

Patricia Porter, above, and Velna Troxlar, left, work in the Christmas spirit.

ROUNDUP

Lyndon B. Johnson
Space Center

NASA

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Vol. 18, No. 25

From the Director

This holiday season marks not only the end of a year, but the end of a decade, and the beginning of the Shuttle era. In the past ten years we've seen man become at home in space—from the first missions to the Moon to extended periods of time in space station Skylab.

We are now laying the groundwork for a new workplace in space with the Space Transportation System. This past year we've developed routines for mission simulation of the very complex Shuttle system, and we are now training flight and ground crews for every possible contingency. We have tested Orbiter equipment in our space environment chambers, and begun work designing payloads and payload interfaces for future Shuttle missions.

This year-end holiday message would not be complete without recognizing the outstanding work of the Skylab reentry teams. They worked long hours, and we are all grateful for the success of their efforts.

The next decade will be the beginning of an active and productive era in space.

We are an agency devoted to the future, blazing the trails for mankind in space. As we enter the 1980's, the future looks bright.

Merry Christmas, happy New Year, and happy new decade.

Christopher C. Kraft, Jr.
Center Director

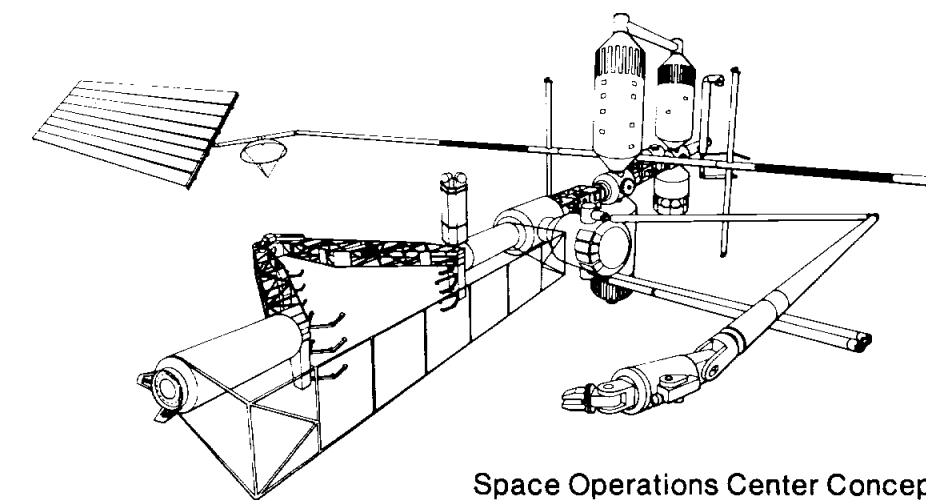
Columbia to undergo 'all systems' test

"Columbia," the first Space Shuttle Orbiter which is scheduled for flight in 1980, is undergoing its first major simulated "flight," all systems test, on or about December 15 at the Kennedy Space Center. Astronauts and ground support teams are putting the vehicle through an around-the-clock five-day critical operational trial.

Among the tests to be performed are five separate launch and ascent flight profiles, on-orbit operations, and one en-

try phase. Several hundred NASA and contractor engineers—at JSC, KSC, and Rockwell Downey—will take part in this Orbiter Integrated Test, one of the final verifications of Orbiter systems and electronics before the "Columbia" is cleared for final assembly.

The test is to demonstrate selected Orbiter hardware and software subsystems during a mission timeline. In addition to nominal launch conditions, the test will put the astronauts and ground



Space Operations Center Concept

Orbiting center discussed

More than 300 aerospace officials from the United States, England, France, Germany, and Switzerland recently attended a two-day session at the Space Center on a possible follow-on Shuttle operations center.

JSC engineers outlined the Space

Operations Center (SOC), as outlined by JSC designers, is a self-contained orbital (low Earth) facility built up of several Shuttle-launched modules. With resupply, on-orbit refurbishment, and orbit maintenance, it is capable, according to the JSC study, of continuous operation for an indefinite period of time.

The two-day program is the culmination of a concept study conducted by personnel of JSC during the year. The concept, although not an approved follow-on project at this time, warrants additional

Operations Center to aerospace officials on November 29 and 30 during briefing and discussion sessions which included an active exchange of ideas between the U.S. and foreign aerospace engineers and scientists.

Please turn to Page 4

Over 2,900 say to NASA 'I want to be an astronaut'

Over 3,000 applications for Space Shuttle astronaut candidate came in to JSC last month in the recruiting drive that ended December 1. A total of 2,937 men and women applied for the 10 to 20 open astronaut positions, with 341 of those applying for both the pilot and mission specialist categories, making a total of 3,278 applications.

In the mission specialist category there were 2,759 applicants, and in the pilot category, 488. A total of 390 women applied.

An astronaut selection board at the Space Center is narrowing the selection to those best qualified in the two categories. Approximately 100 will be selected for preliminary screening and physicals

at JSC in the spring of 1980.

Those selected will report to JSC in July 1980 for their one-year training and evaluation period as astronaut candidates. Final selection as an astronaut will depend on satisfactory completion of the evaluation period.

Pay for civilian candidates will be based on the General Schedule for pay grades GS-11 through GS-14, with approximate salaries from \$20,611 to \$34,714 per year.

NASA plans to accept applications for Space Shuttle astronauts on an annual basis. The number of open positions will depend on NASA's need for pilots and mission specialists.

support teams through various flight anomalies.

The ability to switch from primary to back-up flight control systems, the ability of ground support systems to support an Orbiter countdown, and capability of the interface between the Orbiter onboard software and Mission Control Center will also be demonstrated.

Astronauts John Young and Bob Crippen, prime crew for the first flight, and backup crew members Joe Engle and Dick Truly, are taking part in the test. The prime crew and backup crew will do alternate duty in the Orbiter crew compartment throughout all phases of the 140-hour exercise.

Columbia will be resting on its landing gear in the Orbiter Processing Facility at KSC throughout the test. The vehicle's electrical fuel cells and ground support via an umbilical will furnish power. Ignition of the three Shuttle main engines and the two solid rocket boosters, which provide the 6.9 million pounds of thrust necessary to place the spacecraft in orbit, will be simulated.

The test is divided into five runs with the first day devoted to buildup and checkout of vehicle and ground systems. Astronaut crew members will be in the cockpit through all phases, and on the second day the crew will wear pressure suits through the operation which includes a nominal launch and entry.

Please turn to Page 4

Last Moon Walk

Seven years ago today, on December 14, 1972, U.S. astronauts lifted off from the Moon for the last time in the Apollo Program, culminating one of the most ambitious and successful engineering and scientific endeavors of man.

Apollo 17 astronauts Eugene A. Cernan and Harrison Schmitt lifted off from Taurus-Littrow after spending 74 hours and 59 minutes on the Moon. They rejoined command module pilot Ronald E. Evans in the "America" for the return to Earth.

The Apollo 17 mission was launched on December 7, 1972, and splash-down in the Pacific was on December 19, 1972.

CFC teams beat goals

JSC was a pacesetter among Federal agencies in the Combined Federal Campaign this year exceeding our \$185,000 goal by \$2,197.

Team leaders who deserve special mention for their hard work and dedication are **Alma Martin, Cecil Dorsey, Erma Cox, Carol Smith, and Alotta Taylor**. Each exceeded his or her direc-

torate and office goals by wide margins making JSC's performance possible.

"The Center and those persons less fortunate that we are helping thank you who contributed and all of you who made JSC's drive an overwhelming success," said Roy Aldridge, NASA's division chair. "Thanks very, very much."

Coops perform like pros

In three co-op work periods, **Michael Bennett** became a valuable employee in the Space Environment Simulation Lab. He developed real-time computer programs needed to evaluate the Orbiter's Active Thermal Control System's temperature flow rates and heat transfer rates.

In addition, and independently, Bennett developed a new computer program

for configuration management of the SESL data circuitry. Features he designed for this program will save the SESL substantial funds during each test. Bennett received the Co-op of the Month award for September. He is a senior in Electrical Engineering at the University of Akron in Ohio.

October's Co-Op of the Month, **Joe Miller**, just completed his first co-op period with the Engineering Analysis Division. He had two primary tasks: developing an automatic plotting routine for the Aerodynamic Data Extraction Program, and, more important, developing an optimum maneuver for extracting pitch stability and control coefficients in the hypersonic region (Mach 20) to be flown on the first Shuttle missions.

The maneuver he developed is planned as a pilot stick maneuver on flights two through nine of Orbiter 102. Miller is a senior at the University of Michigan, majoring in Mechanical Engineering.

Joy Elliott, November's Co-Op of the Month, has completed two assignments in the Tracking and Communications Development Division, doing advanced systems work with microwave power transmission and fiber optics transmission. Among her accomplishments is a detailed review of the proposed array system test plan for the Solar Power Satellite microwave system.

She also defined requirements for developing ionospheric models that can predict effects on microwave signal phase and amplitude. Elliott is a senior at the University of Minnesota, majoring in Electrical Engineering.

December's co-op, **Tandi Benson**, has been working in the Flight Training Branch of Crew Training and Procedures. Her assignment was to develop requirements for a Shuttle aerodynamic heating model to be installed in the Shuttle Mission Simulator. Her work resulted in a heating model that is now going through the requirements signature cycle; but her constant attention to detail and persistent questioning motivated groups throughout the directorate to challenge many old thermal heating assumptions.

She wrote several memos describing operational concerns with Shuttle entry heating, and she provided several briefings on the subject. "She typifies the spirit that sparked the development of the Apollo program," says one supervisor. Benson is a senior in Chemical Engineering at the University of Washington.

Bulletin Board

Please limit announcements to 10 lines, double-spaced copy

Smoked Turkey Sale Continues

The League City Evening Lions is continuing its annual Smoked Turkey Sale through the Christmas season. These 11-pound turkeys are from the Sunday House in Fredericksburg, Texas, and sell for \$16. Since they are ready to eat upon thawing, you can avoid the tedious job of cooking a turkey during the busy holidays by ordering a smoked turkey from Dean Thompson, x-4823, or Jerry Maruska, 554-6350.

On Sale at The Exchange Store

(Store hours 10 a.m. to 2 p.m.)

Dean Goss Tickets - \$10 single, \$20 couple (Reg. \$14.50)
ABC Theatre Tickets - \$2 each
General Cinema Tickets - \$2.40 each
Magic Kingdom Cards - Free
Sea-Arama Marineworld Fun-Time Card - Free
Entertainment 80 Coupon Book - \$15

"Man in Universe" Coming Up on Channel 8

A special, "The Nobel prize '79," airs Sunday, December 16, a report on this year's ceremony December 10, including interviews with laureates around the world. At 11:30 a.m., Sunday, December

23, "Over a Barrel: Energy in the 80's" is a documentary and panel discussion on energy policies in the next decade.

"Pioneer-Saturn Encounter," a NASA-produced experimental film project, airs Thursday, December 27 at 8:30 p.m. It summarizes highlights of the fly-by mission, concentrating on new discoveries about the planet, the rings, and especially Saturn's moon Titan. Then at 11:30 that same night, "Man's Place in the Universe" is the segment of *Ethics in America*, a lecture on how space age technology has raised new ethical problems, especially regarding behavior towards extraterrestrial life forms.

Softball teams wind up season

Gilruth Center recently wound up its mixed softball season with a Fall Tourney won by "MSTERS" mixed league team.

In the first round of play, the MSTERS rolled over the Metro team 14-3, then nudged the JOCKS AND JILLS by a score of 9-8. In the second round, the MSTERS routed the FOOL BALLS 8-2. The MSTERS suffered their first tournament loss to the JOCKS AND JILLS by a score of 9-8.

This set the stage for a winner-take-all game between the MSTERS and the JOCKS AND JILLS, with the MSTERS coming out on top by a score of 9-4.

In early October as the World Series was drawing to a close in Pittsburg and Baltimore, four local baseball teams were just beginning their season. The teams, made up of civil service and contractor personnel, were captained by Ray Ranzell, Roy Hand, Bob Luke, and Jim Crawford. They played 12 games and Luke's team ended the season with a perfect record while Hand's team came in a close second. JSC players on Luke's team were Nick Lance, Lou Ashwal, Joe Meier, Herb Baker, Jerry Baker, Jim Budahn, and Luke.

The teams were organized and season coordinated by Danny Zimmerman from an ad placed in the *Roundup* in September. Everyone had a great time becoming

reacquainted with the great American pastime, and at times the competition was keen.

For those of you who have not played baseball in 10 or 20 years, do not hesitate to try it next year, says Luke. Everyone plays and there is lots of hitting, base stealing, fast balls, walks, and scoring, he says. Look for the ads next year and sign up.

What's cookin'

Week of December 17 - 21

MONDAY: French Onion Soup; Beef Chop Suey; Polish Sausage w/German Potato Salad; Breaded Veal Cutlet (Special); Okra & Tomatoes; Green Peas. Standard Daily Items: Roast Beef; Baked Ham; Fried Chicken; Fried Fish; Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

TUESDAY: Split Pea Soup; Shrimp Creole; Salisbury Steak; Chopped Sirloin; Fried Chicken (Special); Mixed Vegetables; Beets; Whipped Potatoes.

WEDNESDAY: Clam Chowder; Fried Catfish w/Hush Puppies; Braised Beef Rib; BBQ Plate; Weiners & Beans; Shrimp Salad; Stuffed Bell Pepper (Special); Corn O'Brian; Green Peas; Rice.

THURSDAY: Vegetable Soup; Beef Stew; Baked Ham; Harvard Beets; Whipped Potatoes; Christmas Special; Waldorf Salad, Turkey w/Combread Dressing, Giblet Gravy, Cranberry Sauce, Baked Yams w/Marshmallows, Green Beans Almondine, Roll, Butter & Beverage, Apple and Mince Cobbler.

FRIDAY: Seafood Gumbo; Broiled Flounder; Liver w/Onions; Seafood Platter; Fried Shrimp; Mean Sauce & Spaghetti (Special); Green Beans; Buttered Broccoli; Whipped Potatoes.

Week of December 24 - 28

MONDAY: Beef & Barley Soup; Beef Chop Suey; Breaded Veal Cutlet w/Cream Gravy; Grilled Ham Steak; Weiners w/Baked Beans (Special); Whipped Potatoes; Brussels Sprouts; Buttered Rice. Standard Daily Items: Roast Beef; Baked Ham; Fried Chicken; Fried Fish; Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

TUESDAY: Holiday

WEDNESDAY: Celery Soup; Turkey a la King; Pork Chop w/Applesauce; Fried Shrimp; Chinese Pepper Steak (Special); Whipped Potatoes; Italian Vegetables; Buttered Spinach.

THURSDAY: Green Pea Soup; Corned Beef w/Cabbage & New Potatoes; Chicken & Dumplings; Tamales w/Chili; Hamburger Steak w/Onion Gravy (Special); Navy Beans; Buttered Cabbage; Green Beans; New Potatoes.

FRIDAY: Seafood Gumbo; Deviled Crabs; Broiled Halibut; Liver & Onions; BBQ Link (Special); Breaded Squash; Green Beans; New Potatoes.

Dishonorable Mention

It all started at the FOD chili cookoff last spring. Sy Liebergot says he "could have cared less" about chili cookoffs until that day. But the laid back cowboy atmosphere got to him. He improved his Bay Area Refuse Farm chili recipe, formed his own team with "old ski club buddies," and headed out to win chili cookoffs across the state.

Most notable was the Harris County Fair cookoff November 24 in the Astroarena. Liebergot's team walked off with four trophies: first place for chili, first place tie for pinto beans, second place as the all-around cooking team, and fourth for gumbo.

"We cooked a modified gumbo using duck breast broth," Liebergot said.

These efforts win Sy Liebergot Roundup's baited breath award for 1979.

Regelbrugge scores at paperwork

One employee you won't find buried under mounds of paper at his desk is Bob Regelbrugge of the Institutional Support Development Branch, FD6. In November he received the Federal Paperwork Management Award from the Association of Records Managers and Administrators, Inc.

"The team deserves the credit," Regelbrugge says. "All I did was get out of their way and smile a lot.

The development team was made up of Norris Taylor, Bob Voigt, Joe Hehn, Boyd Jackson, Sterling Fugman, Dale Fessenden, and Dave Harris. They were

named for a group achievement award last month.

The Interactive Financial Systems Team developed a system of basic accounting for funds from Headquarters and their dispersal throughout the NASA organization. The system is basically a changeover from keypunch to CRT's which "eliminated 125 keypunch transmittals annually, a quarter million computer cards, 3 million computer pages, and a bunch of ledger postings for account balances," Regelbrugge said.

Regelbrugge accepted the plaque at a ceremony in Washington November 20.

FBA/EAA Membership

Membership cards for the EAA and FBA (Federal Business Association) are currently being updated by the NASA Exchange.

Government employees still on the Center roster will receive both cards automatically. However, badged contractor employees need to make applications at the Gilruth Recreation Facility for new associate member 1980 EAA cards, as there is no contractor employee member roster to go by.

FBA cards are limited to Government

employees only.

Dependent cards will not be automatic for government or contract employees. Roy Aldridge, Exchange Operations manager, suggests that Center employees wait until they receive their 1980 membership cards in the interoffice mail before making requests for dependent cards.

Retired Government employees or those who are about to retire are also eligible for both EAA and FBA cards. The Exchange office in the Building 11 cafeteria will need home addresses of retirees in order to keep in contact.



Stella Luna decorates AP4 door



Anna Costello receives Outstanding Secretary award from C. C. Kraft

'She plays a leading role'

It's not easy being secretary in the Shuttle Payload Integration Office. You have daily contact with foreign and domestic Shuttle users, on top of the usual secretarial tasks—typing, filing, phone service, coordinating meetings.

Anna Costello not only excels in these duties, but has on her own developed technical knowledge concerning the Shuttle. It shows in her written and oral communications with users and other centers.

It's these outstanding traits that have earned Anna Costello the Outstanding Secretary award for November.

"Mrs. Costello plays a vital, leading role in establishing a positive relationship with the payload customer," says her supervisor, Glynn Lunney. "She is a significant asset to our overall payload project activities."

Costello is also an active organizer for the Employee Activities Association.

Diverse classes offered next year

Leisure time classes will begin in 1980, sponsored by Gilruth Center and the EAA.

Ballroom Dance: All the social dances from waltz to disco to Latin American sambas. Class meets Wednesdays beginning in January. There will be ten one and a half hour sessions at \$46 per couple. Classes are categorized beginner, intermediate, high intermediate, and advanced. Register by January 4.

Disco Dance: Learn to bump and boogie and get some exercise as well. Class meets Tuesday nights for six weeks beginning January 15—either beginner or advanced, cost \$32 per couple. Registration deadline: January 14.

Defensive Driving: Learn the art of safe driving and qualify for a 10% reduction on auto insurance. January 15 and 17, 6-10 p.m. Cost is \$12 per person, and deadline to register is January 11.

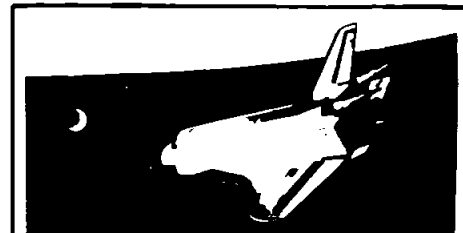
A number of other classes are now in the planning stage and will be advertised in the next issue of *Roundup*. These include Kung Fu, Slimnastics, Photography, Darkroom Techniques, and CPR Training.

"If there are other classes you would like to see offered, call the Rec Center at x-3594," says JSC's Recreation Director Carl McCollum.

Please note that classes are available for all EAA members, their spouses, and eligible dependents. Registration is on a first come, first served basis, and must be in person at the Gilruth Gym office during normal operating hours.



Emily Ertl touches up LA door



The *Roundup* is an official publication of the National Aeronautics and Space Administration Lyndon B. Johnson Space Center, Houston, Texas, and is published every other Friday by the Public Affairs Office for all Space Center employees.

Editor:

Kay Ebeling

Roundup Swap Shop

Property & Rentals

Lease/Sale: Baywind I condo, 2 bedrooms, 2 baths, fireplace, patio, 950 sq.ft., first floor, exc cond. 334-2461.

Friendswood, split 3 bedroom, 2-2,w/pool. 482-4734.

Galveston West End, 2 bedroom, By-the-Sea condo, furn. \$210/week off, \$280/week in season. Clements 474-2622.

Custom English, formals, 4-2 1/2-2 landscaped wooded lots, new a/c, furnace, roof, carpets and decorations, high and dry. \$73,900 (less realtors fee) \$69,900. 534-3113.

Sale: Glenbrook area, 2000-sf, 3-2-2, fireplace, new roof, furnace, a/c, dishwasher, Pasadena schools, trees, quiet street, dry, \$70's. Owner 649-0396.

Lease: Scarsdale 3-2-1 house, empty or furnished, large yard, no flooding, school close, \$385/mo. Dave 488-5660 x218 or 484-1036.

Sale: Waterfront-Lake Houston-Northshore Subdivision, 2 lots, \$10,500 at 8%. 487-8633.

Fake ads are becoming a problem in the Swap Shop department. Classified ads are a free service, and if employees continue to abuse this service, the JSC News Staff will consider discontinuing Swap Shop ads.

In the meantime, referring to last issue, the gentleman in Building Four does not have firewood for sale at \$30 a half cord, delivered and stacked; and there is no Solar Powered Acoustic Accelerator for use in limited bathroom tile testing available for sale in the Shuttle Program Office.

Cars & Trucks

79 Ford club wagon van, 8-passenger, loaded, auto, air, captain's chairs, chateau package, privacy glass, 14,000 miles, \$8200, 337-3261.

73 Olds 8-passenger wagon, ac, pb, ps, good cond, \$1100. Barton x5181.

60 English Ford (Zodiac) classic car, exc running gear (has overdrive). Sound but sad body, poor interior. Make offer. 534-4839.

66 Plymouth VIP, rebuilt engine, ac, ps, pb, good rubber needs body work. Best offer, 333-2974.

73 Pontiac Grand Safari station wagon, 3-seat, loaded, power everything, cruise control, am/fm stereo, 65,000 miles, regular gas, exc cond. X4871 or 771-6100.

78 Pontiac Grad Prix (LJ) all electric, clean, less than 15K miles, rust proofed, \$5350. 332-2205 after 5:30.

72 Lemans wagon, runs great, no problems, ac, auto, \$700 or best offer. 482-3678.

78 Camaro LT, auto, pb, and ps, ac, AM/FM, cruise control, one owner, not flooded, perfect mechanical. \$4900. Peacock X2208.

Nifty station wagon, \$400. Looks only fair but starts and runs great. 71 Buick. Bob Algeier

488-0397 after 6.

77 Dodge van, 35,000; customized, with naughahyde interior; ps/pb, a/c, stereo/tape, cruise. exc cond. \$6700. Jay X5853 or 481-2335.

77 Ford Pinto, 3 door runabout, auto, a/c, htr, new tires, mag wheels, moonroof, powder blue, \$2950. 334-3236.

74 Alfa Romeo, GTV, grey, a/c, stereo, exc cond. Penrod x3747 or 486-4112.

70 Ford Ranger XLT pickup, exc cond, auto, a/c, ps, am, \$1500. 621-2761.

76 Malibu Classic station wagon, 350 V-8, a/c, ps/pb, cruise control, hitch, manuals, exc cond, \$2450. Truly X2221 or 334-2262.

70 Ford Maverick, a/c, auto, 1 owner, \$700, 482-7330.

79 Silverado pickup, 1/2 ton, 11,000 miles, \$5895. Fiberglass camper cover, \$250. Hester 332-2291.

79 Ford Futura 2 door, 12,000 miles, 6 cyl, auto, ps, a/c, v-top, am radio and fm-8 track, BSM, TG, WSW radials, pinstripes, undercoated, \$4795. 481-0150.

67 Chevy Pick-up, 1/2-ton, step-side, 6 cyl., Std. Bill 482-1327.

Household Articles

Coffee Table, contemporary, marble insets, good cond, \$75. Corner end table, \$25. 486-9394.

Maple dining table and buffet, good cond, \$50. 331-0608 after 5.

Norge gas dryer, needs new motor. Free if you come get it. Thompson x4823 or 332-2229.

Oversize black sofa, exc cond. Danish modern round walnut table, with 4 matching chairs and extension leaf. 331-5751.

Pets

AKC Labrador Retrievers for hunting and field trials, superior national championship stock, hips OFA certified, pups ready Dec 2, \$250. 333-3508.

AKC Cocker Spaniel puppies, ready for Christmas, \$125. Doug X3541 or 334-2179 after 4.

Reg. AKC Bassett Hound at stud. Bob Allgeier 488-0397 after 6.

Alaskan Malamute puppies ready by X-mas. AKC sired, wormed, shots, \$250. 723-1576 or 862-6623.

Free to good home—a kitten and/or its gentle mother. Shots, spayed, Red/blue eyes. Call Dave 488-5660 x 218, 484-1036.

Wanted

Low boy trailer about 6' X 6' for towing 4 bicycles behind car. Frank x3551 or 481-5541.

40 to 60 hp outboard motor with controls, age not important, must run well. 482-3678.

Exercycle in good condition. Reasonable. Call X5084, 2240, or 2888. Peterson of CSC.

To buy fur pelts; raccoons, nutria, muskrat, coyote, fox, opossum, etc. 488-2276.

Ads should be under 20 words, double spaced, typed or printed, one ad per person. Deadline for submitting or cancelling ads is 5:00 p.m. the first Wednesday after publication. Send ads to AP3 *Roundup*, or deliver them to the Newsroom, Building 2 annex. No phone-ins, please. Swap Shop is open to JSC federal and on-site contractor employees for non-commercial personal ads. Goods or services must be offered as advertised without regard to race, religion, sex, or national origin.

Boats & Planes

14' Sr. Dolphin. 'Tis the season to be sailing, exc cond. Rubenstein X3116 or 334-2354.

1972 Hydrodyne tournament ski boat 220 H.P. Volvo I/O Galvanized Big Wheel Trailer \$2600. 487-8633.

Stereos & Cameras

Rolleiflex camera/accessories. 334-2318 after 3.

Kenwood-Dual-Bose-Shure stereo. B/W video camera, brand new. 482-4734.

Motorola 3-speed portable stereo phonograph with 2 speakers. \$50. 621-2761 after 6.

Phono stereo with am/fm radio, Housed in 2 matching blond cabinets. For the low-fi audiophile. Rubenstein X3116 or 334-2354.

Musical Instruments

Like new electric organ, Yamaha tree keyboards, fruitwood, exc cond, sacrifice, \$1000. 944-5818.

Clarinet, Robert, like new, \$150. Trombone, Conn Constellation, exc cond, silver-plated, deluxe carrying case, \$395. 333-3508.

Miscellaneous

Refurbished stroller baby car seat, \$5. Bauch 333-3382.

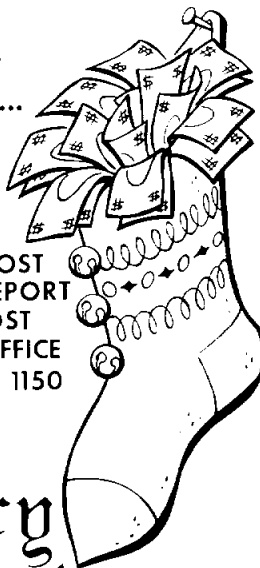
Senco roofing stapler, used on 1 roof, cost \$328, sell \$275. 333-2974.

SOCK it to YOURSELF...

THRU COST REDUCTION!

SEND YOUR COST REDUCTION REPORT TO: B E -3 COST REDUCTION OFFICE USE JSC FORM 1150

Merry Christmas



Cartoon by Russ Byther

Heathkit GR-180 vacuum tube TV, 19" screen, needs parts and repair. \$50 or best offer. Houck 488-5639.

Louvered wood shutters, 28 panels, orig. 9 x 36, trimmed slightly, \$2 per panel, incl. hardware. 488-8027.

Heathkit AC VTVM model IM-21, assembled and calibrated. Ideal for audio system optimization and VU applications. \$30. Samouce x2568.

Assembled electric pinball machine 43" L X 25" W X 52" H, \$50. 621-2761 after 6.

8 ft. Cabover camper with air, stove with oven. Sleeps 4, good cond. 534-6037.

Used carpet (not flooded). Gold shag, some blue indoor/outdoor, various size pieces. Barron 488-4258.

Covered, ventilated 4' X 6' utility trailer on 13" wheels. 559-1025 after 6 or weekends.

Order nuts for Christmas giving or freezing. Elaine X3803 between 11:30 and noon. ABWA Bay Area Chapter Scholarship Fund.

Coit Trooper, x357 mag., 6" barrel, like new \$200. Don x2962.

2-fer aquarium set, 10/15 gal. metaframe tanks mounted on single stand. Includes all accessories plus \$100 in African fish. \$150. 333-5797.

Boat form, 17-ft. fiberglass, new. Best offer. Hester 332-2291.

40-channel Krako CB, w/slide mount and antenna. New never used, \$75. X3641 or 332-1439 after 5.

Lawnmower, 22" self-propelled, rebuild Briggs and Stratton engine, \$55. x3641 or 332-1439 after 5.

New 49 mm polarizing lens by Tiffen \$15. Used metal curtain black, fireplace screen—fits 27" high, 32-38" wide—\$10. Jones X2394 or 471-3303.

Tire. New GR 70-15 steel belted radial. Whitewall, 40,000-mi. original guar. Cost \$85, sell for \$45. Steve X3212.

Cycles

76 Kawasaki KH500, 3200 miles, runs great, extras, \$1000. 332-8219 after 5.

Street-legal, 250 cc dirt bike and trailer. Very good cond, \$250 each. Bob Allgeier 488-0397 after 6.

Girl's 20" Schwinn bike, \$30. 333-3508.

Exercycle, Schwinn, like new, half-price. 482-4734.

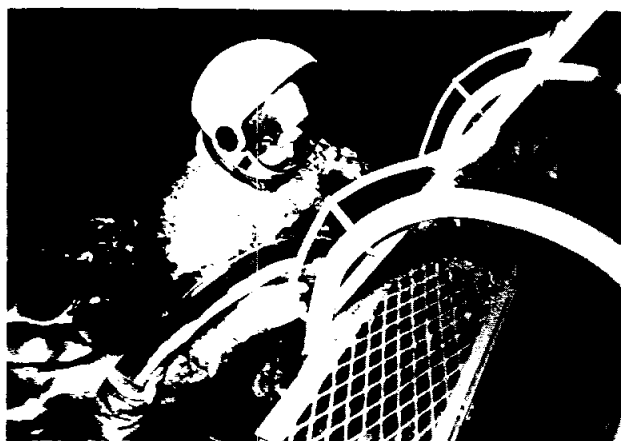
Ladies Schwinn Varsity, 27" 10-speed, 3 years old, exc cond, \$65. 488-8149 after 6.

Suzuki RM-370 76, exc cond, a proven trophy winner, plus leathers, gloves, boots, misc equipment, \$500. Leonard X5553 or 944-4997.

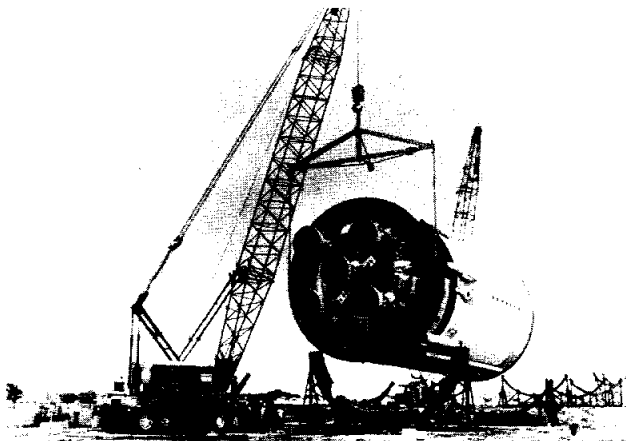
Suzuki RM80, dirt bike, 2 years old, exc cond, \$350. Louma x2321 or 482-2360.

Boys two 27" ten speeds, \$50 and \$25; one 20" five speed, \$15. exc buys 488-4487.

75 Honda 350 CT. Needs a little work, \$475. Doherty X4039 or 488-0182.



Astronauts trained...



Preparations were underway...



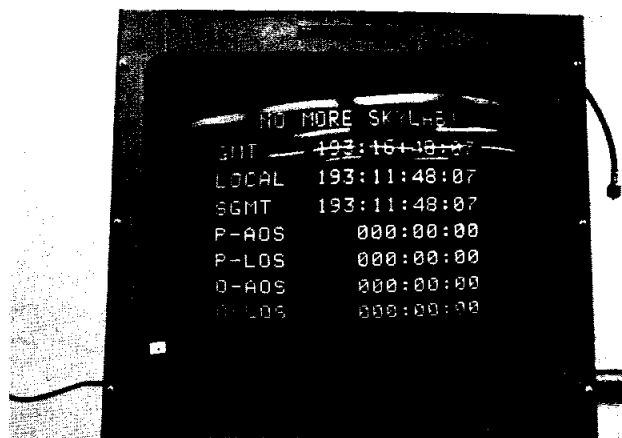
Skylab teams worked in the night...



Trained in the classroom...

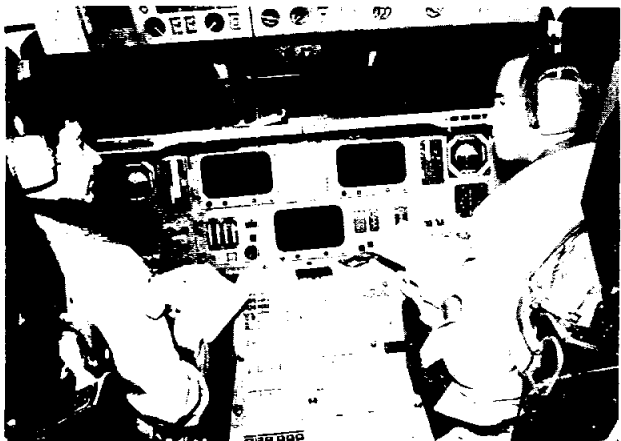


For the Apollo 11 10th anniversary...



And breathed a sigh of relief...

1979 The Year in Review



Trained for the missions...



The pecan harvest was a success...



Shuttle equipment passed the test.

SOC

From Page 1

study for consideration in future NASA planning, the JSC report states.

"Without a goal towards which we can direct our efforts, there will be gaps in the program," said Robert O. Piland, who headed up the team of JSC engineers working on the concept study. "What we are proposing is relatively modest. If we want a manned space program to continue, we think this makes sense."

Extra Holiday

Christmas Eve 1979 became an official holiday for Federal employees when President Carter, in a meeting with AFGE President Kenneth Blaylock December 11, signed an executive order. The move gives millions of Federal employees an extended weekend. Merry Christmas.

Test

From Page 1

The first launch sequence will be normal, but ensuing launches will include various modes which would conceivably require a mission abort-return-to-launch-site, or an emergency landing at a designated strip.

Flight controllers in the Mission Operations Control Room at JSC are monitoring displays during the tests. Key parameters of systems performance will

be observed by controllers who will later be on the scene during the actual launch and flight of the Shuttle.

Engineers in the Mission Evaluation Room in a building adjacent to the control center will monitor similar display and voice loops. Their job is to monitor data of selective portions and procedures of this test, and it is their job to develop solutions to test problems if and when they occur.

New Fax system

When 1 minute is just too long



Kathy Reid demonstrates unit

Sometimes one minute is just too much time. So JSC's communications center is testing a new facsimile system that can transmit a page of information from here to Rockwell, Downey, in seven to ten seconds.

Using an RCA F2 satellite in geosynchronous orbit 22,500 miles above the Equator and two Earth stations at JSC and Downey, the Nippon Electric unit is speeding up communications for the Shuttle programs. And "if the price is right," says Tom Ullrich, the new units will gradually replace fax systems throughout the site.

Current units send messages at a rate of one minute per page.

The new terminals in Building One and at Downey have the serial numbers "1" and "2." They were recently developed by Nippon Electric Co. in Tokyo, who sent a representative to JSC last month to train an RCA operator.

After a 90-day evaluation period that ends February 15, JSC will contract with RCA to use the high speed fax units for a Shuttle communications network.

JSC is also evaluating the units for use in bulk mail delivery and other high precedence communications.

Letters to the Editor

Cold waste in plastic

To the editor:

We appreciate your article (*Roundup* Nov. 30) recommending ways to keep warm in our now cold environments. However, we prefer to tie sweaters around our waists rather than our waste. Our waste does not wear the layered look well. We already wrap it in plastic bags; must we also knit it a sweater?

—Sally MacArthur
Cherri Marsh
Technology, Inc. SD-3

"We were looking near the outer edge of the rings for that image. The planet is not in the frame," says Stewart Collins of the Voyager Imaging Science Team at JPL. "What you have there is a cropping. In the original picture there were several stars. In fact that's how the new moon was discovered. We looked in the catalogue and that track did not correlate with any stars in the charts."

More on metrics

To the editor:

The already overburdened taxpayer cannot stand it. It is estimated that the cost, directly to the taxpayer, to convert to the metric system is about \$400 million. This does not include the inevitable rise in consumer prices as a result of the conversion. Do we really need it that badly? Granted it is a viable tool among the scientific community. But why should the average layman, housewife, etc., be placed in a very confused state of relearning a measurement system? Let's face it. This can only result in another political and bureaucratic boondoggle.

—Paul Hobush
C.S.C.

Another new moon?

To the editor:

In regard to the caption of the picture "New Jupiter Moon" (*Roundup* Nov. 16), I am interested in the statement that the other track was made by a star. If this is true, then the planet must be transparent or else the star track would not show. Since it does show, the track could be made by an object between the observer and the planet in the background. Perhaps it would be possible to get clarification on this.

—J. B. Fox, ND555