NASA
Lyndon B. Johnson Space Center

Space News Roundup

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News Briefs

Test crews selected

Astronaut crews have been selected to support two upcoming tests involving the Space Shuttle Orbiter *Atlantis* at the Kennedy Space Center. Astronauts assigned to the tests do not constitute assigned flight crews. The crew which flew Space Shuttle mission 61-C, Jan. 12-18, 1986, will support the countdown demonstration test. Crewmembers are Robert L. Gibson, Commander; Charles F. Bolden, Pilot; and Mission Specialists Franklin R. Chang-Diaz, Steven A. Hawley and George D. Nelson. Assignments for the emergency egress test are: Frank L. Culbertson, Commander; Stephen S. Oswald, Pilot; Carl J. Meade, Kathryn C. Thornton and G. David Low, Mission Specialists; and Pierre J. Thuot and Jerome Apt as Payload Specialists.

Myers becomes Deputy

Dr. Dale D. Myers has been sworn in as Deputy Administrator of NASA. Myers succeeds Dr. William R. Graham, who has left NASA to become director of the White House Office of Science and Technology Policy. Myers was sworn in by Vice-President George Bush in a ceremony held in the Vice-President's office. Most recently, Myers served as an at-large member of the NASA Advisory Council, an organization created to provide advice and counsel to NASA top management on aeronautics and space programs. From 1979-1984, he served as president and chief operating officer of Jacobs Engineering Group, Inc., Pasadena, Calif. Myers also served as undersecretary at the U.S. Department of Energy from 1977-1979. From 1974-1977 he was vice president, Rockwell International and president, North American Aircraft, El Segundo, Calif. He was the associate administrator for Manned Space Flight at NASA from 1970-1974.

Scanner images Atlantic

Using NASA's coastal zone color scanner on the Nimbus-7 satellite, scientists recently completed a computer-generated color image showing, for the first time, the distribution of microscopic phytoplankton in the surface waters of the entire north Atlantic Ocean. The image also shows the land vegetation index for the continents bordering the north Atlantic basin, making the image the first to show measurements of both land and ocean plant abundance on such a large scale. Scientists from numerous international institutions participated in the coastal scanner research project. Launched aboard the Nimbus-7 satellite in October 1978, the scanner acquired data along a swath approximately 500 miles wide during a single pass of the satellite.

Comet teams selected

NASA has selected 38 possible investigations for the Comet Rendezvous Asteroid Flyby (CRAF) mission planned for launch in the early 1990's. The mission is designed to send an unmanned U.S. spacecraft to rendezvous with a comet, fly in formation with it for 3 years and fire an instrumented penetrator into the comet's nucleus. The spacecraft also will make close flybys of two asteroids on its way to the comet encounter. The baseline plan calls for the CRAF spacecraft to be launched in late 1992. After a flyby of the asteroid Malautra in mid-1993, the spacecraft will swing by the Earth again and a gravity-assist maneuver will boost the spacecraft o the orbit of comet Tempel-2. Following a flyby of asteroid Hestia, rendezvous with the comet will occur in late 1996 near the orbit of Jupiter.

The elbow joint of a new remote manipulator simulator looms out of the water in the Weightless Environment Training Facility as astronauts Jerry Ross and Pierre Thuot are lowered into the tank. For details on the first trial run of the arm with astronauts, see Page 3.

Changes in Senior Staff announced

Changes in several senior staff positions at NASA's Johnson Space Center, Houston, were announced last week by Dr. Aaron Cohen, center director.

Effective immediately, the following JSC officials assume the new duties indicated:

Robert C. Goetz becomes technical assistant to the center director. He will assist with a number of projects of importance to JSC, including strategic planning activities. Goetz was formerly deputy center director, and was reassigned at his own request.

Clifford E. Charlesworth will serve as special assistant to the director. He has been with NASA since 1962 and has held several key positions, most recently as director of Space Operations.

Henry O. Pohl becomes director, Engineering. He has been associated with propulsion systems development since 1957. He came to JSC's Propulsion and Power Division in 1962 as a senior propulsion engineer and has held a number of key supervisory positions in that organization. He has served as division chief since 1980.

William R. Kelly will serve as director, Administration. He came to JSC in 1962 as a senior engineer in the Mercury Project Office. He has held a number of management

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NASA FY '87 budget is $10 billion

Final actions taken by the 99th Congress before adjourning Oct. 18 included authorizing a $10 billion NASA budget for Fiscal Year 1987, a record appropriation.

The Congress also approved funding for construction of a replacement Orbiter for the *Challenger*, authorized the Department of Defense to reimburse NASA for Shuttle support, and took action which could affect retiring Federal employees, according to John F. Murphy, Assistant Administrator for Legislative Affairs.

NASA's appropriation for FY '87 is $10.43 billion under the Continuing Resolution passed by Congress, $8 billion of which comes from the HUD-Independent Agencies Appropriations Bill and $2.43 billion of which was transferred to the HUD-Independent Agencies Bill from the authorization for the Department of Defense.

Of the $2.43 billion transferred to NASA, Congress allocated $2.1 billion to be used for the replacement Orbiter, $265 million for Shuttle reimbursements owed NASA by the Department of Defense and $69 million for other Shuttle-related expenses incurred after the *Challenger* accident.

The remaining $266 million owed NASA by the DOD was allocated under the HUD-Independent Agencies appropriation. Since 1983, the NASA/U.S. Air Force Memorandum of Agreement for reimbusrement of launch and associated Shuttle services has governed the policy for how the DOD pays NASA for use of the Space Transportation System.

The budgeted FY 1987 DOD reimbursements of $531 million and

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'Team Excellence' program debuts

The new centerwide "Team Excellence" program currently being implemented throughout JSC will demand the active participation of every JSC and contractor employee, Director Aaron Cohen said this week.

Team Excellence, developed by representatives of all center organizations, is designed to focus employee and organizational efforts on improving areas that will have the greatest positive impact on their work.

"The excellence of the NASA team has been the key to our success in the past and it is the foundation on which we must continue to build in the future," Cohen said. "We must strive for excellence in all our endeavors as we work together to get the Shuttle flying again and to develop an operational space station for the 1990's.

"Every aspect of our efforts must support the continuing achievement of our people—the way we organize and manage our work, our facilities and equipment, and our work processes and procedures."

Specific areas of emphasis in the program include safety, quality/reliability, timeliness, employee participation, productivity/efficiency, quality of worklife, innovation, effectiveness, and teamwork.

"Every civil service and contractor employee is a key player in this program," Cohen said. "We need everyone to be a 'pro-active' participant—that is, to assume the responsibility to identify and implement the improvements that will enable JSC to meet the demands of an increasing workload and limited resources.

"Every member of the team has an important role in this achievement—from the engineers and scientists that design the systems to the technicians that build and maintain the spacecraft, from the astronauts that go into space to the secretaries and clerks that support our offices, from the personnel

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Bradshaw named to ABWA Top Ten list

The American Business Women's Association has named Lois Mason Bradshaw, a program analyst at JSC, as one of this year's Top Ten Business Women of ABWA.

The announcement was made October 23 at the opening session of the ABWA National Convention in Kansas City, which was attended by more than 5,500 businesswomen from throughout the country.

The award is presented by ABWA to 10 outstanding businesswomen in recognition of their professional achievements and community involvement. An independent, three-judge panel selected Bradshaw for the honor from a field of more than 2,100 businesswomen.

This is the third consecutive year that a member of the JSC Chapter of the ABWA has been among the ten outstanding businesswomen in the country.

In 1985, Elsie Easley, Chief of the Logistics Division, was one of the ten honorees.

In 1984, Connie Alexander of the Employee Assistance Office was selected as the outstanding businesswoman of the year by the ABWA.

Bradshaw is responsible for providing detailed technical direction and assistance to the National Space Transportation System and for the development of management systems. She also serves as Mission Management Team Coordinator for readiness reviews of the NSTS flights.

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Lois Bradshaw

Bulletin Board

Fletcher to speak at Awards Ceremony

NASA Administrator Dr. James C. Fletcher will be on hand Nov. 13 when JSC honors its own at the Honor Awards Ceremony. The ceremony will begin at 1:30 p.m. in the Bldg. 2 Auditorium. Employees who have made significant contributions toward the achievement of Agency and Center goals during the past year will be honored. A reception will be held in the lobby of the auditorium at the conclusion of the awards ceremony. All employees who can be spared from their duties are encouraged to attend.

Brown Bag Seminars scheduled

Design options for manned Mars mission and a review of Soviet space disasters are among the topics to be presented at the JSC Astronomy Brown Bag Seminars in November and December. The sessions are held each Wednesday from noon to 1 p.m. in Bldg. 31, Conference Room 193. On Nov. 5, James Oberg will discuss Soviet space disasters. On Nov. 12, G. R. Babb will present a comparison of design options for manned Mars missions. On Nov. 19, Dr. Dave Mittlefehldt will report on the September Meteoritical Society Meeting in New York. The Nov. 26 meeting is now planned as an open discussion. On Dec. 3, Kyle Fairchild will discuss the potentials for a permanent human presence in space. Dr. Rosemary Killen will report Dec. 10 on the October meeting of the Division of Planetary Science in Paris. An open discussion is planned for Dec. 17, and no meetings are planned for Dec. 24 or Dec. 31.

Cleave to address TSPE meeting

Dr. Mary Cleave, a member of the STS 61-B crew, will be the featured speaker at a dinner meeting of the Texas Society of Professional Engineers in November. All JSC personnel and the public are invited to the meeting, which will be held at 7 p.m. Nov. 18 at Jimmy Walker's Restaurant in Kemah. The cost is $15.60 per person, which includes a shrimp/roast beef buffet. Soft drinks and bar drinks are extra. Reservations should be made by Nov. 14 by calling Jim Babb at 280-1500, x3122.

IBM to host computer festival

IBM will sponsor a technical update on computer hardware and software Nov. 12 and 13 at the Holiday Inn Conference Center, 1300 NASA Road One. Topics will include an overview of the new 9370 computer, advanced function printing, managing the end user environment, end user applications, enterprise connectivity, expert systems, token ring, and the new RTPC personal computer for engineering applications. Demonstrations will be held throughout the day. For information or reservations, call Marvel at 333-7430.

PSI chapter to meet Nov. 12

The monthly meeting of the NASA/Clear Lake Area Professional Secretaries International (PSI) Chapter will be held Nov 12 at the Holiday Inn on NASA Road One. There will be a social period beginning at 5:30 p.m. with dinner following at 6 p.m. Sandra Reiff, MA, a psychotherapist with the adult program at the Deer Park Hospital, will be the featured speaker. Her topic will be "Whole Brain Learning." A business meeting will follow the speaker. All clerks/secretaries, GS-3 and above are encouraged to attend. Meetings are held the second Wednesday of each month. For further information, call Jesse Gilmore, x2411, or Carol Cribbs at 488-7070. Membership calls should be directed to Betty Cobb, x3811.

JSC Atari ST Users get discounts

The JSC ST Users group is now offering members large hardware and software discounts through the Houston Wholesale Warehouse. The Atari 520/1040 ST users group now meets every fourth Wednesday of each month at the Gilruth Recreation Center, Room 207, at 7 p.m. The first 30 membership applicants will qualify for free software, said organizer Bruce Hilty. For more information, call Hilty at x4691 or 333-5888.

Gilruth Center News

Call x3594 for more information

Weight safety — This is a required course for persons interested in using the weight room at the Rec Center. One-night courses will be offered from 8 to 9:30 p.m. Nov. 4 and Nov. 18. The cost is $4 per person, and the class size is limited to 40 students. Pre-registration is required.

Turkey Trot race — The annual Turkey Trot 5 kilometer or 1 mile race will be held at 8 a.m. Nov. 15 at the Rec Center. The $6 early registration fee includes a tee-shirt. A late fee will be added after Nov. 10. Entry blanks are available at the Rec Center.

Karate — This course meets Mondays and Wednesdays from 7 to 8 p.m. beginning Nov. 17. The cost is $25 per person.

Beauty enhancement — Learn make-up tips such as how to blend colors in this one-night class being offered from 7 to 9 p.m. Nov. 6. The cost is $35 per person.

Defensive driving — Learn to drive safely and qualify for a 10% reduction in your auto insurance rates. The next one-day class will be held from 8 a.m. to 5 p.m. Nov. 22. The cost is $25 per person.

New in the Library

The JSC Technical Library is located in Bldg. 45, Room 100, and is open from 8:00 a.m. to 4:30 p.m. Monday through Friday. The general information number is x4048. New books received in the Library as of September 15 include:

Ada in Practice, by C. N. Ausnit.
Aerospace Computer Security Conference: Protecting Intellectual Property in Space, by IEEE.
Antennas, by L. V. Blake.
Applications of Space Developments, by L. Napolitano.
Artificial Intelligence: Methodology, Systems, Applications, by W. Bibel.
Computation and Cognition: Toward a Foundation for Cognitive Science, by Z. W. Pylyshyn.
Computational Physics, by S. E. Koonin.
Computer Interpretation of Natural Language Descriptions, by C. S. Mellish.
Computer-Aided Engineering: Heat Transfer and Fluid Flow, by A. D. Gosman.
Conceptual Structures: Information Processing in Mind and Machine, by J. F. Sowa.
Digital Transmission Systems, by D. R. Smith.

Moser to head Station Program

Thomas L. Moser, former Director of Engineering at JSC, will become Director of the Space Station Program Office which will be located in the Washington, D.C., area.

The Space Station Program Office will be responsible for the overall technical direction and content of the Space Station program, including systems engineering and analysis, configuration management and the integration of all elements into an operating system that is responsive to customer needs. Moser will report directly to Andrew J. Stofan, Associate Administator for Space Station.

Establishment of the program office in Washington was in response to a recommendation by a committee headed by former Apollo Program Director Gen. Samuel E. Phillips (USAF-Ret.) which is conducting a long-range assessment of overall NASA capabilities and requirements.

NASA Administrator Dr. James C. Fletcher announced this past summer that program management of the Space Station would be centralized in Washington to improve communications, program control and accountability.

Moser was appointed Deputy Associate Administrator for Space Flight at NASA Headquarters in February 1986. Prior to that assignment, he was Director of Engineering here.

Moser began his career with NASA in 1963 as a mechanical systems design and analysis engineer. From 1966 to 1971 he was the structural subsystem manager for the Apollo command module and subsequently became project manager for the Shuttle Structures and Mechanics Division. In 1972, Moser was named head of structural design and manager for Orbiter structure and thermal protection system.

He became technical assistant to the director in 1981 and was named deputy manager, Orbiter Project Office in 1982. He assumed the position of director of Engineering in 1983.

Born Aug. 12, 1938, in Houston, Moser received a B.S. degree in mechanical engineering from the University of Texas in 1961 and an M.S. degree in mechanical engineering from the University of Pennsylvania in 1963. He has completed candidacy requirements for a Ph.D. at Rice University.

Moser has received numerous NASA awards, including the Exceptional Engineering Medal and two Special Achievement Awards. He belongs to two professional engineering fraternities and is a member of the American Institute for Aeronautics and Astronautics and the National Management Association. He is a registered engineer in the state of Texas.

Moser and his wife, the former Nelwyn DeLaney, reside in Arlington, Va. They have two children, Matthew and Meredith.

SARSAT saves four Canadians

Only 6 days after launch and less than 24 hours after being put into operation, the Search and Rescue Satellite Aided Tracking equipment (SARSAT) onboard the NOAA-10 satellite picked up the first distress signal from a downed aircraft, leading to the rescue of four Canadians who crashed in a remote area of Ontario.

The RCA-built spacecraft was launched Sept. 17 from Vandenberg Air Force Base, Calif., by a General Dynamics/U.S. Air Force Atlas E launch vehicle. The Canadian/French-built search and rescue equipment onboard the NOAA-10 satellite was activated on Sept. 22, according to officials at NASA's Goddard Space Flight Center, where the SARSAT program is managed.

Details of the rescue were verified by Goddard officials whose engineers are performing final checks on satellite equipment prior to turning over NOAA-10 control to the National Oceanic and Atmospheric Administration.

The SARSAT equipment permits the satellite to pick up distress signals from aircraft or ships and to relay these signals to ground processing facilities which then dispatch rescue forces.

The equipment was activated at 7:40 p.m. EDT during its 76th revolution, SARSAT "heard" a distress signal over Canada and relayed it to Canadian rescue forces in Trenton. The signal was the first indication that someone was in trouble.

A Soviet satellite—also equipped with search and rescue equipment—verified the distress signal coming from the Ontario area. NOAA-10 picked up the emergency signal again on its next orbit.

The combination of reports from the American and Soviet satellites and from the pilot of a private plane, caused Canadian officials to alert rescue units in Edmonton, Alberta, where a four-engine C-130 Hercules was dispatched.

Poor weather that evening prevented the C-130 crew from spotting the downed aircraft. However, the rescue crew returned the next morning, when the fog lifted, and parachuted two medical technicians into the area to provide first aid.

Because of the accuracy of the satellite's coordinates, the C-130 crew picked up the Cessna's distress signal at the exact location indicated by the satellite system.

NASA FY '87 budget

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the requested NASA funding for Shuttle represents the total U.S. Government FY 1987 outlay for Shuttle operations.

The 99th Congress also passed the Federal Employees Retirement Act of 1986 and the Tax Reform Act of 1986, both of which will affect retiring federal employees.

Under the Tax Reform Act, a provision was eliminated that, under existing law, allows employees to receive tax-free pension benefits until the benefit payments exceed the total contributions made during an employee's federal service. Under the new law, the tax-free portion of the benefits would be spread out over the retiree's life expectancy as defined by actuary tables, and this new rule will apply retroactively to pensions received beginning July 1, 1986.

Anticipating the elimination of this so-called three-year basis recovery rule, a provision was included in the Retirement Act to allow employees to withdraw their annuity contribution in a lump sum on retirement in return for a decreased annuity, thereby avoiding the consequence of the tax bill.

"The tax bill, however, tightened, if not cleared, this loophole by providing for the taxation of lump sum withdrawals," Murphy said. "The exact effect of this lump sum taxation provision, however, cannot be determined until the issuance of regulations by both the Office of Personnel Management and the Internal Revenue Service."

Bills were introduced in the 99th Congress to reinstate the three-year basis recovery rule, but were not acted upon. Murphy said similar measures are expected to be resurrected in the 100th Congress.

Bradshaw named to Top Ten

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The Texas businesswoman has been a member of ABWA since 1974 when she joined the Clear Lake Area Chapter. Her election as chapter Woman of the Year qualified her for the Top Ten Business Women of ABWA judging.

Following the *Challenger* accident, Bradshaw became involved in helping special task force teams investigate the incident. She has worked with NASA since 1962 and joined the Space Shuttle Program in 1979. Her current assignment utilizes the culmination of her knowledge and experience gained in financial management and administrative positions.

In addition to her membership in AWBA, Bradshaw is a member of the National Management Association, Association of Government Accountants and the Federation of Houston Professional Women.

The American Business Women's Association was founded in 1949. Its purpose is to provide opportunities for businesswomen to grow personally and professionally through leadership, education, networking support and national recognition. Each year, the association awards more than $3 million in scholarships. AWBA has more than 2,100 chapters and 112,000 members throughout the United States and Puerto Rico.

Senior Staff

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positions within the center, most recently as Director of Center Support.

Dr. R. Wayne Young will report to Kelly as deputy director, Administration. He joined JSC in 1962 as a technical manager in the Apollo Spacecraft Project Office and has also held a number of key managerial positions.

Astronaut Paul J. Weitz is temporarily assigned as technical assistant to the center director. He served as pilot on the first manned Skylab mission in 1973 and in 1983 he commanded the sixth Space Shuttle mission. He has been an astronaut since 1966, and most recently was assigned as deputy chief of the Astronaut Office.

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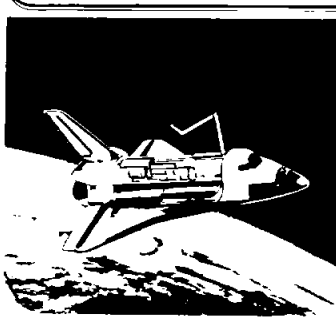

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Editor.....Brian Welch

Underwater arm provides realistic training in WET-F

If Hollywood were writing the ad copy, phrases such as "seven years in the making," or "supported by a cast of hundreds" would probably be used to describe last week's successful test of the new underwater remote manipulator system trainer.

"I feel so good, I just can't describe it," said Guy King, the project engineer who saw the underwater RMS mockup from the drawing board to reality over a period of nearly four years.

The test in the Weightless Environment Training Facility (WET-F) tank was the first involving space-suited astronauts and the RMS mockup. The October 24 test performed by astronauts Jerry Ross and Pierre Thuot was part of the Shuttle Radiator Assembly Demonstration (SRAD), designed to accumulate data on three different techniques for assembling Space Station radiators.

The astronauts worked underwater for four hours, taking turns on the manipulator foot restraint (MFR) as Russell "Rusty" Crawford, Northrop's WET-F engineer, operated the RMS. Their tasks in the SRAD included assembling radiator panels into an abbreviated version of the 50-foot-long radiator assembly that someday will be used as a thermal bus to reject heat from the Space Station.

Ross, who did EVA operations on Mission 61-B, said that "in many ways it was very similar to the arm in orbit. The biggest similarity is the smoothness of operation and the precision of positioning."

The biggest difference, he said, is that in space the RMS operator has command of all six joints simultaneously, which allows straight-line movements not yet possible with the mockup. Nevertheless, he was pleased with the mockup's performance.

"We've been trying to get it over there for some time and we're very happy to see it," he said.

"It's not identical to the orbiter arm, but it's pretty darn close," said Thuot after the test. "It gives us a capability we haven't really had in the past, to have someone on the end of the arm and do it exactly like we do it in space.

"It's very realistic, and realistic training is what you need."

Mitchell Wu, project engineer for SRAD, said three different methods of assembling the radiators—completely remote assembly using the RMS, EVAs using the MFR, EVAs using the manned maneuvering unit (MMU)—are being tested in the WET-F to build a data base for evaluation and comparison. The tests involving astronauts will help identify problems with handholds, visual cues, RMS positioning, and procedures that can be altered to improve installation efficiency. The ultimate goal is to cut the amount of EVA time necessary to install the radiator assembly.

Crawford, the mockup operator, said the underwater RMS worked as well or better than expected. Suited astronauts made the arm behave more realistically than divers had because the suited subjects were neutrally buoyant to better approximate micro-gravity. The experienced RMS users also asked for arm positions that hadn't been tried before, which made for a more demanding test of the mockup.

"It was a picture-perfect run," Crawford said, "it operated as flight-like as possible."

King said the developers of the mockup were looking to see how the joints held up and how much bend and flex they provided. "We want it to simulate the real arm, and it has a lot of flex in space—it bobs and weaves." He said the mockup uses a graphite exoxy boom structure similar to the real RMS.

King said he also was trying to get a feel for the speed of the joints, to make sure that they were slow enough that the astronauts could hold onto the foot restraint in spite of the water drag that makes the simulation different from space.

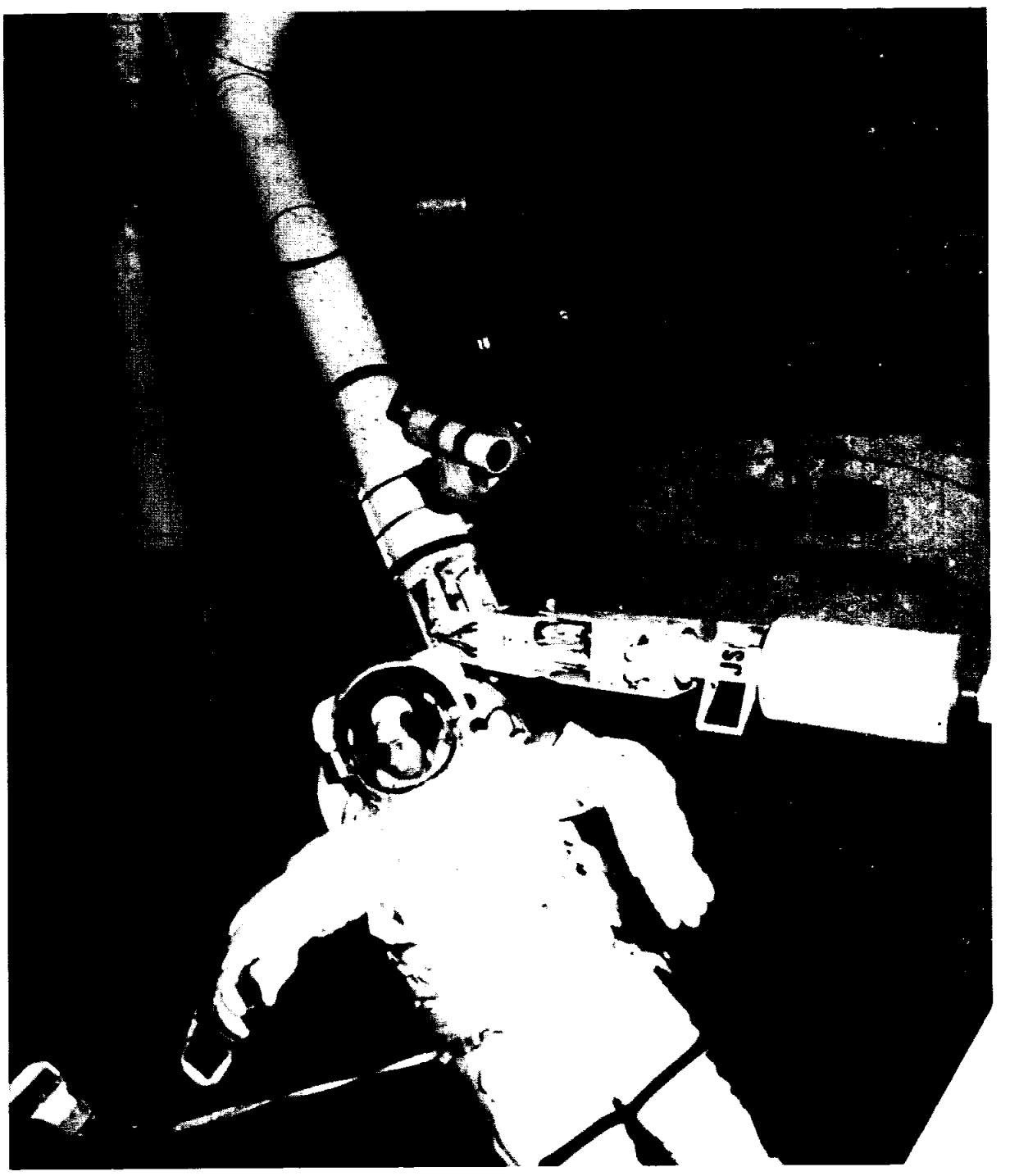
"The rates from the joints were pretty good. When you operate three joints at a time, the wrist roll moved a little slow. But when we were doing single-joint movement it worked real good," he said. "The next time we take it out, we still want to modify a few things. But I guess that's part of being an engineer—you always want to make it better."

Making it as good as it is has been quite a job in itself. The arm project, completed largely with in-house talent, has been in the works fro almost four years and has involved the efforts of more than 100 people. It started out under the direction of Stu Grissom, was passed on to Jack Humphreys and finally to Guy King. The May 2 issue of *Roundup* contained a list of some 80 employees involved in the mockup's development and construction, and more have come into play since then.

Perhaps the biggest challenge, King said, has been designing a man-rated arm and a system that can withstand the harsh environment of the chlorine-rich water of the WET-F tank without contaminating the water. The arm had to be built with materials that could simulate the "feel" of the real arm, and protected from the deterioration caused by the harsh pool chemicals with special coatings.

Being underwater meant the arm couldn't be powered electrically because of frequent shorts and maintenance requirements. Standard hydraulics also were ruled out because they leak and would have contaminated the tank water.

At first, King tried to use a half-and-half system that used distilled water hydraulics in the tank and standard hydraulics in the control station. The interface between the two hydraulic systems proved unreliable, so the distilled water hydraulics came to be used for the whole system.



Astronaut Jerry Ross, with the remote manipulator simulator in the background, maneuvers in the waters of the Weightless Environment Training Facility.

"As far as we know, no one else had ever tried this," said Bill Drummond, section chief of the assembled machine section, in reference to the distilled water hydraulics. Using distilled water to fill the hydraulic system meant adapting many standard hydraulic system parts for use with water. One example is the load-locking valve system used to lock the joints in place in case of a power loss. The off-the-shelf valves use a small metal ball to close the valve opening. In a standard hydraulic system, the fluid helps seal the opening. But distilled water wouldn't do that. Larry Petty, the head technician who built the mockup from King's drawings, had to invent a plastic sealing mechanism to replace the ball. The modifications, plus the fact that the valves had to be made of stainless steel inside and out, pushed the cost of the valves from $150 to $6,000 each.

"It's been a really neat job," said Drummond after watching the successful test. "A lot of challenges, a lot of hard work, and it's very gratifying to see it working."

Another challenge was to give the arm, which weighs 2,383 pounds on land, neutral buoyancy underwater, and to make the elbow strong enough to support its own weight when it protrudes out ot the water, said Petty.

The builders also had to build sight glasses to monitor the hydraulic fluid. King said they were initially used to see if hydraulic fluid was leaking in to the distilled water. When the system became completely water filled, they came to be used to check for air in the lines, which can make the joints act "spongy."

King said he has a few more things he wants to do to make the arm better, such as making it computer controlled, making it possible to operate all six joints at a time and thus provide staight-line movement, providing digital readouts for joint angles, and making it possible for astronauts to operate the arm underwater while looking through viewing ports just as it would be done on a mission.

But Mike Brzezinski, WET-F manager, said some of those improvements depend on building a larger tank. The proposed tank would be 300-by-300 feet, with a maximum depth of 60 feet and the capability to easily adjust the depth. The proposed tank would allow total EVA training for Space Station operations, something the existing tank won't accommodate.

Program seeks improvements

(Continued from page 1)

that carry out space flight operations to the administrative professionals that support our program and institutional needs."

One Centerwide system that has significant impact throughout JSC will be selected for an in-depth improvement effort during Fiscal Year 1987. Candidate systems for this effort are currently being evaluated. A task team will be created to review the selected system, and identify and implement improvements.

The program also will include organizational action items, in-depth organizational reviews, contractor involvement and continuation of the existing NASA Employee Team (NET) Program.

Every organization—from section level up—is being asked to identify and initiate improvements as Team Excellence Action Items. Each directorate level organization will decide which action items will be reported to center management.

"The emphasis on initiating improvements at all levels is focused on stimulating participation and teamwork throughout the Center to achieve excellence in all activities," Cohen explained.

In addition, each directorate has selected a division-level project for in-depth operational review, with one additional project to be identified from the JSC staff offices. A Team Excellence Action Process will be used to assess these organizations, clarify priorities, set objectives, plan and implement improvement, and measure progress.

JSC organizations are encouraged to include contractors on their improvement teams when appropriate. "We recognize the important role that contractor's play in the successful accomplishment of JSC missions," Cohen said, "and we want to involve them as active participants in all improvement efforts that involve their work."

To support that end at the Center level, a JSC/Contractor Team Excellence Forum made up of representatives from JSC and the Center's largest contractors will provide an opportunity to discuss joint issues, share experiences and ideas, and work together to identify and implement improvement.

The Forum's first meeting was held in July with working groups established to develop plans for future Forum activites. Forum members will meet again in November to review the status of that planning process.

The NET program is an integral part of the Team Excellence effort, emphasizing involvement and teamwork. "We want to expand this program based on the outstanding accomplishments that have already been made by our existing civil service and joint civil service/contractor NETs," Cohen said.

Team Excellence Areas of Emphasis

Safety — *Recognizing safety as the first order of business in carrying out the Center's missions.*

Quality/Reliability — *Meeting high standards of professional performance in every task.*

Leadership — *Providing vision, inspiring commitment and a "Can Do" attitude.*

Participation — *Soliciting and valuing the participation of every team member.*

Effectiveness — *Focusing on doing the right things.*

Quality of Worklife — *Providing every team member with the resources and opportunity to experience a sense of challenge and accomplishment.*

Productivity/Efficiency — *Doing things right the first time.*

Innovation — *Nurturing an organizational climate that encourages innovation and creativity.*

Teamwork — *Seeking the added value that can be found in sharing ideas and working with others.*

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

Lease: West Galveston Island beach house, 3-2 furnished, day/week/month. Shumilak, x6575 or 482-7723.

Sale: League City house, 3-2-2, large back yard w/garden, fence, FPL, 1 blk. to elem. school, immaculate, $54,800. 554-2703.

Lease/sale: Forest Bend townhouse, 2-2.5-2, CP, new carpets, paint, vinyl, no pets. Tom, x3781 or 333-4545.

Rent: League City townhouse on Clear Lake, 2336 Crows Nest Lane, 2BR, loft 3 story, A-frame, rough cedar beams & staircase, FPL, view of NASA and marina, optional boat slip, $850/mo., negotiable. Keith, (202) 788-3276.

Rent: Colorado ski resort, 3 1BR luxury condos at Beaver Creek, available Dec. 6-13, $595/wk. D. Smith, x6455 or 280-0027.

Rent: Dickinson mobile home lot, 50x120, good location, all utility hookups, $65/mo. 333-3446.

Sale: Friendswood, 3-1.5-1 house, near schools, fenced, trees, central heat/AC, $45,000. 482-7546.

Lease: Baywind II condo, 1-1, FPL, all appliances, pool, game room, tennis. Jim Wiltz, x5437 or 944-0451.

Lease: Univ Green townhouse, 2-2.5-2, refrig., W/D, FPL, mini-blinds, microwave, fans, small yard w/deck, $650/mo. Cindy, x2924 or 486-8266.

Sale: Seafarer townhome on golf course, 2-2.5-1 w/loft, mirrored FPL, built-in buffet, bookcase, custom deck w/bar. Bob, x2231 or 480-8597.

Sale: New 3-2-2 house on .75-acre close to IH-45. 409-925-3626 after 7 p.m., before 10 a.m.

Sale: Houston County Lake (Crockett) 1.2 acres in Tejas Shores subdivision, 21' × 58' stable, utilities. Armstrong, x3824 or 333-3279.

Lease: Seabrook 4-2-2, 2,000-sq.-ft, cul-de-sac, drapes, FPL, fenced, near schools, pool, $550/mo. $300 deposit. 331-0733.

Lease: Lake Livingston waterfront house, 3-2, fully furnished, pier, fishing, skiing, swimming, weekend and weekly rates. 482-1582.

Sale: Baywind II 1-1 condo, FPL, mirrored walls, miniblinds, fans, W/D connections, assumable loan. 471-6814.

Lease: CLC 1BR condo, fans, W/D connections, FPL, tennis, exercise room, 2 wks. free. Briley, 282-1958, 488-7901.

Sale/lease: Webster condo, 2 BR, $45,000 cash, $425/mo. plus $250 deposit. Rick, x5341 or 744-3906.

Rent: Aspen 3-2 condo, outdoor jacuzzi, 8 blks. from slopes, on free bus line to four ski areas. Tom, 335-1623.

Sublease: Nassau Bay apartment, 1BR, furnished, balcony overlooking pool, short-term rent possible, $415/mo., all utilities paid. Tom, 335-1623.

Sale: Shoreacres, 3-2-2 country home, .5-acre wooded lot, fenced, knotty pine kitchen, dining room, beam ceiling master BR, walk to Galveston Bay, boat ramp, pier, HYC, $84,100. Jon S., x4927 or 470-9267.

Rent: Friendswood townhouse, 2-1.5, W/D, covered parking and courtyard, pool, $450. 482-1070.

Sale: 420 acres 1 mi. from Center, TX, 300 timber, 120 pasture, half of minerals. Billie, 482-4365.

Lease: Heritage Park/Friendswood, 3-2-2, FPL, large kitchen, fenced, fan, custom paint, refrig., $550/mo. 482-6609.

Lease: Forest Bend/Friendswood, 3-2-2, fence, fan, new paint, refrig., $495/mo. 482-6609.

Sale: Meadowbend brick 3-2-2, ex. cond., appliances, fenced, $50,900. Glen, x6541 or 486-0462.

Sale/lease: Forest Bend townhouse, 2BR, ex. cond., quiet area, $35,000. Glen, x6541 or 486-0462.

Sale: Houston County Lake (Crockett) waterfront lot in Golden Acres subdivision, 100 ft. waterfront. Armstrong, x3824 or 333-3279.

Lease: Univ. Terrace townhouse, 2-2.5-2CP, all appliances, security sys., 2 pools, sauna, gym, $500/mo. 333-4044.

Sale/lease: Nassau Bay 4-2-2, 2,200-sq. ft., new carpet, paint, large garage, deck, atrium, 20' FPL, $895/mo. or $109,900. Jerry, x3561 or 4310.

Sale: Baybrook condo, 2-2, pay off loan. Marty, 486-0819.

Rent: CLC furnished 2-2 condo. 486-0819.

Lease: El Dorado Terrace condo, 2-1, carport, W/D, clubhouse, no deposit, $430/mo. 937-7606.

Sale/lease: El Lago 4-3-2 (2 master BR), $89,900 or $750/mo. 488-0887.

Lease: Heritage Park 4-2-2, split bedroom plan, large den & country kitchen, fully carpeted, drapes, large fenced yard, deck, very clean, avail. 12-1. Ray, x3954 or 474-4885.

Lease: Lakeshore 2-2-2 condo, waterview, covered parking, W/D, refrig., FPL, 1,075 sq. ft., 2 storage areas, fresh paint, $495/mo. + $350 dep. Regelbrugge, 280-2185 or 484-3318.

Lease: 2 BR condo, 10 min. to NASA, pool, tennis, carport, FPL, refrig., W/D conn., free water, $450/mo. + dep. 482-1575.

Cars & Trucks

'75 Volvo 242DL, 4 speed, ex. cond., $2,000; ARKLA dual burner gas grill, like new, $100. Frank, 280-3800 or 335-1889.

'83 Olds Delta 88 Royale, 4 dr., white, PW, PL, PS, stereo cassette, tilt, cruise, etc., diesel, ex. cond., $5,600. 482-2527.

'76 280Z, good cond., sport wheels, new tires, $2,100. Rodney, x4393 or 480-1340.

'79 Buick LeSabre 2 DR, PW, PD, PS, AC, 350 engine, new transmission w/1-year warranty, new radiator, ex. cond., $1,500. Don, x3087 or 486-8041.

'87 Chevy full-sized pickup, all power, AM/FM/cassette. 554-4710.

'79 Toyota pickup, long bed, low miles, ex. cond., $1,800 firm. Ed, x2091, 333-3187.

'75 Buick LeSabre convertible, burgundy and white, $1,595. Don, x4183.

'83 Nissan Sentra, 4DR, ex. cond., auto. AM/FM/cassette, AC, $3,400. 483-3558 or 333-3349.

'84 Pontiac Fiero, red, 4 speed, 17K mi., loaded, extend. warranty, $6,900. Marie, x3905 or 996-8334.

'74 Volvo 4 DR, 4 speed, ex. cond., $2,000. Jerry, x3466 or 488-5671.

'85 Chrysler Laser XT, turbo, 5-speed, silver w/black leather interior, AM/FM/cassette, PS, PW, PM, AC, tilt, cruise, hood mask, ultra-seal rustproof/paint seal/leather seal, 17K mi., $11,000. Pat, 280-1585 or 559-2571.

'82 Volvo DL, 4 DR, auto., AC, Concord stereo, cruise, 87K highway mi., no kids, nonsmoker, ex. cond., $6850. Tom, x3180 or 280-0828.

'79 Ford Fairmont station wagon, AC, PS, PB, new battery, tires, good cond., $1,450. Ron, x6247 or 585-8035.

'82 Honda Civic 1500 DX, ex. cond., 26K mi., auto, AC, AM/FM, service manual, $4,200. Mike Lake, 523-2137.

'80 Pontiac Grand Prix LJ, gray over gray, 72K mi., AC, PS, PB, blue velour interior, ex. cond., $1,800 OBO. Janet, x5111 or 554-5968.

'82 Saab 900S Turbo, 58K, AM/FM/cassette, sunroof, ex. cond., $7,000. McMillan, x3048 or 481-9095.

'82 280ZX turbo, 46.5K mi., burgundy, AT, T-tops, cover, $9,000. Keith, 480-0950.

'84 Dodge Ram minivan, AM/FM, AC, 4-spd., custom windows, clean, good mileage. Jim, 487-3636.

Boats & Planes

14' Starfish sailboat, Sunfish class, galv. tilt trailer w/buddy bearings, spare tire/wheel, dollyu-jack, extra sail w/booms, $800. 333-1054.

'83 16' Hobie Cat, special edition, multi-colored sails, galvanized trailer w/custom boat box, extras, stored indoors, $2,990. Carla, x2623 or 538-1148.

19' Seabreeze w/100HP Johnson motor and trailer, good cond., $1,900. 471-3165.

'84 Invader V171, 17', V-hull, Volvo AQ-125 I/O, always covered, full Coast Guard package, Danforth anchor w/80' rope, Humminbird LCR 2000 depth recorder, 40 channel CB, galvanized McClain trailer, full instrumentation, '86 NADA loan value $8,750, asking $9,750. Mark, x4927 or 470-8533.

14.5' Glastron ski boat, needs some repair, new trailer, totally rebuilt 80 HP Merc., new direct drive steering, must sell, $1,500. Alan, x4030 or 334-7814.

Photographic

Nikon (Nikkormat EL) w/Nikkon 50mm 1.8 lens, cleaned, inspected, skylight filter, padded camera bag, $250 OBO. Jeff, x4021 or 488-2405.

Audiovisual & Computers

Sears portable Beta VCR/power pack/video camera/tripod/lights, $700; Apple McIntosh computer w/Imagewriter, $1,800. 482-0935.

IBM-PC w/Amdek video 310 display and Epson RX-100 printer, some software incl., $1,850. Bonnie, x4473 or 930-9348.

Hewlett-Packard calculator, HP16-C, boolean logic, base conversions, 203 lines programming, $50. Bryan, 480-1224.

Beta VCR and tapes, $150. Linda, 282-5118.

Cherry wood stereo, approx. 5 ft. long, record player, needs new needle, $75. Opal, x3669 or 643-7460.

Hitachi compact stereo system, 8 yrs. old, needs good cleaning and TLC, tape deck, turntable, rec'vr., speakers and wire. Make offer. Karen, x3576 or 520-8348.

Cycles

'81 Honda CB750 custom, new battery, recent tune-up, $1,800 OBO. Jana, x5355, or Brian, 480-5527.

'79 Suzuki dirt bike, $400. Michelle, 483-5516.

'77 Yamaha XS750D, good cond., runs well, new battery, service manual, orig. owner, custom seat, crash bars, $625. Richard, x7281 or 480-0880.

'78 Suzuki GS750, windshield, crash bars, luggage rack, helmets, clymer manual, runs and looks great. David, 282-2853 or 485-3214.

Three 10-speed bicycles, $50 ea. 480-4432.

Huffy 10-speed, 2 yrs. old, $60 OBO. Len, x5408 or 333-5576.

Household

Large hobby table w/overhead light, $25; 8'×12' tent, $25. 480-4432.

Sofa bed, queen sized, brown and beige plaid, good cond. Jodi, x2868.

Sleeper sofa, $20. Rodney, x4393 or 480-1340.

Antique oval twin pedestal library table, $125; round Duncan-Phyfe drum table, $75; antique washstand, $100. 488-4487.

Newly upholstered chaise lounge, $150. Claire, 474-4310.

Executive desk, 3'×6', dark walnut, 2 file drawers, ex. cond., $250; office chair, brown, $50. 332-1864.

Extra wide patio door drape (one draw), 110"×84", bittersweet orange, $35; aluminum storm door, 36"×62", $15. 332-1864.

Solid walnut dining table, 6 chairs. Lynne, x3945.

Track and bracket shelving, black w/simulated walnut shelves, $20; wet suit, men's small, BO. Lynne, x3945.

Pecan Mediterranean RB suite by Burlington, full-sized bed, mattress, box springs, nightstand and triple dresser w/two mirrors, $650, w/matching armoire, $875, ex. cond. 331-0133.

Queen-sized mattress, box springs, gentle firm, good cond., $75; twin mattress, $10. Larry, x6101.

Gas dryer, Maytag, $75. 333-1054.

Maple twin beds w/mattresses, 4 drawer chest, $100. x6545.

Geriatric chair, blue leather w/footrest and food tray, $200. x6545.

Kimball soild oak bedroom suite; queen headboard, mattress, springs, night table, chest, dresser and mirror, $950' 52" round solid oak dining table. 4 pressed back chairs, $600; Frank: 280-3800 or 335-1889.

Kitchen table w/4 chairs, brown, $50, sturdy and looks good. Rich, x3803 or 996-7630.

Student desk, $85; antique desk & chair, $100; 6 place dining room glass table top, $250. David, 282-2853 or 485-3214.

Complete 55 gal. aquarium, $190 OBO; Sear's almost best ping pong table, net and paddles, $75. Ray, x6327 or 554-5434.

2 barstools, beautiful cond., brown with wood trim, were $375, both for $150. Hansen, x2855.

Loveseat and chair, gold, good cond., $125 OBO. Cordelia, x6459 or Tim, 641-5279.

9 ft. gold/green sofa, $140; 4 pc. stoneware setting, $20; stereo w/2 spkrs., $75; Jana, x5355 or Brian, 480-5527.

Double bed, mattress, boxsprings and frame, ex. cond., $125. 332-4938.

Wanted

'76-'81 Monte Carlo, Cutlass or Regal for student. Tom, x3781, 482-2575.

Want to buy used children's books. Cindy Leos, x4231.

Want lead trumpet player and aux. percussionist for Contraband, 18-piece volunteer big band. Ray, x6327 or 554-5434.

Want Kodak carousel projector in good working condition. Doug, x5573.

Want to buy electric trains. Don, x2449.

Want to buy or rent ski clothes, men's, women's children's Dec. 28-Jan. 4. 474-3319.

Car pool wanted from Pasadena area to JSC, 8 a.m. to 4:30 p.m. shift. Carol, x5996.

Musical Instruments

Casio CT 6000 keyboard, preset, rhythm, touch sens. keys, stereo, was $999, now $570; Bruce, x4691.

Antique Chicago Cottage organ, excel. cond., $1,500. Opal, x3669 or 643-7460.

Slide trombone with carrying case, 3 yrs. old, good cond., $250. Carol, x5996.

Clarinet outfit, 1 1/2 yrs. old, very good cond., was $425, now $195 cash. Mary Lou Sprake, x2634 or 334-1345.

Lost & Found

Found: Ladies gold watch in parking lot east of T585/29 on 10/16/86. Jim, x6226.

Pets & Livestock

Slender 6' boa constricter, $125; w/cage, gravel and hot-rock, $150, very tame, easy to take care of, eats medium to large rats. Rich, x3803 or 996-7630.

AKC German shepherd pup, black, silver and tan, born Aug. 18. Billie, x4105 or 482-4365.

Free female orange tabby cat, house-trained, has shots, 1.5 yrs. old, litterbox, food dish. Roger, x3314 or 480-0638.

AKC Chow puppies, with shots. Susan, 484-2248 or Jackie, x6134.

Miscellaneous

Sand pool filter, pump, needs work, $25. 482-6027.

Volvo tires, good for 15,000 mi., $50/ea. Hank, x4107 or 996-9033.

Men's Brighton rubber boots, size 10, worn once. 471-0262.

Hardwood firewood, dry, split, delivered, stacked, $60/half cord. 474-3319.

Rear bumper, chrome, std. for '78-'86 Ford vans, ex. cond., $60. Martin, x3771 or 482-1734.

Two P215x15" tires, 10K mi. left, $20. Tom, x3180 or 280-0828.

Chrysler motor, 50 HP, $475. Ben, x4971 or 488-1326.

Live bait well, 30 gal., 12V, used 3 mos., $20. Bernhard, 333-2968.

Auto repair ramps, new, $12/pr. Bernhard, 333-2968.

C.P.A. Exam Review, 70 hrs. taped instruction and 3,100 pages text review, was $495, asking $325. Verna, 480-5629.

Fitness Master exercise machine, simulates cross-country skiing, separate variable weight resistants for arms, legs, was $450, asking $300. Amy, 280-4800 or 666-2599.

Ajay Exer-Chair w/butterfly attachment, weights incl., was $180, asking $100. Verna, 480-5629.

Used golf clubs, irons, woods, putters and wedges. Jerry, x6250 or 333-5181.

DP Gympac 2000, ex. cond., $150 OBO. Stacy, x3601 or 332-1585.

Olympia portable typewriter, ex. cond., 471-0262.

Lawn mower, 3.5 hp. Briggs & Stratton gas engine, rear bag, push type, runs well, $75. Luis, 483-5803.

Avon chess set, complete, $50. 946-4013.

Aluminum camper top for long-bed Toyota pickup, insulated, paneled, good cond., $150 OBO. Coy Martin, x2576 or 337-2682.

Ariens riding lawn mower, cast iron engine, pneumatic tires, good cond., $225. 473-2709.

Diamond ring, .20-carat, solitaire, $200. Michelle, 483-5516.

Infant car seat, $30; plastic baby bath, $4. Rob, x4175.

Silver cast-iron BBQ, on wheels, $24; 20" fan, practically new, 3 speeds, $20; recreational perch, hangs or sits on table, w/tray and feed cups, $45. Valerie, x2208.

Bassinet, mattress, sheets, $20. Rob, x4175.

Royal 110 copier w/table, $650. x3051 or 488-6406 after 7 p.m.

Compressor/pressure tank/paint accessories, .75 HP, 6 mos. old, $500. 482-0935.

Baby items: swing, $15; wicker bassinet, $20; car seat (0-3 mo.) $15; infant carrier, $5; Johnny Jump-Up, $5; walker, $10. Jodi, x2868.

Go-cart, 5 hp., 2 seats, ex. cond., $150 OBO. 482-6027.

Wire wheels for '79 Monte Carlo; water conditioner for entire water system. Ethel, x5341.

Time-Life book series on history of aviation, $50; series on the Old West, $50; both sets for $90, excel. cond. Hansen, x2855.

DP 650 USA fitness gym, incline/flat exercise bench, 5 position back, adjustable leg lift, leg curl, rowing attachment, etc., still in box. $110. 332-4938.

New stock camshaft for Chevy 283, $30; starter for small block Chevy V8, new solenoid, good cond., $15; young teen size motorcycle helmet, $5. 488-1069.

Cedar ridge row shingles, felt, 2 bundles, $20; B&D 9-in. cord trimmer, used once, $10. 488-1069.

Cookin' in the Cafeteria

Week of November 3 — 7, 1986

Monday — Cream of Potato Soup; Franks & Sauerkraut, Pork Chop, Potato Baked Chicken, Meat Sauce & Spaghetti (Special); French Beans, Buttered Squash, Buttered Beans. Standard Daily Items: Roast Beef, Baked Ham, Fried Chicken, Fried Fish, Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

Tuesday — Navy Bean Soup; Beef Stew, Liver & Onions, Shrimp Creole, Smothered Steak w/Dressing (Special); Corn, Rice, Cabbage, Peas.

Wednesday — Seafood Gumbo; Roast Beef, Baked Perch, Chicken Pan Pie, Salmon Croquette (Special); Mustard Greens, Italian Green Beans, Sliced Beets.

Thursday — Beef & Barley Soup; Beef Tacos, Diced Ham w/Lima Beans, Stuffed Cabbage (Special); Ranch Style Beans, Brussels Sprouts, Cream Style Corn.

Friday — Seafood Gumbo; Fried Shrimp, Deviled Crabs, Ham Steak, Salisbury Steak (Special); Buttered Carrots, Green Beans, June Peas.

Week of November 10 — 14, 1986

Monday — Cream of Chicken Soup; Beef Burgundy over Noodles, Fried Chicken, BBQ Sausage Link, Hamburger Steak (Special); Buttered Corn, Carrots, Green Beans. Standard Daily Items: Roast Beef, Baked Ham, Fried Chicken, Fried Fish, Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

Tuesday — Beef Noodle Soup; Baked Meatloaf, Liver & Onions, BBQ Spare Ribs, Turkey & Dressing (Special); Spanish Rice, Broccoli, Buttered Squash.

Wednesday — Seafood Gumbo; Broiled Fish, Tamales w/Chili, Spanish Macaroni (Special); Ranch Beans, Beets, Parsley Potatoes.

Thursday — Navy Bean Soup; Beef Pot Roast, Shrimp Chop Suey, Pork Chops, Chicken Fried Steak (Special); Carrots, Cabbage, Green Beans.

Friday — Seafood Gumbo; Broiled Halibut, Fried Shrimp, Baked Ham, Tuna & Noodle Casserole (Special); Corn, Turnip Greens, Stewed Tomatoes.

Week of November 17 — 21, 1986

Monday — Chicken Noodle Soup; Wieners & Beans, Round Steak w/Hash Browns, Meatballs & Spaghetti (Special); Okra & Tomatoes, Carrots, Whipped Potatoes. Standard Daily Items: Roast Beef, Baked Ham, Fried Chicken Fried Fish, Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

Tuesday — Beef and Barley Soup; Beef Stew, Shrimp Creole, Fried Chicken (Special); Stewed Tomatoes, Mixed Vegetables, Broccoli.

Wednesday — Seafood Gumbo; Fried Perch, New England Dinner, Swiss Steak (Special); Italian Green Beans, Cabbage, Carrots.

Thursday — Cream of Chicken Soup; Turkey & Dressing, Enchiladas w/Chili, Wieners & Macaroni, Stuffed Bell Pepper (Special); Zucchini Squash, English Peas, Rice.

Friday — Seafood Gumbo; Baked Cod, 1/4 Broiled Chicken w/Peach Half, Salisbury Steak (Special); Cauliflower au Gratin, Mixed Vegetables, Buttered Cabbage, Whipped Potatoes.

AT BUILDING #3

On Wednesday we feature The Reuben: Corned Brisket, Swiss Cheese on a bed of Sauerkraut, Poupon Mustard on Rye and 1/4 Pickle. Delicious!

Monday and Thursday check out our French Dip Sandwich.