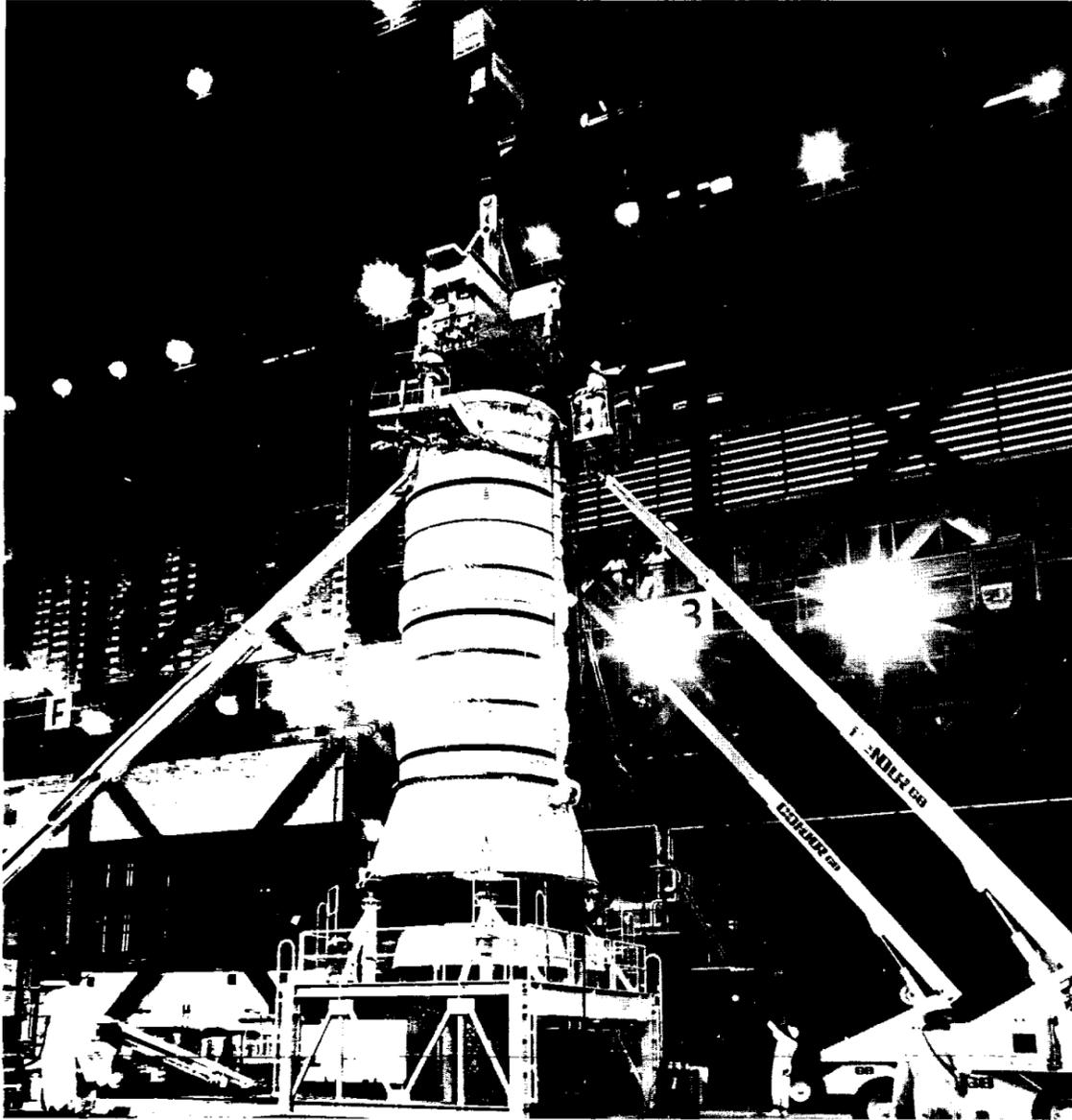


# Space News Roundup

Vol. 27 No. 10

May 6, 1988

National Aeronautics and Space Administration



NASA Photo

**STACK 'EM UP**—The aft segment of the left solid rocket motor slated for use on STS-26 is prepared for stacking in the transfer aisle of the Vehicle Assembly Building at Kennedy Space Center. The redesigned booster segment is being prepared for lifting by a 250-ton crane that will place it atop Mobile Launch Platform 2 in VAB high bay number 3.

## JSC Women's Week eyes multi-cultural success strategies

Women have made substantial progress within JSC and NASA in the areas of employment, development and advancement, but the movement toward a more diverse work force is only gaining steam, according to Shirley Price, JSC Federal Women's Program manager.

"I've been here for 17 years, and I have seen a tremendous amount of progress," Price said as she prepared for the 11th annual JSC Federal Women's Week Program May 9 through 13 at the Gilruth Recreation Center.

"I feel strongly that JSC, as one institution, tries to motivate competitiveness among women," she said. "The opportunities are here, unfortunately I feel women in general don't have enough role models to follow."

In fiscal year 1987, a total of 996 female employees made up 29.8 percent of the JSC civil service work force. They constituted 6.1 percent of the technicians, 12.7 percent of the scientists and engineers, 45.4 percent of the professional administrators and 98.6 percent of the clerks.

Females garnered 321—or 49.2 percent—of all JSC promotions in 1987, and made up 32 percent of the professional hires, 37.7 percent of the fresh-out hires and 100 percent of the clerical hires.

Price said that while she is not satisfied with these statistics, they do represent improvement.

Improvements are coming slowly because the federal work force as a whole changes slowly, and because women are relatively new to the aerospace field, she said.

"A lot of our women are becoming more knowledgeable of the requirements to advance in the aerospace field. I think a lot of women are ridding themselves of stereotype fears and accepting the challenges to go into the field," she said. "What we have to accept as women is to be competitive with one another. Once we accept that in a real sense of the word, we can be more than competitive with men."

JSC Director Aaron Cohen has encouraged supervisors and employees to attend this year's program, which will focus on "Multi-Cultural Women: Strategies for Excellence."

"I want all the women to know that we are concerned about them—the American Indian women, the Asian Pacific women, the Hispanic women, and the non-minority women," Price said.

"Many people think that women's week is for women only. It is not. The purpose of the Women's Week activities, number one, is to observe and appreciate and express appreciation for what the women in the JSC community are doing, from secretaries to engineers to astronauts, and to say 'We're proud of you.'"

The general session will begin at (Continued on page 2)

## Armendariz gets Woman of Year honors

*Business women base choice on experience, accomplishments*

Lupita Armendariz, JSC's Hispanic Employment Program manager, has been chosen Woman of the Year by the Clear Lake Chapter of the American Business Women's Association (ABWA).

ABWA Women of the Year are elected on the basis of their business experience and accomplishments, ABWA participation, education and special interests, according to Carolyn B. Elman, national ABWA executive director. A panel

of non-member judges will choose the ABWA's Top Ten Business Women from among the chapter Women of the Year at the association's 1988 National Convention in October.

Armendariz is responsible for implementing equal opportunity policies and procedures, and assists in the execution, support and promotion of equal opportunity within JSC and with outside groups and agencies.

She is immediate past president of the Clear Lake Chapter of ABWA, and since 1986 has been chairman of the Houston/Galveston Hispanic Employment Program Managers Council. She is scholarship chairman of the Mexican American Engineering Society, and a member of the Federal Executive Board. In September 1987, she was recognized as Federal Employee of the Year, administrative category.

She has been active in the community, serving as a member of the City of Webster Comprehensive Planning Project task force, as a member of the League of United Latin American Citizens, and as a block captain for the March of Dimes.

In May, she expects to receive her bachelor of arts degree from the University of Houston-Clear Lake.



Lupita Armendariz

## Neural networks mimic human decision making

Consider "neural networks," devices that can absorb and learn human decision-making abilities. Imagine astronauts taking their own personal neural networks with them through hours and hours of simulations so that the devices may learn when and why the astronauts make their decisions.

Then imagine the astronauts taking their personal networks with them on a mission, and allowing the devices to make high confidence decisions—based on the astronauts' own training responses—at computer speeds while the astronauts concentrate on the most critical problems.

Leon N. Cooper, keynote speaker at the recent JSC "Neural Networks and Fuzzy Logic Workshop 1988," says such a scenario is not that far away. Neural networks, which use complex mathematical models and computers to simulate the informa-

tion processing and response of the human central nervous system, already have been trained to solve problems as complicated as those encountered by a mortgage underwriter.

"I think 10 years down the line, even in the next few years, these networks will begin to assume a place in practical systems," Cooper said. "You're going to begin to find them proliferating just the way early computers did."

Cooper, a Nobel Prize-winning theoretical physicist perhaps best known for his work in superconductivity, was one of 300 people who participated in the workshop at the Gilruth Recreation Center on May 2 and 3. He is a professor of science at Brown University, which has a Center for Neural Sciences.

Cooper said research at Brown has gone in two directions: trying (Continued on page 2)



JSC Photo by Bob Weick

**ROBOT CONTROL**—Young hands manipulate a controller for a set of robotic arms, as Steve Nakata helps. Nearly 1,000 people visited a Space and Life Sciences Directorate open house April 30.

## More cooperation foreseen by NASA, Soviet scientists

NASA and Soviet space scientists said they expect a gradual movement toward more cooperation and data sharing based on the first U.S./USSR Space Astronomy and Astrophysics Joint Working Groups meetings held in Washington April 27 through May 2.

Samuel Keller, NASA deputy associate administrator for space science and applications, said the meetings were "cooperative, useful and surprising congenial."

"We have reviewed the content of our two programs and we have commented again and again on how well they mesh together," Keller said.

Rashid Sunyaev, Soviet co-chairman of the Space Astronomy and Astrophysics working group, said that he hopes the difficulties in cooperation in recent years are gone.

## People

### Bennett is new NASAMAIL administrator

William J. Bennett of the Data Processing Systems Division has been appointed JSC and NSTS NASAMAIL administrator. Bennett will be responsible for the overall management of NASAMAIL services. Donna M. Keith will remain alternate administrator, responsible for establishing and maintaining user authorizations. For help or problem reporting, users should still call the DPSD Help Desk at 280-4800.

### Miller to manage Lockheed program

Dr. Maurice (Moe) Miller, a 33-year Lockheed veteran, has been appointed vice president and program manager of Lockheed engineering and Management Services Co.'s engineering and science program at JSC. He succeeds Henry Bowes, who retires July 1.

## Bulletin Board

### Technical symposium on 'Challenge Ahead' is May 11

The 13th annual AIAA Houston Section Technical Symposium, "A New Beginning—The Challenge Ahead," will begin at 9 a.m. May 11 at the University of Houston-Clear Lake. Concurrent morning sessions will discuss Communications Systems; Computer and Software Systems; Ground Test and Simulation; Materials, Structures and Dynamics; Space Systems; Guidance, Navigation and Control; Payloads and Experiments; and Science and Technology for New Initiatives. Concurrent afternoon sessions also will look at Spacecraft Propulsion and Power; Life Science/In-Space Life Support; and Management/Space Activities. Hubert Davis of Davis Engineering will discuss NASA's upcoming programs at a plenary session at 4:10 p.m. in the Bayou Bldg. Auditorium. Registration begins at 8:15 a.m.; cost is \$2 for members, \$3 for nonmembers. For more information, call Andre Sylvester, x31537.

### Professional secretaries to install officers May 11

The Clear Lake/NASA Area Chapter of Professional Secretaries International (PSI) will install incoming officers for the 1988-89 term at 7 p.m. May 11, 1988, at the Holiday Inn on NASA Road 1. Doris Towns, chairman of Retirement Centers Trusts will be the featured speaker, and Vera Turner and Beth Eichelberg, both of the PSI Southwest Houston Chapter, will install the officers. For more information, call Lillian Hudson, x31032, or Rose Wilson, x30312.

### Space Society to focus on lunar bases May 14

Dr. Wendell Mendell will discuss lunar bases at the next meeting of the Clear Lake Area Space Society, at 7:30 p.m. May 14 in Rm. 207 of the Gilruth Recreation Center. For more information, call Chuck DiFalco, x31701.

### Olympic and world ice skating exhibition is May 19

The next JSC-EAA night at the Summit will feature a "Tour of Olympic and World Skating Champions" at 7:30 p.m. May 19. Medalists from the 1988 Winter Olympic Games, including Debi Thomas, will perform. A limited number of tickets are on sale at the Bldg. 11 Exchange Store for \$18 each. For more information, call x35350.

### Houston Mayors' Salute to Space Industry is May 19

The American Diabetes Association will present the second annual Houston Mayors' Salute to the Space Industry at 6 p.m. May 19 at The Park Shops in Houston Center, 1221 Lamar St. A reception and autograph signings will be from 6 to 7:30 p.m., followed by the program. A space memorabilia auction begins at 8 p.m. Proceeds will support diabetes research in the Texas Medical Center and other areas of Texas.

### Rockwell 'Mighty Neighborly' picnic is May 21

The first annual "Rockwell Houston Operations 'Mighty Neighborly' Family Picnic" will be from 11 a.m. to 5 p.m. May 21 at the Gilruth Recreation Center. Barbeque, face painters, games for adults and children, and a disc jockey will be available for Rockwell employees and their guests. Advanced tickets are \$4 for adults and \$2 for children ages 6 to 12, and are available from J.R. Riley, Madeline Stripling, Ramesh Khatri, Lisa Conway and Therese Covell. For more information, call Karen Johnson, 282-3522.

### Superconductivity researcher Chu to visit JSC May 16

Dr. Paul Chu of the University of Houston will speak on "High Temperature Superconductivity in Space" at an AIAA luncheon at 11:30 a.m. May 16 in the Gilruth Recreation Center. Cost is \$7; early reservations are encouraged. For more information, call Jim Stramler, 333-6232.

### Ada language binding group to meet May 31-June 2

The IEEE POSIX 1003.5 Ada Language Binding Subcommittee will meet May 31 through June 2 at the Holiday Inn on NASA Road 1. Registration for people participating in the working meetings will be \$70. A free general assembly meeting will be held at 1 p.m. June 2 at the Gilruth Recreation Center to inform the NASA community of the goals and progress of the group. For more information, call Jayne Baker, 335-8553.

### JSC team to compete in 'Superstars' June 11-25

JSC employees are putting together a team of 10 men and 10 women to compete in the Houston Superstars. A fun run in Houston's Memorial Park will kick off the competition June 11. The rest of the events will be June 21-25. All JSC civil service and military employees are eligible to participate. For more information, call Ruben Zavala, x33742, or Mike Fawcett, x34427.

## Gilruth Center News

Call x30304 for more information

**EAA badges**—Dependents and spouses may apply for photo I.D. badges between 6:30 and 8:30 p.m. May 18 or May 24.

**Defensive driving**—Course is offered from 8 a.m. to 5 p.m. May 21 or June 18 and costs \$20.

**Weight safety**—This is a required course for those employees wishing to use the Rec Center weight room. The class will be on May 19 or June 8. Cost is \$4.

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

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

**Basketball officials**—The recreation department will conduct a basketball officiating clinic to recruit new officials. Anyone interested should call the Rec Center.

## Buyers earn small business recognition

Two JSC employees will be honored during Small Business Week, May 8 through 14, as "Small Business Buyers of the Year" in fiscal 1987.

Lois Ransdell of the Base Operations Procurement Office is being honored as the JSC buyer whose cooperative efforts resulted in the largest number of new awards to small businesses by a single buyer, said Bob Dupstadt, JSC Small and Disadvantaged Business specialist.

Jim Gips, contract specialist in the Space and Life Sciences Procurement Branch, is being recognized for having the largest dollar volume of new awards to small businesses.

The Small Business Administration will present its "Award of Excellence" to Pioneer Contract Services, a JSC prime contractor, at this year's awards ceremony in Washington, D.C.

NASA has always recognized the potential of small businesses and

has worked to utilize their capabilities, Dupstadt said. During fiscal year 1987, JSC placed more than \$89 million with small business firms, a record amount.

"The contributions that small businesses have made to JSC's programs are very important and the more we can get small business involved the better," Dupstadt said. "JSC's small business program provides a nucleus for these companies to become larger and more viable."



JSC Photo by Bob Waick

**COLORS RETIRED**—Former flight directors John Cox, left, and Jay Green were the center of attention at an April 25 ceremony to retire their flight team colors. Cox, whose team color was granite, is now director of Space Station Program Utilization and Operations at NASA Headquarters. Green, whose team color was emerald, is now chief of JSC's Safety Division.

## Space technology aids low vision sufferers

NASA and Johns Hopkins Wilmer Eye Institute of Baltimore will use space technology to develop a device designed to improve the sight of millions of people with low vision.

Scientists at NASA's National Space Technology Laboratories (NSTL) and Wilmer plan to adapt technology used for computer processing of images from satellites and head-mounted imaging systems originally developed for NASA Space Station projects to enhance vision.

According to officials in NASA's Technology Utilization Program, the new collaborative project is expected to run at least five years and cost a minimum of \$5 million in its first phases. The project will be carried out for NASA by NSTL's Earth Resource Laboratory, the

installation's research and development organization.

The "Low-Vision Enhancement System," will resemble "wrap-around" sunglasses and will custom-tailor images of the outside world for low-vision patients. A version of the enhancement system is expected to be available to patients through clinical tests in a few years.

About 11 million Americans have visual defects that cannot be corrected medically, surgically or with glasses. Severe impairment that causes disability, called low vision, affects 2.5 million Americans, according to Eye Institute officials.

The transfer of NASA's technology will make it possible to improve the visual capability of low-vision patients by appropriately enhancing and altering images to compensate

for the individual patient's impaired eyesight.

When the device is worn, the patient will see the world on two miniature color television screens where the lenses of eyeglasses usually are located. Lenses and imaging glass fibers will be embedded on each side of the "wrap-around" section where the front and ear pieces join.

The lenses will form images of the scene in front of the patient on the surface of the fibers. The fibers will carry pictures back to miniature solid-state television cameras in a belt or shoulder pack. The images will be processed by a small, battery-powered system in the pack and displayed on the screens.

Outside, the device will look like mirrored sunglasses.

## Women's Week activities begin Monday

(Continued from page 1)

8:30 a.m. Monday with greetings from JSC Director Aaron Cohen and remarks by Alma Newsom, associate professor of telecommunications at Texas Southern University.

This year's keynote address will be delivered by Dr. Guadalupe Quintanilla, assistant vice president of academic affairs at the University of Houston, at the 11:30 a.m. Friday luncheon.

Monday session highlights will include "Leadership Strategies for Excellence," by Dr. Martha Wong, associate professor at Baylor University; and "An Astronaut's View of the World," by Dr. Kathryn Sullivan.

Tuesday highlights include "Strategic Planning for the Individual," by Dr. Roland Smith, associate vice president of the University of Houston (UH); "How to Write a Job Winning KSAOC," by Sue Leibert, personnel management specialist; and "How to Create Wiz Kids," by Dr. Sylvia Pena, UH associate professor.

Wednesday highlights include panel discussions on "Women in the Work Place" and "A.I.D.S.," and "Staying Sane and Well," by Janet Matthews, assistant Administrator of Women's Hospital.

On Thursday, session highlights include "Women's Preventive Health," by Dr. Cecelia Lowder of

Women's Hospital; "So You Want to Be a Manager," by Dr. Judith Walker-DeFelix, UH associate professor.

Friday morning sessions will include "Soviet Women in Space," by James Oberg, author and engineer; "Do We Need Daycare," by Dr. William Parker of Prairie View A&M University, Pat Daniel and Carol Homan; and "Communications," by Alma Newsom.

Accomplishments of women throughout the JSC community will be on display throughout the week at the JSC Technical Library in Bldg. 45 during work hours, and films will be shown on the hour at the Gilruth Center.

## Neural network field is still in infancy

(Continued from page 1)

to construct specific theories of how the human cerebral cortex functions all the way down to molecular models about where memory is stored and what learning processes are, and taking some of those ideas and constructing neural networks that do things in the real world.

"I guess the bottom-line idea here is if you could get some of the functionality of the central nervous system, some of that ability to do common-sense things, and if you could capture it and combine it with the kind of computing power you have with current computers you'd have what's obviously the next generation," Cooper said.

Although the field is still in its

infancy, he said, researchers already have succeeded in getting neural networks to recognize complex patterns and mimic human decisions in complex situations. The next step is to marry the technology with the real knowledge of problems in different areas of expertise.

"This is not purely a technical problem," he said. "It's a problem of how human beings interact with new systems and to what extent they trust them—how they feel comfortable working with them."

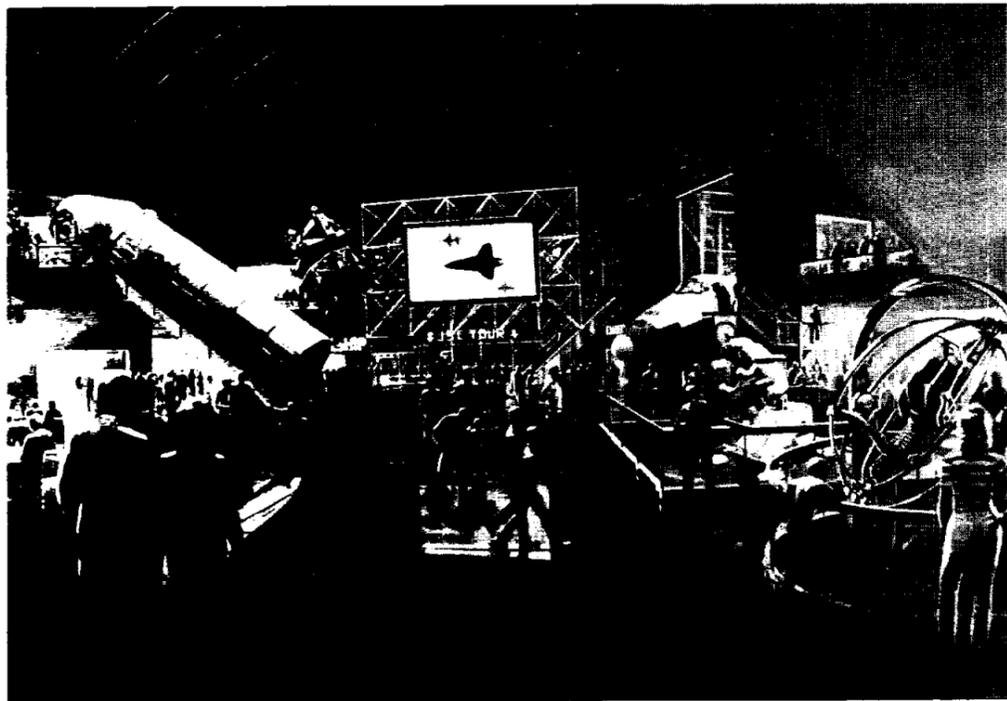
A prime area for use of neural networks is helping humans who must make decisions quickly based on multiple inputs, such as pilots, astronauts or flight controllers.

"If he has enough time, he has

no problem, he knows what to do. The difficulty is he is being asked to accumulate a large amount of data very rapidly and make decisions very, very fast."

One way of helping humans get used to such systems might be to allow the neural network to make decisions only in situations that always have the same solution, and reserve the rest for the human.

"Although eventually, as with all tools and all machines, human beings may lean on them more and more, they should never be thought of as replacements. They are like any other mechanical device, they are assistants. You'll always have a human being in the loop, but they don't have to do everything."



# SPACE CENTER HOUSTON

## Where visitors can touch, feel manned spaceflight adventure

**By Kelly Humphries**

"Space Center Houston," as the new visitors center planned for JSC is being called, will do more than just help guests appreciate manned spaceflight, according to preliminary plans just approved.

"We want a visible measurable difference in behavior between those who have visited and those who have not," states the Walt Disney Imagineering design team proposal that was given a unanimous go-ahead April 25 by the Manned Space Flight Education Foundation board of directors. "After all, if Space Center Houston doesn't make a difference, then Space Center Houston is unnecessary. We are determined to make a difference."

At the same meeting, the board selected CRSS/Linbeck for negotiations leading to a contract for construction management of Space Center Houston. CRSS/Linbeck will coordinate project design and construction, provide value engineering recommendations, plan construction strategy, and manage overall construction, scheduled to begin in the fall of 1989.

"We've got it all blocked out and we think we know how it fits together," said Harold S. Stall, President of the Non-profit Foundation. "It's like looking at the Space Shuttle as that program matured—the lines may change but the concept is well defined."

The design schematics, which describe the real-life, experiential philosophy behind the visitors center as well as its contents, envision a 140,000-square-foot, two-level, dome-topped building capable of allowing more than 6,500 visitors per hour to feel like "insiders" at JSC through experiences, live demonstrations, live coverage of on-going missions, big format film and video, historical exhibits, a tram tour and a special breed of guides that will be credible spokesmen for the "real stuff."

Attractions will include a Feel of Space demonstration area, a Mission Status Center, a Space Shuttle Crew Trainer, a Space Station habitation module escalator, a large-format film theater, a Starship Gallery of Space artifacts, a Skylab trainer walk-through exhibit, a gift store, two dining areas, and a canopied tram loading area.

Admission is expected to cost about \$5 a person, and the Foundation predicts that 2 million people will visit Space Center Houston and JSC in the first 12 months after opening day in early 1991.

From outside the building, to be constructed on 40 acres inside and just west of JSC's main gate, visitors will see the 80-foot-tall, squared dome. A reflective stair-step roof will "bring the sky down," and large vinyl graphics will depict NASA's space achievements, Stall said.

As they enter, guests will walk directly beneath the Skylab trainer, suspended from the ceiling in its full space-borne configuration. They'll be visually lured into a large theme plaza hub from which attractions will radiate. A giant video screen facing the entry will show live or recorded mission activities, creating a "Times Square" effect. Every attraction will be visible and easily accessible from the plaza, and all features are being designed to accommodate the handicapped.

To the right on the main floor will be the Feel of Space, a demonstration area where visitors may get a "physical, tactile experience which challenges the guest's senses, intellect and imagination while learning important concepts about spaceflight."

Preliminary plans call for six Single System Trainers, where guests may try to dock the Shuttle to the Space Station or save themselves from pressure loss in a Space Suit Failure Simulator; two Mechanical Hands-On stations where they may try to tele-operate a remote mechanical hand or find out what it's like to manipulate pressurized gloves in a vacuum glove box; and two Mini-Environments, which will include a walk-through Shuttle crew compartment trainer and an Open-Back Space Suit that gives a faceplate view into a diorama of the Space Station in orbit.

A large, live Living in Space demonstration will be presented by guides using a break-apart Space Station habitation module. The guide will select volunteers to participate in demonstrations of food preparation, eating and drinking, sleeping, medical treatment and using the zero-gravity shower and toilet.

Two smaller live demonstration areas will make use of a multi-axis personal tumbler to let some adventurous visitors try their "right stuff" with six degrees of freedom, and an air-bearing floor to let others challenge the leverage problems of weightlessness while trying to retrieve a satellite using a manned maneuvering unit.

"The audience very much wants to do things which enable them to fantasize that they are a part of the Space Program," the Disney team led by Bob Rogers wrote. "These fantasies usually center on being an astronaut."

Also in the "experience it/imagine it" vein is a big format film theater that will follow astronaut candidates through their training, culminating in a long-duration simulation and finally, a launch.

"Although our proposed title is 'To Be An Astronaut,' the subject of training cuts across dozens of disciplines," the Disney report states. "It will allow us to focus on the larger team approach which includes the full spectrum of JSC professionals who contribute to a successful spaceflight," Stall added.

The film, which will use Imax or a similar large format, will depict what is going on here at JSC and give visitors insight into the many challenging emergency situations that occur in simulations, the personal dedication that NASA employees exhibit daily, and the everyday side of astronauts' lives.

To the left of the main entrance will be the Mission Status Center, where guests will be able to watch on-going missions on three large-screen monitors with live, in-person commentary by guides or JSC experts.

"This is where we can get the flesh and blood contact between JSC's people and the public," Stall said.

Just past the Mission Status Center will be the Destiny Theater, where a presentation will dramatize the adventures of the past and future and share NASA's vision on an emotional "gut level." The presentation is intended to show that the space program is not a series of isolated technological stunts, "but the beginnings of a great adventure full of daring, dedication and destiny in the highest of human traditions."

Upstairs from the Destiny Theater will be the Starship Gallery, where JSC's artifacts "will be transformed into adventures by vividly capturing the emotional content of the adventure the artifact represents."

They will be recognized not as dead artifacts of the past, but stepping stones in the path to the future," Stall said.

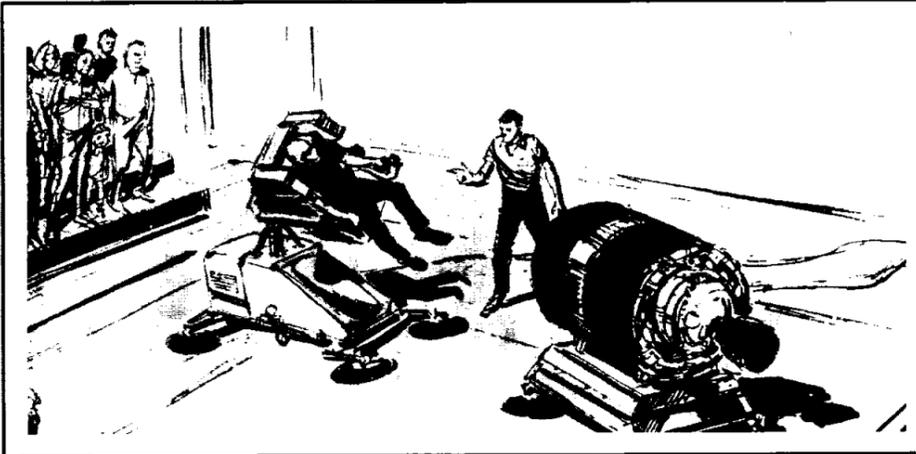
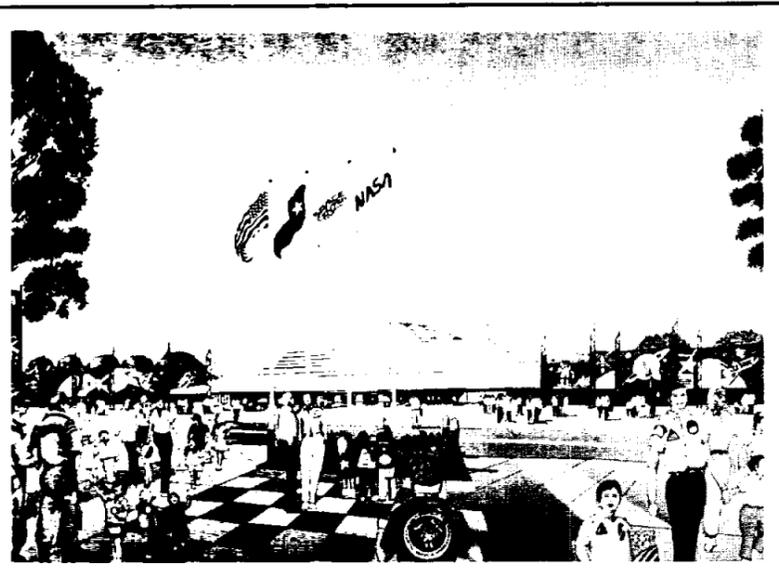
The Apollo Lunar Excursion Module (LEM) and rover, for example, will be displayed on a forced-perspective landscape that gives the impression visitors are elbow-to-elbow with the rover's crew and that the LEM is miles away on the lunar horizon.

Space suit evolution will be made more captivating by exhibiting each suit as a particular astronaut might have worn it, along with personal memorabilia.

After crossing a catwalk to look through America's first space station, Skylab, visitors will return to the main floor on an escalator that passes through a mock-up of the future Space Station hab module.

A covered loading area for the tram tour of JSC will be at the rear of the building. The tram will carry tour groups of 190 people on a driving tour of JSC, with stops provided by NASA at areas such as Mission Control, the Weightless Environment Training Facility (WET-F), and the Bldg. 9A Shuttle trainers.

"This has to be taken as a whole," Stall said. "The new facility is a way to provide a core of understanding that is really only complete when our visitors get on the tram tour and see the rest of the center. Space Center Houston is just a way to enhance that experience and make it manageable for visitors numbering in the millions."



**Top:** The main plaza will provide a visual menu of every Space Center Houston activity. **Left:** Architecture will provide a sense of being for the facility. **Above:** Visitors will be able to attempt a rendezvous with a satellite mock-up on an air-bearing floor.

# Roundup Swap Shop

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

## Property & Rentals

Sale: Big Bend area, 160 acres hunting land. \$170 per acre. 337-4051.

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

Lease: Galveston Bay, Victorian condo, sleeps 6, fully furnished, beach, pools, spas & tennis, weekend and weekly rates. 480-5270.

Sale: Friendswood/Sun Meadow Estates, wooded lot, established, well maintained neighborhood, cul-de-sac, bordered by stream & golf course, approx. 1/3 acre, 220' deep, gas/elec. on site. Doug, x32860 or 486-7412.

Lease: 3-2 cottage, renovated, light and bright, central A/H, fenced, shade trees. 5 min. from NASA. 728-5693.

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

Lease: Pebblebrook condo, El Lago, 1 BR, 1 bath, mirrored walls, mini blinds, W/D, upstairs, 650 sq. ft., \$300/mo., Lindemann, 488-3300 or 532-2218.

Sale: Lake Livingston highway frontage lot, wooded, Paradise Acres Subdivision on FM 356. Roger x30093 or 472-5650

Lease: Lake Livingston waterfront house, new 3 BR, 2 bath, fully furnished, covered deck, pier, fishing, skiing, swimming, weekend & weekly rates. 482-1582.

Lease: University Trace condo, 1 BR, stdy, W/D, ceiling fans, pool, exercise room, all elec., alarm sys, \$375 plus deposit. Barbara, 282-4616

Lease: Galveston beach house in Pirates Beach, 3-2, FPL, W/D, all appl., \$100/night. 488-0667.

Sale: League City, 3-2-2, cul-de-sac, landscaped, low equity, FHA 10% fixed assumable. David, x35464.

Sale: Algoa/Sante Fe, .5 acre, well, septic, driveway, water purifier, shed, ready to move on, trees, \$12,500. Linda, x33844 or (409) 925-4862.

Lease: Lake Travis Cabin, private boat dock, central A/H, fully equipped, \$300/\$425 weekly, weekend available in spring. 326-5652.

Sale: Sagemont near schools, large 2-story house, 4-2.5-2, both formals, large den, FPL, 484-3859.

Lease: Friendswood, Heritage Park, 3-2-2, fence, FPL, large kitchen, microwave, fence, fan, new paint. \$575/mo. 482-6609.

Lease: Friendswood, Forest Bend, 3-2-2, fence, patio, new paint, clean, good location, \$475/mo., 482-6609.

Lease: CLC area, large condo, vaulted ceilings, 2 BR, FPL, balcony, W/D conn., all appl's, pools, storage, \$350/mo. 486-0315.

## Cars and Trucks

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

'77 Ford Granada Ghia, 4 dr., 6 cyl., 4 spd., PS, A/C, AM/FM, 100K mi., good cond., good tires, service manuals, orig. owner, \$1,000. Allen, x35538 or 486-5740.

'86 RX-7, sports model, white, maroon int., AM/FM/Cass. 24K mi., ex. cond., \$11,995 OBO, Jeff, x31470 or 996-7097.

'86 Red Firebird, V8, auto., T-tops, AM/FM cass., PS, PB, alum. rims, tilt, air, cruise, 4 new RWL tires, less than 38,000 mi., ex. cond., \$8,650. 422-6260.

Toyota MR-2, '86, 12K mi., \$10,200. x36305 or 474-5961.

'77 Honda Accord, 5 spd., \$750 OBO. 486-1110.

'84 Volvo DL Wagon, ex. cond., \$8,500 OBO. Sharon. 337-3624, (409) 935-9274.

'79 Mercury Capri, 6 cyl. auto., red/black, new carpet, trans., cooling sys., tires (TA radials), mags, \$900 OBO. Young, x38543, 532-2289.

'55 Dodge 3/4 ton pickup, current tags, inspection, needs work, antique, \$1,000. 280-1259.

'83 Firebird, S/E, V8, auto O/D., All power, A/C, 47K mi. \$4,800 OBO, 488-3019.

'84 Camaro Z28, cruise, tilt, tint, stereo, 40K mi., good tires, ex. cond., \$8,200. Chris, x30225.

'80 Olds Cutlass V8, 2 dr., new tires, 70K mi. Bo Rick, x36156 or 480-1218.

'83 Honda Accord, 4 dr. sedan. Lt. blue, A/C, cruise, velour int., 46K mi., one owner, 5 spd, manual. \$5,750 OBO. Call Ken, x32516.

'69 GMC 3/4 ton pickup, good cond., \$500. Connie, 282-4921 or 332-4405.

'79 Toyota Corolla Deluxe, 2 dr., 4 spd., new brakes, \$995 OBO. Jeff, 282-7744 or 996-1907.

'81 Pontiac, LeMans sedan, V6, fully

equipped, clean, dark brown w/beige vinyl roof. \$2,400. 474-2654, x33199.

'76 Jaguar for sale. Beautiful! New paint, new headliner, new carpet, new 350 Chevy V8 and new turbo trans. 26K mi. on engine, \$7,800. OBO. x32034.

'84 Lincoln MK VI, AC, moon roof, Michelins, leather int., built-in CB, AM/FM/tape hi-fi stereo, dark blue, 47K mi., \$9,000. Ed 528-4882.

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

'84 T-Bird Elan, all power, alarm sys., keyless entry, AM/FM cass. \$7,000. Call 282-4381 or 332-0709.

Rent: 1985 Mallard 35 ft. motor home, weekly rates. 337-4051.

## Cycles

'78 Suzuki GS550. new engine, needs parts, \$150.

'85 Suzuki GS 700E, 2600 mi., ex. cond., \$1,850. John, x36484 or 486-1186.

'72 Benelli 250cc Super Sport, 5 spd., classic, great paint, good cond., needs minor repair, \$295, 474-5988.

'83 Honda GL650 Silverwing, 4,800 mi., \$1,600 OBO. 661-0273, 335-8539.

'79 Yamaha 750-Special, ex. cond., garaged, extras, \$1,750. John, x37219 or 488-5706.

1978 Honda CX-500, 18,500 mi. \$600 OBO. Barbara, x38257, 538-3675.

10 spd bicycle, Sears Free Spirit. \$45. 335-8553 or 280-0331.

'84 Honda Aspencade, 23K mi., new tires, battery, floor boards, bumper rails, full cruise control, trailer hitch, mint cond., \$4,500. 943-0113.

## Boats & Planes

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

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

Prindle 18' Catamaran, like new, orig. owner, galv. trailer, sail, box storage, double traps., \$2,950 OBO. C.W. 282-1871, 280-8796.

12' F/G V-bottom boat (Manitoba) & trailer, \$250. 333-3925.

"Easy Riser" ultralight plus landing gear, eng. & props, had accident, needs work, will help, \$1,000. Steve Ruiz, x38541, 485-8930.

Sailing/rowing dinghy, 7 ft., fiberglass, w/sail, oars. Can take sm. motor, \$480. Jeff, x32725 or 532-1643.

NACRA 5.8 Catamaran (19'), trailer, all Harken hardware, life jackets, butt buckets, \$3,500, Wayne, x32435, 337-3766.

## Household

Vacuum cleaner, Whirlpool, 6 AMP motor, new in carton, \$80; early American couch, \$50. 482-8827.

Couch, 2 end tables, coffee table, mattress, box spring, apt. sized vacuum. OBO. Sharon, x38451, 996-1496.

Baby furniture - Simmons crib and mattress - like new, \$250. 870-0990.

2 contemporary 2-drawer office desks 4' x 3', woodtone color. 5' x 3' contemp. conference table (blond), stack office chairs (6). 488-2716.

Refrigerator: Magic Chef, avocado, frost free, 15 cu. ft, \$125 OBO. Joel or John, 996-9223 or 282-3117.

Sofa: 1 piece, full size, 2 yrs. old, stain resistant, ex. cond., \$150 OBO. John 282-3117, or 996-9223.

Couch & love seat, dark blue velour, w/tiny white polka dots, ex. cond., \$550 OBO. Sandy, x39342 or 532-3220

Sale: 6 piece living room set, heavy wood, autumn colors, ex. cond., \$375 OBO. Jennifer, x37521 or 996-1496.

Queen-sized water bed, all attachments, headboard, frame, mattress, cushioned side rails, OBO. Myron, 280-1101 or 482-4778.

Couch, recliner, coffee table, 2 end tables, 2 bar stools, \$250 OBO. Michelle, x31925 or 280-9944.

Queen-sized waterbed w/heater, headboard/shelves, liner, padded rails, \$225 OBO. 482-9168.

Reclining couch, matching loveseat, ex. cond., beige with blue, both \$500. 488-5218.

Twin/bunk beds, hardwood, maple finish, ladder, side rail, slats, bunkie boards included, ex. condition. \$79. 488-2735.

2 ottomans, brown and beige, \$100 for both; corner daybed w/2 twin beds & corner table, \$200; 42" octagon Spanish style table w/4 chairs, \$170; unfinished lg. roll top desk, \$175. Sheryl, 333-9408.

King-sized Sealy Posturepedic (premier series) bed w/frame and king size headboard (rattan w/brass), 3 yrs. old, \$395 OBO. Cindy, x38801

Captain's bed w/matt., 2 drawers, 4 shelves, pine, \$275, x39425 or 576-6171.

Green plaid sofa, \$80, Kelley, x32631.

## Audiovisuals

Elec. test equipment - B&K E300D RF generator, \$75; B&K TR110 isolation transformer, \$40; Leader LSG 231 MPX generator, \$95; Leader LSW-333 sweep marker generator, \$175. Tom Clark, x39842.

AT&T monochrome screen, used 1 yr./ approx. 100 hrs., will guarantee 60 days, \$100. Shannon, 331-6260 or 483-1255.

Stereo, 10 yrs. old, works fine, cabinet needs work, \$50. Connie, 280-9419.

Cassette tape deck, Realistic brand. Dolby noise reduction, metal tape, \$25. x32606 or 333-3839.

Commodore 64, 1541 disk drive, 1702 monitor, 300 baud modem, G-WIZ printer interface, joysticks, paddles, dust covers, cooling fan for disk drive, FASTLOAD cartridge, hundreds of programs. \$500 OBO. Robert, 282-3667.

IBM Enhanced XT, 640 memory, 2-360 floppies, 20 meg fixed disk, internal modem, Epson printer, Princeton RGB monitor, \$1,995. 996-1410, x36462.

Gemini Star IOX printer, \$190. Jeff, x32725 or 532-1643.

Atari 1200, printer, disk drive, joystick, assorted programs, \$500 OBO. Gene, x39030.

Computer printer, Superb letter quality. Brother HR-25, wide carriage, extra print wheel, manual. \$400 OBO. 486-9636.

## Wanted

Want roommate for 3-2-2 w/pool. \$225 plus half util., 5 min. from JSC. Non-smoker, 488-8029.

Want riding lawnmower in good working order, \$200 or less. Vic 282-3216 or 334-2335.

Want to lease lot for mobile home, near JSC. Ron, x34481 or 486-4895.

Want gar/shop space for 3 to 6 vehicles. Ron, x34481 or 486-4895.

Want girls bike, 20" or 26", no 10-sp, must be in good cond. Fred, 488-8111.

Need ride to work. (M-TH) from Meadowbend (L.C.) to Rockwell Int. on Gemini, need to arr. at approx. 7:30 and leave 4:30, share expenses. G. Musso, 282-5211.

Want info. on how my adopted gray & white cat, Charlemagne, is doing. Mary Wilkerson, x34251 or 941-8627

Want to buy World Book Enycl. set and childcraft, used, good cond., reasonable. 538-1186.

Want lead trumpet player to play in 20 piece band. Roger at 333-6962.

Want MG or Austin Healy in restorable cond., does not have to run. Steve, x38651 or 480-9715.

Want Cockateil cage, good cond., large. 335-8553 or 280-0331.

Want ride from Friendswood, Anna-lea Subdivision. Arrive 6:30/6:45 until 3:45 p.m. Nita, x33852.

## Musical Instruments

Lyle elec. guitar, \$125; Cleveland King coronet, \$125. Bob Cordes, x39377, 474-5420.

Spencer flute, closed hole, C concert, used one year, ex. cond., case, \$170. 488-6521.

5 pc. drumset w/ziljians, custom wood snare, new china top, ex. tone, \$300. David, 488-7937 or x33816.

Yamaha portatound keyboard & instr. selection, 10 rhythm selections, single finger chord, auto. bass settings and tempo and bass variations, port. case, ex. cond., \$100. x36462, 996-1410.

Kimball upright piano, \$300 OBO. Barbara, x38257 or 538-3675.

## Photographic

Chinon Super 8 sound movie camera, pwr zoom, telephoto lens, etc., like new, \$100. x33942 or 332-6853.

## Pets & Livestock

Free kittens, 3 left. Mary, x32576. 2 cats, male and fem., 3 and 4 yrs. old, need this yrs. shots. G. Musso, 282-5211.

Free kittens - 2 blk ones, 8 wks old, 4 white ones, 3 wks old (not ready yet). Karen, x31385 or 947-2025.

Cocker Spaniel, male, AKC paper for stud. Fee or pick of litter. Tamela, x36155 after 3 p.m. or 480-8980.

Free kittens, ready for delivery soon. Eric, x38420.

## Miscellaneous

Montgomery Ward TV floor unit, 19" color, stereo, cable ready, remote control, 1 yr old, was \$500, now \$300, 1,000 millimeter telescope, adapt to any cam/metal carry case & 2 lens for spotting scope, 1 yr old, ex. cond, was \$400, now \$200. x38497 or 488-1044

Five wheels, size S 15, came off Jeep, will fit I.H. Scouts or Ford trucks, good cond., \$50 for set. x38497 or 488-1044.

New B&D 1-1/2 hp router, \$35; new Skill portable planer, \$30. Tom Clark, x39842.

Large PR. West coast truck mirrors, were \$100, now \$60. 554-2627.

Water well pump & motor, 3/4 hp. 220 wiring, 42 gal., galv. tank. \$200. 554-2627.

Two 13" bias tires, brand new, fits sm. cars, \$60 OBO. Shannon, 331-6260 or 483-1255.

'75 Pontiac 400 ci short block rebuildable, \$75; Trans Am posi rear end, \$100; 2 sp. power glide "59" orig. \$25; Firebird T/A doors, \$25; various T/A parts & engine. 337-3690.

Riding lawnmower, good cond., \$750 OBO; push lawnmower, \$50. Call 485-2289 or 991-5576.

4 Honda Civic alloy 13" sport tires & wheels. German made. \$35 ea. Vic, 334-2335 or 282-3216.

Leading Edge XT, 20 MHD, hi-res color monitor, EGA, microsoft mouse, Lotus 1-2-3, pro design, WP, \$1,995 OBO; Colt Bright S.S. Python, 4", case, holster, cleaning kit, ammo, \$550. John, x36484 or 486-1186.

Dilly GT1200 Motorcycle tilt trailer with loading ramp & spare tire/wheel, 1 7/8 in. hitch, 1,200 lbs. cap, \$375. Tom, x38941, 474-2041.

Datsun 260Z parts, bumper, grill, carburetor, bumper struts, apron, hub

caps, small touring wheels, more. 282-1871, 280-8796.

'65-'66 Mustang parts, padded dashes, etc.'71-T3 trunk lid for fast-back, perf. cond. Jim, x33942, 332-6853.

4 Corvette rims, 15x8, \$150, Tom 941-4832, leave message.

Boys bicycle w/training wheels, new, \$30; girls 20" "BMX" style bicycle, \$25; cozy coupe ride-in push car, \$15. Mark, x30160, 643-4726.

33000 BTU/H A/C compressor, new & still in shipping container, \$100 OBO. 326-5652.

Brown Toyota truck camper, fits 7 1/2' bed, carpeted bed liner, built-in cabinets & speakers. BO. Audra, x39174 or 534-3837.

Dinner ring, large ruby surr. by 14 diamonds. Appraised \$1,275, now \$900. Laura, x34320.

Airline tickets - Two (2) round trip, Pan Am tickets to N.Y. Hobby to JFK. June 7 - return June 15, \$198 each. 474-3507.

Rowing machine, like new, was \$325, now \$150. Blanche, x34220.

4 patio chair cushions, blue/yellow, in wrapper, were \$90, now \$40. x34210.

Cemetery lot, 3 spaces with monument privileges, \$2,000. Nita, x33852 or 996-1429.

Exercise bike, \$40; treadmill, \$35; riding lawnmower, \$300. x39426 or 576-6171.

Fluorescent desk light, \$12.50; 2 matching chairs, cushioned spring seats, \$20 both. 488-5564.

Elec. sewing machine, console, white mfg, like new, \$75; antique mantle clock (1879) Gilbert, \$175; antique foot stool, \$15; table lamp, 4' tall, \$25; old wood highchair, \$45. 488-5564.



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## Cookin' in the Cafeteria

### Week of May 9 - 13, 1988

**Monday** — French Onion Soup; BBQ Sliced Beef, Parmesan Steak, Spare Rib w/Kraut, Chili & Macaroni (Special); Ranch Style Beans, English Peas, Mustard Greens. Standard Daily Items: Roast Beef, Baked Ham, Fried Chicken, Fried Fish, Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

**Tuesday** — Split Pea Soup; Meatballs & Spaghetti, Liver & Onions, Baked Ham w/Sauce, Corned Beef Hash (Special); Buttered Cabbage, Cream Style Corn, Whipped Potatoes.

**Wednesday** — Seafood Gumbo; Cheese Enchiladas, Roast Pork w/ Dressing, BBQ Link (Special); Pinto Beans, Spanish Rice, Turnip Greens.

**Thursday** — Beef & Barley Soup; Roast Beef w/Dressing, Fried Perch, Chopped Sirloin, Chicken Fried Steak (Special); Whipped Potatoes, Peas & Carrots, Buttered Squash.

**Friday** — Seafood Gumbo; Fried Shrimp, Baked Fish, Beef Stroganoff, Fried Chicken (Special); Okra & Tomatoes, Buttered Broccoli, Carrots in Cream Sauce.

### Week of 16 - 20, 1988

**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;