-0202 after 5 p.m.

1929 Mercedes-Benz Replicar, sell or trade for equity in real estate. Call 474-4834 after 5 p.m.

Mercedes 230 4-door sedan, gold, leather, electric sunroof, \$8,000 or trade for CJ-7. Call Horton, x6130 or 332-1309 after 6 p.m.

1975 Chev Nova, 250 ci, 3-speed, AM/FM tape, Crager wheels, good teenager car, \$600. Call 486-8657.

1975 Red Corvette, automatic, sharp, \$6,000. Call 481-0679.

1980 Buick Riviera, 3.8 liter V-6, turbocharged, 2-tone, wire wheels, new radial tires & battery, 69K miles, very clean, \$5,750 firm. Call Tim Niber, 487-5028(H) or Richard, x4770.

1979 Dodge Omni, auto, A/C, PS, woodgrain sides and interior, new tires, \$1,950. Call Glenn, x4861 or 486-0462.

1966 Mustang, like new engine/transmission/brakes/frontend/electrical system, good condition, needs body work, \$2,300. Call 474-3510 after 5 p.m.

1981 Datsun 310-GX, 34K miles, 32 mpg, A/C, AM/FM/cassette, good condition, \$4,100. Call Marie, x3905 or 338-2336.

1977 Corolla 2-door, 5 speed, A/C, 30+ mpg, new tires/brakes, runs and looks good. Call Kevin, x3035 or 944-4441.

Two 1971 Toyota Corollas, one engine partially rebuilt, other is stripped, bodies good condition, will sell parts. Call Ray, x6327 or 996-1966. 1981 Ford Escort GL, 2-door, hatch-

back, very good condition, low mileage, \$2,500. Call Gaye-Ellen, x3911. 1980 Ford Fairmont, 4-door, A/C,

PS, PB, excellent condition, low mileage, \$2,500. Call Gaye-Ellen, x3911.

1972 Lincoln Continental Mark IV hard top coupe, white/vinyl top, AM/FM stereo, tape deck, A/C, power steering/brakes/windows/locks/seats, a classic one-owner, clean/good condition, 50K miles, \$3,200 or best offer. Call Angel, 944-8028 after 5 p.m.

1974 Audi 100LS, automatic, A/C, leather, 96K miles, comes with extra engine and transmission and assorted other spare parts, \$850. Call 474-2906

1974 Cadillac convertible, many extras, new paint w/pin striping, everything works, a real collector's item, \$4,995. Call 332-2664.

1976 Cutlass, AM/FM/cassette, good tires, new A/C, some rust, excellent interior, \$1,000 neg. Call Jim, 333-1709.

1980 Z28 Camaro, power, A/C, cassette, nice, \$5,500 firm. Call 486-1307 days, 538-1033 evenings.

1982 Grand Marquis, immaculate, excellent condition, all options, 16 mpg. \$9,000. Call 280-7758 or 486-9186 after 5 p.m. or weekends.

1980 Mercury Capri, light blue, sun roof, sport wheels, turbo, 4-cylinder, 4-speed, good mileage, \$3,250. Call

1983 Ford Escort GT, 1.61 EFI, 5speed, bright bittersweet, rear spoiler, styped wheels, fog lamps, A/C, guages, 4-speaker AM/FM/cassette, 27K miles, \$6,500. Call Mitch, 280-7183 or 530-3150.

Boats & Planes

Catamaran, Sol Cat, 18', light blue/ dark blue, double trapeze, two mains/1 jib, custom rigged, wet suit, excellent condition, \$1,800. Call Lee, 480-8357 or 538-4483

15' Skeeter Bass boat with 50 hp Johnson motor, trolling motor, depth sounder, etc., \$1,900. Call Don, 280-6307 before 5 p.m. weekdays.

Ericson 27' sloop, sleeps 5, Watergate Marina, best offer over \$22,000, half ownership possible. Call Horton, x5350.

Sculling (rowing) shell, double w/conversion to single, four blades, like new, \$1,800. Call Gene Horton, 332-1309 after 6 p.m.

14' Vagabond sailboat and trailer, accessories included, excellent condition, \$2,150 or best offer. Call Sheryle, 337-1554 before 5 p.m.

For rent: Piper Lance airplane, 6place, club seating, \$85/hr. wet. Call L. Damewood, 482-5572.

Audio & Video

25" Zenith (remote) Mediterraneanstyle TV, works perfect, \$300. Call Ginger, x2631 or 486-3238 after 6 p.m.

Color video camera, JVC GZS 5U. used very little, low light, power zoom, auto focus, case new, will demonstrate, cost \$899, sell \$600. Call x2138 or 334-1303 after 5 p.m.

Color enlarger, 6x7 Nikor (by Rollei) with dichroic head and Rodenstock 50 mm f3.5 lens, used very little, \$200. Call Bob, x5041.

McIntosh Stereo, MR77 tuner, C28 preamp, 2505 amp, all in walnut case, all \$900. Call Schroeder, 486-4420 x319 or 482-5536 evenings.

Complete B&W darkroom, 35 mm 4x5, Bessler 45M enlarger, lens, timers, safelights, tanks, reels, trays, dryer, etc., good condition, \$950. Call 482-

Cannon FT camera, FL 55 mm/1.2 lens, FL 28 mm lens, Vivitar 90-230 mm zoom lens, and misc. filters/sunshades, all \$150. Call Cordon, x4407 or 481-

Olympus mount lens, Kiron 28-105 f3.2, \$115 or best offer. Call Wayne, x6226 or 486-7141.

AM radio for 1981 Pontiac, \$25. AM radio with digital clock for 1984 Plymouth, \$25. Call Vince, x5916 or 538-1712.

1981 Honda Custom 400, 2,500 miles. mint condition. \$1,500. Call 996-0401 after 5 p.m.

1978 Honda XR-75, rebuilt carb and tune-up, new brakes, runs excellent, needs muffler, \$250. Call 538-3636.

Standard bicycle, \$20. Call Ellen, 1981 Honda 400 cc, street bike.

excellent condition, less than 7,000 miles, \$875. Call Chris, 482-1821.

Honda ATC Big Red 1983 with bunrack and front basket, hardly used, asking \$1,600. Call 280-2187 days, 334-3058 evenings.

1975 Yamaha RD350, 8,000 miles, great shape, \$420. Call Phil Sheridan, x3404 or 474-3676 evenings.

Computers

IBM-PC, 256K-RAM, monochrome, 4 mths. old, \$2,500. Call Tom, x2353 or 337-2809 5-8 p.m.

New, boxed Radio Shack PC-3A Pocket Computer (4K RAM) and printer/ cassette interface, \$1,200. Call Tom. Clark, x7445.

Commodore 1525 Graphics Printer, mint condition, \$175. Call Steve Gorman, x2758

HP-41CV, brand new, includes extended memory, extended functions, printer, card reader, all \$600. Call Todd, x4794 or 480-0308.

Vic 20 computer and Commodore Dataset, used less than 5 hours, in

original boxes and all papers, \$95/both. Call 534-4829

Household

Osterpedic mattress for full size bed. Call Madeline, x2303.

Teak stereo cabinet, Spanish design, marble inlays, modular construction, roll-out turntable drawer, vented component areas, record and gadget storage areas, \$400. Call 482-5763.

Teak bar, Spanish design, marble inlays, fold-out construction, slide-out bottle holder, wine rack, glass hangers, \$300. Call 482-6763.

Beautiful dining room table, carved sides and two hand-carved bases, \$350. Call 488-5564.

Unusual decorator 3'x5' gold-leaf coffee table, cost \$1,200, sell \$350. Call 488-5564

Double bed, cherry wood head/foot/ side boards, firm mattress, box springs, excellent condition, \$250. Call 488-

Headboard for queen size bed, \$50. Call D. Doherty, x5326.

New DP Gympac 2000, \$160. New 5-piece pit group, end tables, coffee table, rocker-recliner, \$600. Call Cheryl,

Century dining room table, 4 side chairs, 2 arm chairs, buffet and mirror, \$1,000. Italian Provencial sofa, 2 Weiman end tables and unusual cocktail table, Stiffel lamps, see to appreciate. Call 485-3821.

Bunk bed/mattress, \$95 or trade hide-a-bed or queen. Call Wayne, x6226 or 486-7141.

Walnut executive-style desk, good condition, \$175. Call Rich, x6128 or 482-9212.

Wood top dinette with 6 vinyl captains chairs on casters, \$150. 110 volt grandfather clock, \$25. Call Vince, x5916 or 538-1712.

One-year old Norwegian Elkhound. female, spayed, with papers, loveable. very active, needs training, \$150. Call Maggi, x4581.

Pit Bulldog pups, brindle, good disposition, born 11/10/84, males \$75, females \$50. Call Max, x5425 or 488-4135 after 5 p.m.

German Shepherd puppies, beautiful, large black/tan, excellent temperment, \$45. Call 534-4603.

Miscellaneous

Carburetor, Holley 350 CFM for Ford 302-V8 engine, brand new, \$100. Call 534-4603 after 6 p.m.

Winnebago aluminum camper top for 8-foot pickup, \$175. Call 482-7073. Tandem trailer, 6'x12', custom built,

\$1,500. Call Linda, x2001. Lawn mower, gas powered, self-propelled, rear bagger. Call Dave Dunn,

Chain link fence 26' of 6' high, 3' wide gate, including all hardware, \$25. Call Sparky, x3148 or 480-6215.

Smith Corona portable typewriter, used very little, works perfect, extra cartridges, etc., \$100. Call Ginger, x2631 or 487-3238 after 6 p.m.

Toro lawn mower, self-propelled, rear bagger, electric start, 3-speed, power drive, new engine, \$200. Call 538-3636. Lawnboy mower, tuned, rebuilt carb...

runs excellent, \$100. Call 538-3636. Ski trip, Sarajevo, 8 days, \$749 includes air, hotel, full board, Mar. 21-1985. Call R. McKinney, x3138 or 523-6824.

Antique key-wound pocket watch, \$100. Beautiful string of amber beads, \$70. Call 488-5564

Ski vacation rental, Summit County Colorado, 5 ski areas, sleeps six, reasonable rates. Cail 484-9205.

Shimano 250 SG fishing reel with magnetic drag control, brand new, \$50. Call Don, 280-6307 weekdays before 5

Ski trip Copper Mountain with CLASC, Jan. 6-13, \$450. Call Ken Goodwin, x2881 or 333-2636.

Home fitness system, DP Gympac 1000, excellent condition, \$130. Call 486-8657

Cash register, Victor Electronic Model 515, full-feature, 5-tray, barely used. Call Dave, x5111 or 480-0202 after 6 p.m

Four P235/75R15 blackwall steelers on stock 15"x7" 6-hole rims, \$250. '83/'84 Blazer/Jimmy convertible top, \$150 neg. Call Norbert, 987-4838 or 534-2720

Red fiberglass pickup cover for SWB mini pickup, \$75. Call Ed, x4296 or 471-2542

Utility trailer, 6'x10', Bolens garden tractor, 8 hp with cutting deck, lawn mower, edger, Ariens riding mower, 30" cut, gasoline power drainage pump, 2 hp engine. Call Mark, 331-5748.

Fresh honey, quarts \$3.50 (\$3.20 your container), gallons \$12.50. Call Welby Ward, x4278

Top-rated Brooks Chariot running shoe, size 10½ (too short for me), used about 35 miles, new \$65, sell \$30. Call Welby Ward, x4278.

Three G78X15 tires mounted on Chevy rims, \$40 ea. Over 300' of aluminum beams (C-channel and I beams), \$250. Call Randy, x4527 or 482-4083.

Ski boots, 3 pair women's size 51/2-6. perfect for children, \$20 ea. Call 538-2082. Solid maple butcher block tabletops,

with or without base, 4-24"x30"; 1-30"x30"; 1-30"x48", under \$100 ea. Matching chairs also available. Call Ray, x5258 or 554-2908 after 6 p.m. GAF Timberline shingles (weathered wood color), 11 squares, stored outside

plastic, 85-90% in good shape, \$10/ square. Call 534-4839. Camper fits standard pickup, sink, stove, refrigerator, sleeps 4-5, needs work, make offer. Call Phil, x3404 or

on pallets for two years covered with

474-3676 evenings. Lowrance Mach 1 Chart Recorder for structure fishing, brand new and selling for \$200 below retail. Call Don,

280-6307 weekdays before 5 p.m. Vic 20, 9 games, programmer's guide. teach yourself Basic, 3 extra memory carts., programmer's aid cart., cost \$350, sell \$200. Call 664-0315 after 5

Intellivision game with Intellivoice and 30 games, \$90. Call 644-0315 after

Aristocrat Royal elite typewriter with correction ribbon, \$75. Call 644-0315 after 5 p.m.

Family membership, Bay Area Racquet Club. Call Fullerton, x2411 or 488-5782.

1976 Childcraft by World Book, complete set, excellent condition, \$25. Call Deason, x5111 or 334-4387.

Wanted

Need four small hubcaps for 1981 Ford stepside pickup. Call 333-2395.

Would like to rent an IBM PC (2 disk drives, peripherals) for 3 months. Call George, 554-2718 after 5 p.m.

Need someone to carpool with from Pasadena. Call x2146 or 477-8630.

Housemate to share large house in Manvel/Pearland area, \$100 plus 1/2 electric bill in exchange for help caring for my dogs, non-smoker preferred. Call Sharon, x4941 or 489-1701 after 6

Rider to Akron, Ohio, or anyplace enroute for Christmas vacation, 1/2 expenses. Call Rusty, x4691 or 486-5581.

Roommate, male or female, \$230/mo., all bills paid, furnished with bed/bookcase/chest drawers/ceiling fan/linen/ phone/TV cable & TV in room, house and kitchen privileges, 5 miles from NASA. Call Keith, x4363 or 332-8251.

Want to buy used weights, etc. Call Jean Burgan, 333-6387 or 941-5563 after 6 p.m.

Need ride from Heights area downtown Houston to JSC, working hours are 7:45 a.m. to 4:30 p.m. Call 280-



first Wednesday after publication. Editor Brian Welch

NASA-JSC

Space Center, Houston, Texas, and is published every other Friday by the Public Affairs Office for all space center employees. **Roundup** deadline is the