



SNOWLESS SLED - Shuttle Orbiter crew cabin test article is readied at Rockwell International's Tulsa Division for shipment to JSC's White Sands Test Facility, New Mexico, where it will undergo acceleration/deceleration stresses up to 3.5 g at 500 mph in crew escape system structural tests.

Las Cruces Symposium Stresses Space Careers

Motivation of Hispanic and Native American college and high school students to follow science and engineering as career fields will be the main focus of a three-day aerospace symposium April 21-23 at New Mexico State University, Las Cruces.

Held by the University in conjunction with the National Aeronautics and Space Administration, the symposium has issued invitations to faculties from 14 colleges and universities having a high percentage of Hispanic and Native American students. Local-area high school students also have been invited to attend. All New Mexico tribes are expected to be represented.

O'Neill Speaks Twice at JSC

Princeton University professor Dr. Gerard K. O'Neill Tuesday will deliver two separate talks at JSC on future space activities.

His first talk, "New Directions for Space Manufacturing," will be in the JSC Auditorium at 1 pm and is open to all employees.

O'Neill's second talk will be on "Communities in Space" at the AIAA dinner meeting at the JSC Gilruth Recreation Center Tuesday night. The meeting starts at 6 pm with cocktails, dinner at 7 and speaker at 8. The tab is \$5/person, and reservations should be phoned to Dottie Hamilton at 4555 or Lillian Hudson at 4991.

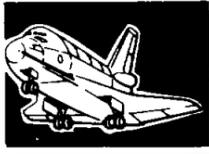
Speakers and exhibits from NASA field centers and from the aerospace industry will highlight space technology applications and career opportunities in the aerospace field. A workshop session for administrators, teachers and counselors will stress the need for additional aerospace courses in the school curriculum, and a job fair will provide attendees with information on a summer, Co-Op and placement opportunities.

Symposium program and registration information is available from Armando R. Alba, Director-NMSU Placement and Career Services Office, Box 3509, Las Cruces, NM 88003.

ROUNDUP

NASA LYNDON B. JOHNSON SPACE CENTER

HOUSTON, TEXAS



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NASA Seeks Proposals For Spacelab Experiments

NASA is asking scientists to submit proposals for scientific experiments for the first Spacelab mission planned for late 1980.

A pre-proposal briefing was held March 22 in the auditorium of the Health, Education and Welfare Building, Washington, D.C.

The primary objective of Spacelab 1, which will be flown aboard NASA's Space Shuttle, is to verify the performance of Spacelab systems and subsystems and to measure the environment surround-

ing the Shuttle.

The secondary objective of Spacelab 1 is to obtain valuable scientific, applications and technology data and to demonstrate the broad capability of Spacelab to perform space research. Stratospheric and upper atmosphere research will be emphasized on this flight, but proposals from other scientific disciplines also will be solicited. The request for proposals is to satisfy this secondary objective.

The experimental objectives of the Spacelab 1 mission have been jointly planned by NASA and the European Space Agency (ESA). NASA's Announcement of Opportunity is being sent to scientists in the United States and in all other countries which are not ESA members. ESA will make a separate solicitation of scientists from the organization's 11 member states. The two agencies will subsequently coordinate their respective selections.

Viking Team Completes Lander Oven Checkouts

Viking flight team engineers have completed in-flight tests on the two Mars-bound spacecrafts' organic chemistry instruments and have verified that each has two of its ovens in good working condition.

Officials said they are now confident that the instruments will be able to perform their chemistry investigations on the Mars surface this summer.

The ovens - three on each lander - are designed to heat Martian soil samples to 500 degrees Celsius (932 degrees Fahrenheit) to release organic materials in the soil for analysis by the instrument, a gas chromatograph mass spectrometer (GCMS).

Earlier test data had indicated one oven on each instrument may have failed, but controllers won't know for sure until after each of the Viking landers reach the Martian surface.

During the course of the recent tests, spacecraft controllers at NASA's Jet Propulsion Laboratory in Pasadena, Calif., also learned that a small carousel that loads and dumps the soil for the GCMS failed a logic check on Viking 2, probably due to an electrical failure in the redundant logic circuit. They indicated, however, that workaround procedures, allowed for in the design of the instrument, will permit normal operation of the carousel during the mission.

There is a separate biology instrument aboard each lander that will perform a direct search for life forms in soil samples.

The two Viking spacecraft, each consisting of an orbiter and a lander, were launched in August and September 1975. The landers are scheduled to touch down on the Martian surface in early July and September respectively. Each carries a full complement of identical experiments.

The Viking Project is managed by NASA's Langley Research Center, Hampton, Va. Mission operations are directed by Langley, using spaceflight operations facilities at JPL.

FEW to Hear Defense Talk

"Self-Defense for Women" will be the topic of Houston Police Department officer Meell at the April 21 meeting of the Abigail Adams Chapter of Federally Employed Women. FEW will meet at 5:45 pm at the Singing Wheel on Texas Hwy 3 in Webster. Guests are welcome.

Griffin Named DFRC Deputy

Gerald D. Griffin, Deputy Associate Administrator for the Office of Space Flight and former Assistant Administrator for Legislative Affairs, will be the new Deputy Director of the Dryden Flight Research Center. The appointment is effective May 1.

Griffin has been at NASA Headquarters since April of 1973. He transferred to Headquarters from JSC where he had been a flight director on all of the 11 manned Apollo Missions and the Lead Director on Apollo 12, 15 and 17.

A native of Athens, Texas, Griffin received his Aeronautical Engineering degree from Texas A&M in 1956. After four years in the USAF, he was an aeronautical engineer for the Lockheed Missiles and Space Co. and for General Dynamics.

Among his numerous awards are two NASA Exceptional Service Awards for his efforts as Flight Director for the Apollo 12 and 15 flights. He is an experienced private pilot, both fixed wing and helicopter.



ON THE OTHER END OF THE LENS - Always a bridesmaid but never a bride could be paraphrased into "always a photographer but never photographed" when applied to JSC Public Information Office photographer A.R. "Pat" Patnesky. Despite rumors to the contrary, Patnesky does have film in his cameras and does remove the lenscap as he poses people and hardware around the Center. The ubiquitous Patnesky puts people at ease and into a smiling mood with his banter about his moustache and his abundance of hair. (Photo by Jim Poindexter/AP2)

Six from JSC On Fellowship, Graduate Leave

Two JSC employees are currently participating in NASA career development fellowships. The two, selected through agency-wide competition, are Owen K. Garriott on an Education for Public Management Fellowship at Stanford University, and Joseph P. Loftus on a Sloan Fellowship at Stanford University.

Four other JSC employees are presently engaged in full-time graduate study under JSC sponsorship. Persons on graduate study leave are Paul E. Brandenberger and Karen M. Clarke at the University of New Mexico, Don L. Lind at University of Alaska, and Janet Wrather at American University.



BELATED SHEEPSKIN - Project Diploma coordinator Eugene Horton presents Jerry Fleming (sans cap and gown) with his high school diploma 28 years after the time he would have earned it under normal circumstances. At right is Project Diploma instructor Dianne Tarkington.

Fleming Earns Diploma After 28-Year Interruption

Jerry H. Fleming received his high school diploma in March. If fate had been kinder, he would have earned his sheepskin with his class in the Spring of 1947. Instead, Fleming was called to serve his country, becoming an electronics instructor specializing in the remote control systems operating the machine gun turrets of B-29 bombers.

Fleming is the first graduate of JSC's Project Diploma, a program of educational assistance, cooperatively designed and administered by the Pasadena Community Evening School and the JSC Personnel Division's Employee Development Branch. Currently, there are 16 enrollees, all of whom are JSC employees.

The purpose of the program is to help JSC employees, whose formal education was interrupted in early life, to meet the credit requirements for a full diploma; it is not a Graduation Equivalency (GED) Diploma. Courses are tailored to the specific needs of the individual enrollees, and all necessary books and class materials are provided to the students at government expense. Instruction is provided during normal

working hours at JSC by an instructor from the Pasadena Community Evening School.

Fleming was honored for his accomplishment by his classmates who presented him with a paper "class ring" and certificate of regard composed by the class "poet". Also present for the ceremonies were: Dianne Tarkington, instructor; Eugene Tegeler, PCES; and Fleming's wife.

Fleming stated that while his graduation was 28 years behind schedule, the experience was one of the high moments of his life. He expressed appreciation to NASA for providing the opportunity to complete his high school work while employed at JSC.

Fleming, a Mechanical Engineering Technician in the Machine Branch, Technical Services Division, is also the last to graduate under the traditional Carnegie Unit System requiring lengthy periods of formal classroom instruction. Future graduates will be part of a newly-adopted high school diploma program which centers around the student's ability to perform the tasks and life skills necessary to function at an adult level in today's society.

The program, called the Adult Performance Level, involves initial testing in very practical areas and, then, individualized work to be examined by an assessor as well as an examination of the individuals' professional accomplishments. These tests will substitute, where practicable, for classroom instruction.

JSC employees interested in enrollment information should call Eugene Horton, Employee Development Branch (AH3), extension 3734.

NASA, RI Sign Follow-on Pact

NASA and Rockwell International have signed a \$1.3 million supplemental agreement which incorporates the follow-on development phase of the Space Shuttle Orbiter project into an existing contract.

This supplemental agreement was contemplated when the original Space Shuttle Orbiter contract with Rockwell was signed. The additional effort covered under the agreement represents work valued at \$1,337,500, and brings the estimated value of the Orbiter contract with Rockwell to slightly over \$2.983 billion. Rockwell was awarded the contract for Orbiter design, development, and integration with all other elements of the Space Shuttle system in July 1972.

This supplemental agreement formally incorporates seven contract changes previously authorized by NASA for modifications to Orbiter 101 and various other changes.

Leader Course Offered Again

A short course on one of the latest concepts in management, the Life Cycle Theory of Leadership, will again be conducted at JSC by University of Houston's Dr. Walt Natemeyer and Dr. Dutch Holland.

Open to employees who attended the recent management development film series, the three sessions will be in the JSC Auditorium, with the introductory lecture at noon April 19, showing of movie *Twelve O'Clock High* at noon April 20, and a Life Cycle theory critique of the film at noon April 21. These dates differ from those announced earlier.

Geographers Name JSC's Underwood to Life Membership

Richard W. Underwood, technical assistant in the JSC Photographic Technology Division, has been awarded life membership in the California Council for Geographic Education for his "contributions to the geographic implications of the applications of space photography in our modern society."

Underwood is the first person to be named to life membership by CCGE. "Speaking on the average of twice daily to audiences of diverse age and background... your lucid, timely presentations dazzled approximately 4000 viewers during the past two years," wrote CCGE executive secretary Haig Rushdoony. "You have brought to California elementary, junior and senior high school, and college and university students as well as to parents and the general public a viable consciousness of the spin-offs of the space program and its geographic connotations."



ERRATA...

Gremlins and typelice ran amok again in the March 26 *Roundup* and caused two boo-boos - both on the same page.

In the gallery of cost reducers on page 2, J. H. Levine of Reliability Division instead of John H. Johansen shared the award with Marion E. Merrell and Henry L. Williams.

In the adjacent article on the microfilmed EVS system, the total value of equipment listed should have been \$2.7 billion instead of 2.7 million.

Susan Gregory Gets March Secretary Award

Susan M. Gregory, secretary to Orbiter Project Office manager Aaron Cohen, has been selected JSC Outstanding Secretary for March.

"She has shown real enthusiasm about her work, eagerness to learn, and the capacity to handle a heavy workload since first joining JSC at the age of 18," said Cohen in his recommendation.

"Her performance in positions of progressively greater responsibility has shown that this early evaluation was accurate. She consistently has been eager to do more than merely what was required, and clearly enjoys taking on additional responsibility. Her ability to assume more demanding work, and her interest in learning new skills have led



her to volunteer for assignments normally performed by more senior employees."

"She has shown similar talent," Cohen continued, "in working with project officials in allocation of travel funds and rearrangement of Project Office workspace."

Are you too little to give blood?

Dennis the Menace appeals from the top of page 44 in the current JSC Telephone Directory with, "Gosh, me'n Teddy are too little to give blood... but *you're* not!"

Below Dennis and Teddy is a schedule of 1976 JSC Blood Bank drive collections, with locations, dates and JSC/industry contact names of the Blood Bank committee. Onsite support contractors take part in the JSC drive and do not schedule an independent drive.

This is an agreement between JSC Blood Bank and the St. Luke's Episcopal Hospital on a Blood Bank Program.

PURPOSE: The purpose of this Agreement is to establish an understanding of the duties and responsibilities of the parties in carrying out a mutually beneficial blood bank program. There is full realization of the incompleteness of a written agreement and a realization that details of the operation necessarily are flexible and changeable by mutual agreement.

DEFINITIONS: 1. The JSC Blood Bank hereinafter called Blood Bank consists of Employees and the support personnel at the Johnson Space Center, Houston, Texas. 2. The St. Luke's Episcopal Hospital shall hereinafter be called the Hospital.

Points of contact: 1. The Chairman or CoChairman of the Blood Bank Program of JSC shall be the point of contact on matters concerning this Agreement for JSC. 2. The Director of Blood Banks of the St. Luke's Episcopal Hospital shall be the point of contact on matters concerning the Agreement for the Hospital.

TERMS OF AGREEMENT: The effective date of this Agreement is October 1, 1974, and shall continue for a period of one year (Amended by letter 10/75 to cover period to 10/76). The Agreement may be extended for an additional one year period by mutual agreement of the parties and a written amendment hereto. Further, this Agreement may be terminated by either party by written notice to the other party 60 days prior to the desired termination date.

POLICY: If an individual is unable to donate blood, he/she may obtain some other person to donate in his/her behalf. In this case, there cannot be duplication of coverage, i.e., not more than one individual and/or family can receive coverage by a single blood donation; There are no medical conditions which constitute exclusion of coverage provided that, JSC shares this risk with the Hospital by conducting special drives or such cases if necessary. No cash return is to be made to JSC Blood Bank for unused credits;

Helon R. Crawford at 3809 is committee chairperson, with Bob Jones and Paula Hagan as co-chairpeople. Industry firms taking part in the JSC Blood Bank have representatives on the committee. Any questions about medications or other donor factors should be directed to the St. Luke Hospital Blood Bank at 521-4483.

The current agreement between JSC and St. Luke's is in small print following.

Blood draws may be scheduled at intervals during the year if necessary; Blood administration charges and costs of compatibility testing are not covered under this Agreement.

DUTIES AND RESPONSIBILITIES: 1. The Hospital shall furnish a donor team consisting of qualified blood bank technologists and technicians and the equipment for blood drawing. The Hospital will have present a physician and/or a Registered Nurse during the donor blood drawings. 2. The Hospital shall be responsible for blood replacement for a period of one year from the date an individual donates a unit of blood under the program. This includes blood and blood components normally available in blood banks for the donating individual, his or her spouse, unmarried dependent children under 23 years of age, mother and father of member and spouse. 3. The Hospital will extend coverage to all personnel and family members of JSC Blood Bank as outlined in paragraph 2 above for a period of one year provided that 50% or more of the personnel in JSC Blood Bank donate. 4. The Hospital shall be responsible for maintaining records and transfer credits relating to the blood program and furnishing copies of such records to JSC Blood Bank. The names of individual donors will be a part of such records. 5. The Hospital shall make blood replacements on a direct basis with the hospital or institution which is responsible for administration of the blood or blood components to the individual when possible. When an individual is hospitalized outside the Greater Houston Area, blood replacement will be made through the American Association of Blood Banks National Clearing house system when possible. When the Hospital is unable to settle replacement directly or indirectly with a hospital or institution, then a cash settlement for the blood replacement and processing charge will be made directly with the covered individual. 6. JSC Blood Bank shall furnish tables, chairs and space necessary for the blood drawing. JSC Blood Bank shall also furnish refreshments for the donors. 7. JSC Blood Bank shall perform all scheduling of the donors. 8. JSC Blood Bank shall provide all publicity necessary for a successful blood bank program.

ROUNDUP

NASA LYNDON B. JOHNSON SPACE CENTER

HOUSTON, TEXAS

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 JSC employees.

Editor: Terry White

Photographer: A. "Pat" Patnesky

EAA ATTRACTIONS

TICKETS

On sale in Bldg 11 Exchange Store 10 am to 2 pm, no refunds: Windmill Dinner Theater — more tickets will be available April 19. Dean Goss Dinner Theater tickets, \$16/couple. ABC Interstate Theaters, \$1.50. Cabaret Theater at Shamrock Hilton, six tickets only for each performance April 7, 8, 14, 18, 21, 22, 28, 29; \$4 EAA price, regularly \$6.50. Unsold tickets will be returned three days prior to each performance.

Tickets are on sale now for April 10 JSC Children's Easter Egg Hunt — only 500 available at \$1 each. SeaArama \$3.25 adults and \$2.25 children. Free Disney Magic Kingdom cards. Houston Astros gift coupons, \$4 boxseats and \$3.15 reserve seats.

Six Flags Fun Seekers Club cards, good for \$1 off each Astroworld and Six Flags Over Texas ticket, are now available. The FSC cards are also good for a 10-percent discount at hotels listed in the club guide and for family vacation packages. See your EAA rep for free Fun Seekers cards.

Lion Country Safari in Grand Prairie is closed but will soon reopen under new management. The hitch is that the new management will not recognize the Free EAA Safari discount cards, so give them the deep six.

Tickets for Houston Aeros play-offs will be sold by EAA provided at least 20 are ordered. The \$5.35 tickets will be \$4, and the \$7.35 tickets \$6. Leave name and exten-

JPL Team Detects Carbon Monoxide On Venus, Mars

A team of space scientists has made the first microwave observations of carbon monoxide in the upper atmospheres of Earth, Venus and Mars.

The finding seems to establish carbon monoxide as a common denominator in the upper atmospheres of the planets, and should lead to a better understanding of the delicate balances in our own upper atmosphere.

The measurements were made by a team of scientists from NASA's Jet Propulsion Laboratory, Pasadena, Calif., and Aerospace Corp. of El Segundo, Calif.

Marine Band Here April 22

The Quantico Marine Band April 22 will give a concert in the JSC Auditorium as part of the Band's visit to the Houston Area sponsored by the City of Pasadena. The JSC concert will be at 11:30 am.

Other Band appearances include ceremonies aboard the Battleship Texas and Pasadena's San Jacinto Day Parade on April 21, and a 7:30 pm concert April 22 at Pasadena High School.

Band clarinetist Daniel Cree is the son of David Cree of JSC Control Systems Development Division.

sion with recorder at 4592 if you want to be counted.

The Carriage Trade Diners' Club applications for the period May 1 thru October 31, 1976 are now available from the Bldg 11 Exchange Store or from EAA reps at \$10 each — regularly \$15.

AERO CLUB OPENINGS

The JSC Aero Club has several openings in its Bonanza section. Pilots interested in flying a P-Bonanza as well as the Club's Skyhawk and Commuter, should call Jackie Bohannon at ext 4161 or 944-5868. Club membership is open to onsite federal and industry employees and offsite industry employees.

LADIES EXERCISE

The EAA Ladies Exercise Group may now meet Mon, Tues, Wed and Thurs nights in the Rec Center. The exercise equipment room (Rm 122) will be reserved for Mon and Wed from 4:45 to 5:45 pm, and the group will meet in Rm 204 on Tues and Thurs nights.

FIVE-DAY STOP-SMOKING PLAN

Response to the inquiry on the Five-Day Plan to Stop Smoking has whelmed over expectations and the program has been scheduled for the Gilruth Recreation Center assembly room from 7 to 9 pm May 10-14. Fees are \$7.50/person, payable at registration Monday evening May 10.

The program utilizes lectures, films, group therapy, a personal control booklet and the buddy system.



Would-be cold turkeys should call the EAA number at 4592 leave name and phone number so that an estimate of needed materials may be made.

Roundup Swap-Shop

Swap Shop advertising is open to JSC federal and on-site contractor employees. Goods or services must be offered as advertised, without regard to race, religion, sex or national origin. Non-commercial personal ads should be 20 words or less, and include home telephone number. Typed or scribbled ad copy must be received by AP3/Roundup by Thursday of the week prior to publication.

BOATS

69 19-ft Seabreeze, 70-hp Chrysler, depth finder, cuddy cabin, big-wheel Flagship tilt-trailer, \$1750. 489-6766 after 6.

23-ft inboard custom-made open cabin, needs work, \$600. 488-1554 evenings.

22-ft Bayliner Skagit Camper, 188-hp Mercruiser, built-in stove, icebox, sink, sleeps 6, less than 30 hrs on engine, \$7800. Camp, 483-4949.

Jamaica 1900 Bayliner fiberglass, 115-hp Johnson, E-Z Load trailer, loaded w/xtras, \$3985 or pickup equity with Credit Union. Zilli, 483-2457.

Ensign sailboat No. 669, two each mains, working jibs, genoas, one spinaker; 6-1/2-hp Seagull OB w/bracket, cockpit cover, asstd running gear, \$6000 or best offer. Gadbois, 333-4053 after 5.

72 Venture 22, working sails, head, dinette, sleeps 5, 6-hp Seagull, trailer, many xtras, \$3500. Bullock, 488-6095.

VEHICLES

69 Cadillac Fleetwood Brougham w/everything, xint cond, steel belts, \$1700. York, 483-2074.

73 Volvo 4-dr sedan 4-spd, air, pwr, FM stereo, 25 mpg, xint cond, \$3550. Bird, 487-0942.

70 Dodge Challenger convertible, red w/white top, xint cond, new paint, 70K miles, pwr steer, air, auto, AM/tape. Cortright, 333-4491.

74 Skamper motor home, 440 eng, 5000-w gen, 14,500-BTU aircond, full self-contd, one owner, xint cond, \$9995. Swan, 445-1717 after 6.

71 VW Superbeetle, mags, new wide ovals, Holley carb, 28 mpg, yellow, AM/FM/tape stereo, clean, recent eng ovrlh, 76 reg, \$1425 (negotiable). Klotz, 488-1514.

74 Gremlin, like new 6K miles, auto, pwr, disc brks, \$2650. 488-8149 after 6.

20-in girl's sidewalk bike, \$20; 26-in ladies' bike, \$30-both xint cond. 488-8149 after 6.

73 VW, orange, clean, good tires, FM/tape, runs well, looks good, \$1700. Charlie, 527-1247 after 5.

66 Ford LTD, clean, good paint, no rust, runs well, air, auto, pwr brks, radio, htr, 783-4899 after 6.

Rent motorhome \$125/wk plus 6 cent/mile (incl ins), daily rate avail. 471-5161 after 6.

New 26-in boy's 10-spd bike, sell or trade for 26-in girl's bike — 10-spd, 3-spd or no-speed. 723-6231.

75 Open Road, self-cont, in warranty, perf cond, \$5000. 482-1635.

75 Honda CB-750-4, sissybar, lugrack, \$1495 or take up pmts, good cond. 358-2004 or 944-0745 after 7.

71 Toyota Mark II, air, 4-dr, manual, radio, good cond, \$850. Chase, 334-1286 after 5.

73 Honda 175, xint cond, low miles, cust paint, \$375. Lizza, 554-7149.

74 VW sedan, air, AM/FM, better than xint, \$2700. Rubenstein, 334-2354.

75 Cadillac Coupe DeVille, 13,200 miles, xint cond, \$7195. 944-3470 after 5 M-F.

PETS

Pair AKC-reg Wire-Haired Fox Terriers Free to good home. 482-0553.

AKC Lhasa Apso female pup, 6 wks, weaned, \$100. 479-6766 after 6.

WANTED

A few good pilots for a 75 Skyhawk II flying club, IFR, stereo, based at Clover Field, club rate \$12/hr. Laurentz, 488-2537.

Used HP35 in good cond. John, 474-4353.

Two VW h-back seats thru 71 model. Billie, 333-3425 after 6.

72-72 Capri, Maverick or other compact, low miles, good cond. Doherty, 488-0182.

Throttle/shift w/o cables for Evinrude OB. Young, 334-2187.

Two-wheel trailer for 15-ft boat, pay to \$100. Young, 334-2187.

Window fan, 2 or 3-spd for 35-in window. 554-7052.

PROPERTY & RENTALS

Lot at Lago Vista resort on Lake Travis near Austin, must sell. 477-3964.

Couple's plot in Forest Part East, incl 18x48 stone w/engraving for couple, \$900. 944-8205 after 4:30.

4-2-2 exec home in Middlebrook, contemporary, atriums, skylites, fenced, less than 6 mos old, \$500/mo. 474-2081.

Recreation property at Waterwood on Lake Livingston, access to marina, golf, tennis, stables, etc., buyer's terms. 488-6380.

Lake Livingston wooded waterview choice lot at Cape Royale, enjoy fishing, hunting, tennis, golf etc, ideal homesite or investment. 488-4487.

3-2-1 in Lake Livingston Cape Royale, attractively furn, wooded, waterview, rent w/ky or mnthly, reserve early. 488-4487.

2-bdr apt in by-the-sea condominium at Galveston West Beach, air cond, carpets, full kitch, color TV, weekly rent. Clements, 474-2622.

HOUSEHOLD ARTICLES

Antique washstand, marble top and back, \$155; washbowl, pitcher and soap-dish set, \$85; rocking chair, New Orleans birdseye maple, \$50; maple 4-pc bedroom set, nitestands, table and chest, \$100; hickory chair/table set, 3-pc, straight chair and rocking chair, bark on, \$140; 12x15 gold shag rug, xint, \$50; aquariums compl w/fish, 10-gal \$25, 20 gal slim-Jim w/54-in cabinet, \$55. 554-7052.

Shuttle Systems May Benefit Civil Aviation

Significant benefits to American civil aviation could result from NASA's reusable Space Shuttle program.

The Space Shuttle will conduct the first operational tests of an advanced electronics flight control system for civil aircraft and is providing significant advances in structural materials technology for aerospace manufacturers.

Electronic digital techniques used in the Shuttle's flight control system could help reduce fuel consumption and provide smoother flights when applied to civil aviation.

The Shuttle's electronic flight control system is the focus of many of the possible benefits to aviation. If it proves out, standard heavy, mechanical backup flight control systems would no longer be needed. The reduction in the weight of the aircraft would automatically reduce fuel consumption.

These mechanical backup systems have been used because, traditionally, the reliability of electronic control systems has been suspect.

However, aerodynamic requirements when the mechanical system is used have hampered the development of more flight-efficient aircraft designs.

The advanced flight control system is tied in with a computer for superfast reaction. So aerodynamic loads are less likely to build up on the aircraft's flight control surfaces. The reduced loads allow smaller and lighter wings and control surfaces to be used on the aircraft, another weight reduction, again tied in to reduced fuel needs.

In addition, the Shuttle's integrated electronic system with central data processing will be linked with ground navigation and mission control. Potentially, these techniques are directly applicable to an integrated air traffic control system.

With such precise knowledge of aircraft position and velocity and constant, reliable communications with the ground, the air traffic management process could minimize takeoff, enroute and approach and landing delays and the fuel consumed during such delays.

In another area of potential benefits, the Shuttle program has contributed significant advances to materials manufacturing and tooling technology and in structural analysis and design procedures.

This technology can be applied to the aircraft industry helping in the design of major structural components for future aircraft.

Composite materials are strong, lightweight combinations of metals and plastics such as boron-aluminum or graphite-epoxy. These materials can reduce aircraft structural weight by more than 30 percent, compared to current aluminum structures. Composites are being developed and tested by NASA and the Air Force in collaboration with U.S. industry with an objective of achieving aircraft fuel savings of 10 to 15 percent.

Shuttle operational tests will also enable the aircraft industry to use structural composites with increased confidence in attaining the substantial weight reduction and the associated fuel savings and cost effectiveness that these composite materials offer.

RC Club Holds Meet Sunday

The JSC Radio Control Club will sponsor a radio control model contest Sunday. It will be a Quickie 500 pylon race and the heats will last from 9:00 in the morning until 4:50 in the afternoon.

Quickie-500's are used as trainers for the faster formula-one racers and fly at speeds of 80-100 mph.

Contestants from radio clubs in Fort Worth, Austin and San Antonio are expected to attend along with members of local clubs.

The races are open to the public and will be held behind Bldg. 14 on the antenna range.

FOUND

Silver pierced-ear ring. Stelly, ext 4766.



OK, Quiet Please, This Is Picture

by Charles Redmond

For thirty days and thirty nights they were here. And, in July when the result is released, American International Productions will show how Hollywood can take a nice, quiet, suburban government installation and turn it into Delos — the resort of the future.

To the more than half-dozen contractors and dozen-or-so NASA divisions at JSC, the filming of FutureWorld must have seemed more like a mission than the non-interference, no-cost activity the center agreed to support.

It's surprising what signing a Cooperative Agreement can lead to.

In the very first days of American International's encampment here, even before the agreement had been signed, it began to look as though the whole show would go awry. Stuart Lenett (EE3 and the contact for Bldg. 14) and George Schenck (AI's property manager) were in back of the Anechoic Chamber arguing whether the movie company could take a plywood CSM model without the right paperwork. What a scene. Of course the movie company couldn't get the mockup without the paperwork and so began Hollywood's introduction to the government. And so began the government's introduction to Hollywood.

Is there anyone out there who isn't aware that for the entire month of March JSC was the set for American International's feature flick *FutureWorld*. If there is, perhaps a bit of background is in order.

November last, the strikingly pretty and able director of the Governor's Texas Film Commission, lithe Diane Booker, the film producer Paul Lazarus, the set designer Trevor Williams, and the unit production manager (the Boss) Elliot Schick, were all taken on the first of what turned out to be nearly a baker's dozen extensive tours of the center. Upstairs to building rooftops, downstairs to the tunnel system, inside labs, outside labs, inside chambers, even on top of chambers, through computer rooms, through control rooms, behind the screens in the MOCR. Nearly every square inch of the center was surveyed.

The movie company was impressed. How do we get to use it, they asked.

Easy. The Governor sent a letter of request to the Public Affairs Office. Many meetings, many

revised tentative timetables, many questions.

Economy Boost

AIP had an excellent chance of securing the site for their movie. They had a lot going for them in this regard. The movie would infuse something very close to \$1 million into the Houston economy. The timetable was fortuitous in that it coincided with downtime for many of the facilities they wanted to use. They promised non-interference, and, the script appealed.

This was last winter. Let us now time-lapse to spring. AIP came in what seemed to be an endless caravan of trailers, generators, trucks, vans, cars and hangers-on.

The filming was fascinating and boring. Fascinating because the movie industry is a foreign enterprise to most of us here. Boring because filming takes time, as much as 3 hours for a 90 second segment. A lot of waiting around was done.

First the power people in Building 24 were hit. We might add that Carl Romero (JN8) was aware they were coming and had scheduled some routine pipe painting in advance. That's what Hollywood was looking for - colorful pipes.

Next Building 5. The Skylab Workshop was the scene for launches, naturally. Building 5 was also the first location to call for a covey of Model 700 robots, the so-called sex model. Astronauts Dick Truly and Story Musgrave were seen milling around the robots during one of the filming sequences. They passed unnoticed amid Peter Fonda, Blythe Danner and the robots.

Mob Scene

Building 14 was next, as the set for the cloning sequences, a place where world leaders were turned into robots (or something very close). Trevor Williams turned NASA's famed and useful anechoic chamber into a gleaming forest of stainless steel, aluminum, flashing lights, fake computers, and catwalks connecting plexiglas cones. It truly was a gala affair the night they filmed 14. The set, parking lot behind, inside and chamber were all filled with extras, Lockheed personnel from the facility, JSC persons from the facility, and what seemed like a second cousin chain of rela-

tives of the film crew, NASA and only Hollywood knows what all.

The big question that night was whether it would rain or not. If it rained the chamber door had to be closed, thereby stopping production. Anyway, Hollywood apparently knows the right people, the rain never got worse than heavy moisture and the scene was filmed into the wee hours.

Jim McLane, Al Branscomb, Pan Am and Northrop managers and probably two dozen other persons around Building 32 were understandably nervous when their turn came. The large chamber in 32 was to be readied for some testing immediately following the movie company's use. There was a very tight schedule which had to be observed and no one, Hollywood included, was sure whether it could be done.

Movie people took to attending the daily status briefings in 32 as they slowly but surely took over the facility.

Death Leap

Stage 32, as it was known until recently, was the scene of the movie's most exciting and elaborate stunt. A fall from the 50 foot level onto an air bag. This was perhaps the most talked about aspect of the movie and the day it happened, Jim McLane and son, camera in hand, were looking down from the top of Chamber A through one of the thick glass viewports. A crowd of 200 was looking up from just outside the huge door. AIP themselves had three cameras rolling for the fall, one a high-speed slow-motion camera which was to capture for posterity the poetry of a robot falling to its death. With a short ballet step the stunt man gracefully fell forward and down, 50 short feet to the top of an inflatable air mattress, surrounded with huge cardboard cartons - just in case.

Everyone agreed, it was a superb fall. A standing ovation from the crowd and a lot of easier breaths from the NASA personnel standing by with walkie-talkies linked to the emergency vehicle discretely parked outside.

The movie crew left no building unused. Building 49, the acoustic testing chamber was called into play for the one scene no one got

If your office mate acts strangely, he/she may be a clone left over from Future World

to see. The heroine, Blythe Danner, was to engage in a dream scene with Yul Brynner. The scene had to be very carefully shot, to maintain the "PG" rating of the movie. That's all we know, since no one but the director, cameraman, Blythe, and one or two other essential movie people were allowed in for the filming.

Some odds and ends. Walt Guy and associates in Building 7 were witness to the movie's only casualty, a stunt fall that missed. Fortunately though the stuntman was



not hurt badly. Building 7 was also the set for the Samarai Warrior fight along with a lot of running around on pipes and through hyperbaric chambers. Walt was prepared though, he had studied the crew during the time they filmed in 32 so by the time they came to stage 7, Walt was ready.

Robot Control?

Building 30 control room was the set for the movie's elaborate electronic special effects. Bill Chase, David Price and many others spent long hours over a period of several months with Brent Sellstrom, AIP's effects director, to ensure that Mission Control would come across as Robot Control.

One advantage for people who didn't see the movie being made is that the whole thing will probably make sense. The scenes inside MOCR were never quite right. What with Aeronutronic, NASA, Mobile Color, AIP all having to coordinate monitors, playbacks, graphic charts and the film cameras there never seemed to be more than 30 seconds which hung together well enough to be worth the watch. Perhaps for this reason Building 30 never had much of an audience, though there were plenty of extras asking "when am I on?"

If you didn't get invited to join the movie crew at one of their catered meals, don't feel left out. Elliot Schick was quoted as saying the food was the best Hollywood had to offer. They don't have anything on the cafeteria.

The movie people were absolutely fascinated with space and the space center. Everyone in the movie company who had any rank at all

brought his family in from California to see the center. The fascination was equal though as JSC families were taken on tours of the movie sets.

The plot you ask? Okay, very briefly the storyline concerns two dog-eat-dog journalists, Peter Fonda and Blythe Danner, who are chasing the story of the year. That story concerns an amusement park called Delos where, for the miniscule sum of \$1,200 a day, anyone can have his or her fantasy come true in one of the following ultimate resorts: Medieval World where maids of honor vie for ones pleasure; Roman World where grapes and other delicious items are served with palm fans; Spa World where you and your friend (or robot) can relax and leave everything up to Delos; and Future World where one can ski the red slopes of Mars, play golf on the moon and other technical tricks.

The subplot concerns Arthur Hill, mastermind, John Ryan, master technician, and Stuart Margolin, robot keeper (oh, and Harry's friend, the faceless martini-making robot). Somewhere between the entrance gate of Delos and the exit Art Hill and John Ryan are doing something funny to the guests, but Peter, Blythe and Stu will be damned if they can find out what.

Every Hollywood production has its credits, this in no exception. The *Roundup* would like to mention a few persons who were instrumental in assisting either AIP or JSC in this endeavor (some have other words for it):

Dan Remington - legal assistance; Walt Guy - Building 7; Stu Lenett - Building 14; Jim McLane - Building 32; Al Branscomb - Building 32; Wade Dorland - Building 49; Bill Chase - Building 30; Ken Gilbreath - almost everything; Jack Kinzler - Buildings 9 and 10; Dave McGraw - Buildings 9 and 10; John Brinkman - television and PTD; Ev Shafer - security; Tom Conger - property; Ed Samfield - operations; Carl Romero - Building 24 and a heck of a lot of the tunnels; Dick Smith - Building 29; Rich Homer - Building 5.

And please be mindful that if we missed mention of someone it is an oversight. There were more than 100 NASA and contractor persons directly involved with the movie and hundreds more who helped indirectly.

One final note: from all indications the movie will genuinely entertain. And, oh yes, you can take your kids to see the flick.

