ROUNDUP

Lyndon B. Johnson Space Center

NASA

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SHIFTING EARTH—Surface faults in the Houston area sometimes cause extensive damage to houses and commercial buildings such as this cracked driveway and distorted house on Billings Street. A homeowner with damage from surface faulting is usually stuck with an unsaleable or greatly devalued house.

JSC, USGS geologists map local earth cracks

Surface faults in southeastern Harris county and parts of Galveston and Brazoria counties last week were pinpointed in a map published by the US Geological Survey and based upon surveys by a JSC geologist working with his counterpart from USGS.

The fault map, covering about 200 square miles of developed and undeveloped land is the result of work by JSC geologist Uel Clanton and Earl Verbeek of the USGS. It was undertaken jointly by NASA and the USGS to evaluate the magnitude of the faulting problem in the metropolitan Houston area.

The map covers that portion of Harris, Galveston, and Brazoria Counties bounded by Clear Lake in the south, Loop-610 and Texas-225 in the north, about two miles west of Texas-35 in the west, and Texas-146 in the east.

Ninety-one faults with a total length of 110 miles are shown on the map.

Urban portions of the Houston metropolitan area encompassed by the map include part or all of the cities of Pasadena, LaPorte, South Houston, Taylor Lake Village, El Lago, Seabrook, Webster, Brookside, Pearland, Friendswood, Nassau Bay, and the southeast section of Houston.

Faults cut through residential and commercial areas in many of the cities listed above. Faulting is extensive east and southwest of Hobby Airport. Non-developed portions of the southeastern quadrant of Harris County which are crossed by faults are in the areas of the Clear Lake, Friendswood-Webster, South Houston and Mykawa oil fields. The Mykawa oil field in particular has extensive faulting in both a northwesterly and northeasterly direction.

The map was produced using a combination of aerial photography and ground-level confirmation of the faults. The map should be used as a general guide to the prevalence of faulting near any particular locality and it should not be used in the absence of site-specific studies. The map should be considered to be a minimum statement on faulting, and should be supplemented by more detailed local studies wherever faulting may pose a significant hazard to anticipated land use, especially along extensions of mapped faults or in an area of extensive faulting.

The high side of a fault is called the upthrown side. The physical feature at the break is called a scarp. The low side is called the downthrown side. Typical scarps in the southeastern Harris County area have heights of between one and two feet. Fewer than five percent of the scarps are higher than three feet.

Faults in the urban areas of the map's coverage are probably under represented since only active and damaging faults are readily detected. Inactive or slowly moving faults, and all faults in newly developed areas where damage is not yet severe may escape notice unless the scarp is of substantial height or has not been destroyed by landfill or excavation during the development.

Examination of the map shows that nearly all of the faults are confined to two well-defined, curvilinear belts which bear a close relationship to oil fields in the area. The association is not accidental. All major fields shown on the map are

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Clinic sponsors epilepsy meet

Probably few non-communicable diseases have been as misunderstood as epilepsy. Many famous persons (Julius Caesar, St. Paul the Apostle, Vincent van Gogh, to name a few) have been afflicted with the disease. Their plight remained a closely guarded secret because most of the citizenry confused it with mental illness or worse, mental retardation.

Epilepsy is a disease of the nervous system. It may be hereditary, caused by traumatic injury, or due to other diseases. Further, there are many different types. Daily medication controls it for millions of people. These people are often the world's most brilliant and productive members. Yet there still is much misunderstanding about the disease creating a stigma in employment and social areas.

If you would like to know more about epilepsy and particularly how you can help during a seizure, attend the health education program sponsored by the JSC Clinic on August 22, 1978 at 1:20 p.m. in the Building 30 auditorium. Dr. Daniel Glaze, Blue Bird Clinic, will be guest speaker.

JSC to ask think tank to study center roles

Will controlling 40 to 60 Space Shuttle flights per year limit the JSC's ability to perform its basic role of research and development? How can costs be kept low to encourage maximum use of the versatile space transportation system? How will this increased activity affect relationships with other NASA centers and contractors?

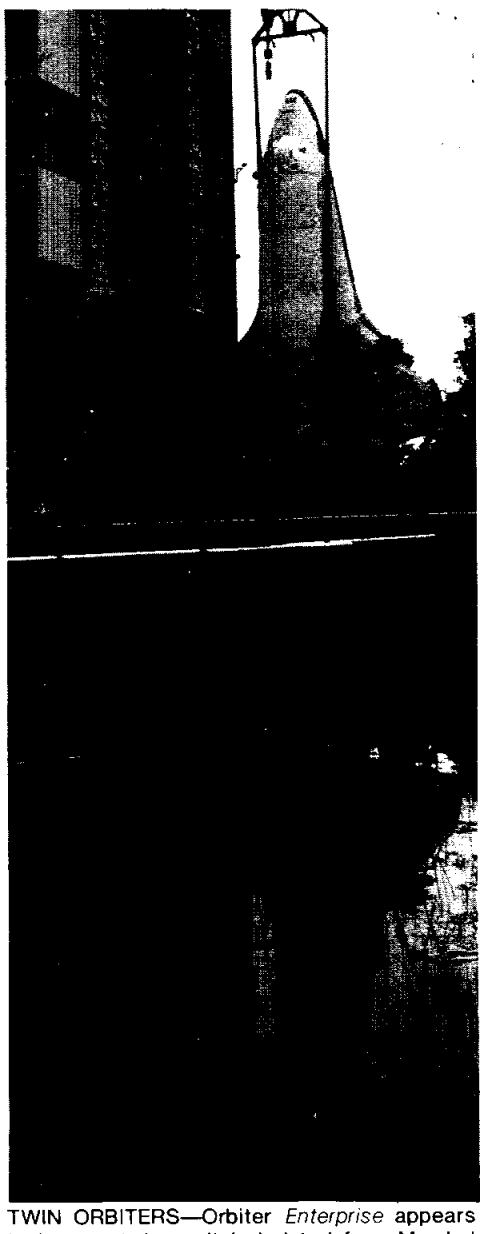
A management consulting firm will be asked to help answer those and other questions after a nine-month, $500,000 study. Joseph P. Loftus, Chief of JSC's Technical Planning Office, said a request for proposals (RFP) on the study will be issued soon.

"Another area to be reported on is the management philosophy here and the relationship between civil service responsibilities and those which are or could be contracted," he said.

Space Shuttle launches are expected to reach the approximate one per week rate by 1985. JSC officials want to be certain that flight operations of that magnitude do not drain off already limited personnel and other resources needed for the Center's principal role as a major research and development arm of the space agency.

Planners here have already drafted a baseline operations plan which covers the mature Shuttle era. The onboard capabilities of the vehicle are greater than in previous spacecraft, so the plan reduces the number of flight controllers assigned to real-time operations on the ground and increases the effort spent on flight planning.

Because the flight control work here affects NASA-wide operations, and because JSC is a key element in future space flight research and development, Center management wants an outside examination of the plan and alternatives prior to committing to it.



TWIN ORBITERS—Orbiter *Enterprise* appears to have a twin as it is hoisted from Marshal Space Flight Center's dynamic test stand. After structural mods to the stand, *Enterprise* will again be lifted into the facility for all-up vibroacoustic tests with the booster.

JSC to host LACIE meet in October

For three years the U. S. government, working with university and industrial research groups, has been involved in a major experiment to determine if wheat production in major growing areas throughout the world could be estimated using data from satellites and the global weather observing network.

The Department of Agriculture, the National Oceanic and Atmospheric Administration have been cooperative partners in the Large Area Crop Inventory Experiment, known as LACIE.

On October 23-26 results from the three-year-long experiment will be discussed at the first major symposium at JSC on crop monitoring based on space-age technology. The topics range from the general, such as the state of existing global crop forecasting, to the specific, such as how to estimate sampling size for the statistical analysis used by the computers. This symposium will be a complete reporting on the conduct and results of the experiment.

The LACIE experiment was begun in the fall of 1974. At that time the USDA felt the need for an improved source for global crop information. In the United States, the USDA has already established a reliable and timely crop reporting system but for many important wheat-growing areas, throughout the world, information is very limited.

The LACIE experiment involved the research, development and testing of an emerging technology know as remote sensing, combined with conventional weather data, to monitor and inventory agricultural commodities on a global scale.

Wheat, because of its great importance in trade and human nutrition, was the primary commodity investigated for this experiment. Electronic imagery from space was gathered by the Landsat orbiting satellites which continually scan the agricultural regions of Earth and provide data for area estimates. Daily data from 8,000 worldwide weather stations were used both to make timely predictions of crop area, yield and production in domestic and foreign wheat growing regions and to provide an early warning of problems.

The effort on the LACIE experiment took skills in many technical fields. Earth resources scientists were involved in identifying the "signature" or appearance of wheat in the satellite data. Other scientists were involved in the development of techniques to estimate the growth stage of wheat. Computer programs were written to examine weather conditions along

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OPPORTUNITY MAKER—Stan Goldstein of the JSC Personnel Office receives the Equal Opportunity Award from JSC Director Christopher C. Kraft, Jr. for "his outstanding leadership in developing minority and female employees to their highest potential."

JSC briefs ex astronauts

Invitations have gone out to 31 former astronauts to attend two days of briefings August 21-22 at JSC to update them on current NASA programs.

The homecoming agenda includes an overview by NASA Administrator Dr. Robert Frosch, a space transportation system review by STS Associate Administrator John Yardley, and briefings on Space Shuttle by Program Manager Bob Thompson and Orbiter Project Manager Aaron Cohen.

Other speakers and topics include: Glynn Lunney, STS operations; Lt. Gen. Tom Stafford, USAF Shuttle participation; Deke Slayton, ALT, OFT and Skylab deboost; John Young, flight crew selection and training; M. P. "Pete" Frank, flight control operations; W. E. Rice, global food and fiber earth resources inventory; and Bob Piland, solar power satellite.

ALT crewmen Fred Haise, Gordon Fullerton, Joe Engle and Dick Truly will describe last year's glide flights in Orbiter *Enterprise,* and Payload Deployment and Retrieval Systems manager Jerry Bostick will cover current U. S./Soviet Union space operations planning.

The former astronauts will tour facilities at JSC that have been built since many of them left the program.

Invitations went to Edwin "Buzz" Aldrin, Bill Anders, Neil Armstrong, Frank Borman, Scott Carpenter, Jerry Carr, Gene Cernan, Mike Collins, Pete Conrad, Gordon Cooper, Walt Cunningham, Charlie Duke, Donn Eisele, Tony England, Ron Evans, John Glenn, Dick Gordon, Jim Irwin, Jim Lovell, Jim McDivitt, Ed Mitchell, Bill Pogue, Stu Roosa, Wally Schirra, Jack Schmitt, Rusty Schweickart, Dave Scott, Al Shepard, Tom Stafford, Jack Swigert and Al Worden.

Women need to learn how to get credit

(The following is the conclusion of the article "Women's credit borrowing tips" begun in the August 4 *Roundup.*)

Mortgages are usually available from savings and loans, commercial banks, savings banks, life insurance companies, credit unions or the person who owns the house you want to buy.

As a note of interest, in May of this year the administrator of the National Credit Union Administration issued regulations granting authority to Federal credit unions to make residential real estate loans on one-to-four family dwellings with maturities of up to 30 years.

At the present time, the JSC Federal Credit Union does not make mortgage loans. However, a study committee has been formed to look into the possibility of offering this service in the furture.

Since the regulations contain a number of specific restrictions and limitations, it is necessary that we determine how this program can be implemented and whether it will be beneficial to the entire Credit Union membership.

If such a loan program is established in the furture, loans will be evaluated using the same nondiscriminatory policy that govern all our loans ("without regard to sex, race, creed, color, religion, labor organization affiliation or nonaffiliation, national origin, marital status or age.") The criteria for granting any loan is based on the applicant's ability to repay, credit history and proposed collateral.

Many credit granting institutions discriminated against women, not because of their credit standing, but simply because they were women. With enactment of the Equal Credit Opportunity Act, the law makes it illegal for creditors to discriminate on the basis of sex or marital status when evaluating creditworthiness. Since the mortgage loan represents the single largest debt incurred by the average wage earner, it is necessary that women become knowledgeable regarding the entire process and further exercise prudence in financial management.

Scuba course offered

The Lunar fins Scuba Club will sponsor a six-week course in scuba diving starting in mid-September at a cost of $65. Lunarfins promotes diving in Texas lakes, the Gulf and Cozumel.

Lunarfins training officer Rodney Rocha at 4393 or 333-4606 has more information.

TOP WOMAN—The Alvin Chapter of the American Business Women's Association has named Bonnie Smith as chapter woman of the year. Smith and 1500 other local-chapter women of the year will be honored at the ABWA annual convention in November in Atlanta. She is secretary to JSC Technical Planning Office chief Joe Loftus.

NSA sponsors review course

The National Secretaries Association jointly with the University of Houston-Clear Lake City will sponsor a certified professional secretary review course starting August 31 each Thursday through April 12. The classes will be from 6:15 to 9 pm in the UofH-CLC Executive Development Suite.

The CPS review course is aimed toward preparing secretaries for the two-day six-part NSA Institute for Certifying Secretaries exam. Topics covered include environmental relationships in business and public policy, economics and management, financial analysis and the mathemaics of business, communications and decision making, and office procedures.

The $60 registration fee covers 15 classes, handouts and parking. Registration is now open, and additional information can be had from Cheryl Bouillion at 3558 or 482-2091 after 6.

COURSE PLANNERS—Cheryl Bouillion, chairperson of the NSA Clear Lake Chapter CPS Service Committee, works out details of the CPS review course with UofH-CLC Center for Administrative Development director Dr. Tim Singleton.

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.

WSTF engineer Kingsbury dies

Don Kingsbury, operations director for the Shuttle forward reaction control system tests at JSC White Sands Test Facility, died August 1. Funeral services were held August 3 at University Presbyterian Church in Las Cruces. He is survived by his wife Sylvia and daughters Donnella and Chauntell.

Kingsbury joined NASA in January 1963 as an operations engineer in the Little Joe project for testing the Apollo launch escape system. He graduated from New Mexico State University in 1961 with a BSME and served as a Nike missile instructor and maintenance officer with the U. S. Army before joining NASA.

A Don Kingsbury Memorial Fund for fostering youth activities has been established, and contributions may be sent to the University Presbyterian Church, Wisconsin Avenue, Las Cruces, NM 88001.

Earth cracks

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known or thought to be producing from sediments above or peripheral to salt domes. It is believed that the formation of the domes and the faulting are genetically related.

The faults are natural geologic features of antiquity. Seismic and drilling data reveals that the faults persist to depths of thousands of feet and show clear indications of prehistoric movement extending over millions of years.

There is ample evidence for a prehistoric origin of the faults, and for prehistoric motion along them. Unresolved is the question of why many faults are so active today. It can be documented that natural movement on some faults persisted into the very recent geologic past, and is likely continuing. However, contemporary rates of movement along many faults, which range up to one-inch per year, are in excess of what has occurred in the past.

If the contemporary rates were characteristic of the recent past, there should be many fault scarps over 30 feet. The present anomalous rate of movement may be the result of human activity, specifically petroleum and ground water production.

The extraction of large quantities of water from shallow sediments beneath the city, and production of petroleum from somewhat deeper levels, has resulted in large declines in fluid pressures within the subsurface sediments. Inasmuch as a link between fluid-pressure declines and land-surface subsidence is well established, it may be that the withdrawal of water and petroleum products is somehow triggering or accelerating motion along preexisting faults as well.

Rape talks planned

Ann Smith of the Fort Worth office of the Federal Protection Service August 28 will give two 90-minute presentations on rape prevention in the Bldg. 30 auditorium at 10 am and 1:30 pm.

The Federal Women's Program Committee is sponsoring the talks. All JSC employees who can be spared from duties are urged to attend.

LACIE meet

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with the crop yields achieved in past growing seasons in order to estimate the yield for the current growing season, and to combine area and yield estimates for wheat production reports.

The experiment centered on the hard red wheat crop in the U. S. Great Plains, where detailed data is available, for comparison and testing of the technology. Comparisons were made with UDSA reports and ground truth gathered by county agents over many sites.

The LACIE activity is now nearing completion, and the results show that this new technology can be used effectively in improving the knowledge of global wheat production. The technology is believed to be generally applicable to other crops and the USDA is currently considering the use of this new technology as a data source to aid them in their responsibility to provide early warnings of significant changes in the global commodity production outlook.

The four-day JSC symposium will conclude the experiment. People from government, industrial agricultural, and university communities around the world will be attending to learn more about this pioneering effort, and to discuss how this new technological tool can best be utilized to improve the world food situation.

Egypt books space for 'getaway' payload

The Egyptian government has reserved four small self-contained payloads to be flown on the Space Shuttle in the 1980's. At a NASA Headquarters ceremony, July 13, 1978, Dr. Mohamed Shaker, Minister of the Embassy of Egypt in Washington, D.C., and Dr. Farouk El-Baz, Research Director for the Center for Earth and Planetary Studies, Smithsonian Institution, presented NASA officials with a down payment to reserve Shuttle space.

The payloads, commonly called "getaway specials," can weigh no more than 90 kilograms (200 pounds) and be no larger than .5 cubic meters (5 cubic feet). They are flown on the Shuttle on a space available basis for scientific research and development purposes.

EAA Attractions

PRISON RODEO DISCOUNTS OFFERED

The Texas Department of Corrections is offering NASA Employees a 25% discount on the $5 ticket (your price $3.75) for the Texas Prison Rodeo, Sunday, October 15, 1978. The Rodeo starts at 2:00 p.m. with pre-show entertainment starting at 12:20 p.m. Tom T. Hall is the guest entertainer for that date.

In order to block out a section of tickets for NASA, we need to know in advance of your interest in attending the "wildest, roughest rodeo behind bars."

Please return the attached form to reserve your ticket by September 8. Upon receipt of this form, tickets will be ordered and then made available in building 4, room 242, Sandra Burdsal. Watch for futher information in the *ROUNDUP!*

Mail to Code CG3/Burdsal

_____will be attending the Texas Prison Rodeo, October 15, 1978. There will be_____in my party.

_____
Signature/Code/Extension

DEADLINE SET FOR ALLEY THEATRE SUBSCRIPTIONS

The Alley Theatre Corporate Subscription program is again being offered to NASA and contractor employees. Season tickets are available for next year's five performances at a low price of $24.50, which may be charged on a variety of credit cards.

See your EAA representative for an Alley Theatre brochure which will explain the program. The brochure contains an order form for subscriptions.

If you are planning to subscribe, fill out the form, enclose a check payable to Alley Theatre or indicate a charge plan on the form and send to Doris Wood, EM (X-2831) by Sept. 8.

Corporate Subscription coupon books will be home-mailed just prior to the opening of the 78-79 season in October.

JSC DANCE CLUB STARTS NEW SESSION

Rae Calvert will teach the Phase I class beginning at 6:45 p.m. and the Phase III class beginning at 8:15 p.m. Bob Calvert will teach the Phase II class at 6:45 p.m. and the Phase IV class beginning at 8:15 p.m. Classes will begin on September 13, for a 10-week period, with each class lasting 1-1/2 hours. For additional Dance Club information, preregistration, and partner pairing, contact Lyyle Jiongo, x-3258.

SOUL GETDOWN

Brothers and sisters, are you ready to shake your booty down? Well, get ready 'cause the Second Annual JSC Soul Getdown is gonna happen on September 23 at the Gilruth Recreation Center. The dance was originally set for September 16 but, because of the TSU/GSU game, has been slipped a week, so come celebrate/mourn your team's victory/loss with us on the 23rd.

Top soul music will be provided by the Down-to-Earth Denomination and the price is $8 per person (includes dinner and drinks). So bring your spankin' partner and let's party hardy!

DEAN GOSS DINNER THEATRE

NASA Night at Dean Goss Dinner Theatre is finally set. The date is Sunday, August 27 and the price is $7 per person (includes dinner and the play). The play is a delightful comedy, "Champagne Complex". Tickets are on sale now at the Exchange Store, but hurry as only 400 can be sold.

ABC THEATRE TICKETS

The Bldg. 11 JSC Exchange Store has ABC Theatre tickets at $2 each for sale to FBA members for the Woodlake Cinema 3, Parkview, Clear Lake, North Shore, Alabama and Briargrove 3 theaters.

CLASSES: Sign-up in person at the Gilruth Recreation Center. Payment is due upon registration and is non-refundable. Call x3594 for further information.

Reminders:

Auto Mechanics - Basic, deadline August 30. Classes September 6, 13, 20, 27, - lab-September 23, $24.

Auto Mechanics - Intermediate, deadline October 4. Classes October 11, 18, 25, November 1. Labs October 21-28, $45.

Group Tennis Lessons - (4 to 8 people), deadline August 21. Classes August 22, 24, 29, 31, September 5, 7, 12, 14. Beginners 7:30-8:30, Intermediate 8:30-9:30, $30.

New Additions:

Oil Painting - 6-2 hour sessions, Thursdays 6-8 p.m., Room 215. Maximum of 15 students, $37.50 per person and materials. 1st session, sign-up deadline September 12, classes September 14, 2., October 5, 12, 19, 26. 2nd sessions, sign-up deadline, October 31, classes, November 2, 9, 16, 30, December 7, 14.

Darkroom - Black and White - Tuesday, September 12, 19, 26, October 3, 10, 17, 24, 30 - eight 2-hour sessions, 7-9 p.m., Room 213, 214, maximum of 8 students, $30 per person, includes materials except negatives. Deadline September 7th. Color - Eight 2-hour sessions, Wednesday, September 13, 20, 27, October 4, 11, 18, 25, November 1, 7-9 p.m., Room 213, 214, maximum of 8 students, $30 per person, and supply own paper and negatives.

HGAIRC Mens Slow Pitch. This tournament is being sponsored by the Houston-Galveston Area Industrial Recreation Council. Teams must be employees or spouses of an HGAIRC member company. NASA Exchange has a membership covering the civil service employees. Any NASA-JSC all civil service team (including spouses) is eligible to participate representing JSC. Some contractor teams are also eligible to participate. The following companies are also HGAIRC members; Lockheed, McDonnel-Douglas, General Electric, Singer, Rockwell and Hamilton Standard.

Date: September 9, 10 (Saturday and Sunday). Sign-up deadline: September 7th. Double Elimination. $45 per team. Rain-out dates: September 23, 24 (Saturday and Sunday).

EAA Mixed Slow Pitch. Our own Employees Activity Association is inviting mixed teams from around the Houston area to compete against interested JSC teams. All JSC teams are eligible to participate.

Date: September 30, October 1 (Saturday and Sunday). Sign-up deadline: Sept. 21. Double Elimination, $45 per team. Rain-out dates: October 7, 8 (Saturday and Sunday).

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 about 20 words and include home phone number. Typed or printed ad copy must be received by AP3/Roundup by Wednesday of the week prior to publication.

CARS & TRUCKS

73 Dodge 4 dr. satellite sedan, Aircon, radio, new tires and battery. Top Condition $1,700 X4511.

76 Prestige Dodge Royal Monaco with 10600 miles. Call 334-1925 after 5:00 p.m.

70 Buick Skylark, p/b p/s New tires, AM/FM $750 or best offer. Gibson 332-3957 after 5:30.

75 Subaru. 17,000 miles. 4 dr. vinyl top, reduced to $1850. Hammack 334-2986.

Stripping out a 66 Chrysler Town & Country, 383 engine runs good, dual air conditioner, etc. 474-2906 after 6. Victor S. Whitehead.

66 Barracuda, Red, PS, PB, Air, Clean and runs good but could use a valve job. $600 or best offer. 474-2906 after 6 Victor S. Whitehead.

73 Honda Civic, AC, roof rack, new brakes, $1600. Also, 57 Plymouth Plaza, runs, best offer. Call Cochran 534-2368.

77 Dodge Monaco, 318 V-8, 4 dr., Air, AM/FM Stereo, new tires, super clean, 24,000 miles. $4500. McBride 534-2066 after 5 pm.

77 Grand Prix, like new, all power, Cruise, tilt s/w, Rally Wheels, AM/FM stereo, 5 yr. rust proofing, Velure bucket seats, and more. $500 under book. Sandy - 944-9320.

71 Buick Electra 225. 4 door, good condition. Very clean. $500. 534-6098.

77 Fiat Spider, Pin stripes, lime yellow, C/B, AM/FM, Excellent condition. R. McKinney 523-6824.

76 Malibu Classic. 4 dr., auto., V-8, air, AM/FM Stereo radio, silver blue color, $3750. A very attractive car. 488-2965 Maas.

67 Chev. Impala. 9-pass. sta. wgn., Auto. Trans. P. Steering, original owner. 944-4581.

72 Impala, 4 dr., AC, AM Radio, clean, $1050 554-2041 after 5 p.m. Rand.

69 Olds 88, Good work car, $550. Call after 5. 474-2081. Arthur Mandell.

70 Station Wagon Ford Country Sedan, good condition, but needs some work. Make an offer. Annexstad 534-4338.

CYCLES

73 Yamaha Enduro 125 CC, only 5000 miles electric start, turn signals, rearview mirrors, two helmets with visors. $285 488-2965 Maas.

75 RD 350 Yamaha, like new $600 488-1493 Jim Akherman.

73 Honda XL250, low mileage, excellent condition. 488-4696 McCollun.

71 BMW R75/5, Windjammer, Airhorns, large tank, low mileage, offers, R. McKinney 523-6824.

BOATS & PLANES

Narco DME 190 Flown 19 hrs since factory certified in July this year. $1400. Pruett 487-3857 after 5.

77 17-foot Ebbtide Captiva, 150 HP Mercury, Tilt/Trim, Speedometer/Tachometer, Stainless Steel Prop. 17-LR Sportsman Trailer. MINT Condition. $5,000. Johnson 488-5010.

16 ft. Glastron Bowrider, excellent ski boat, galvanized trailer. $2195. Edna McAnelly 332-4732 evenings.

MUSICAL INSTRUMENTS

Evette Schaeffer B Flat Clarinet, 5 RV Mouth Piece, All Wood. $250. Bernard 4461.

Drum, Percussion Kit, like new. 1 yr. old. $100. 534-6098.

King 3-B Concert Trombone with F-attachment. Case, Keys, Cup mute, & Cleaning snake. Hackney 2091 482-7019 $350.

Conn student Trombone, beginner, $50.00 Hackney 2091 or 482-7019.

Cello, full size, old, but good for beginner $200. Jim Bates 944-4687.

CAMERAS

Pentax Spotmatic F w/55 mm SMCT, 135 mm SMCT, 1 A filter, and case. Blue book value $280, will sell for $235. McCreary 4688. or 488-7636 after 5 pm.

WANTED

Electric Dryer in working condition. R. Erb 334-3319.

Female roommate to share house in Friendswood with woman and two small children. Private bedroom. $140 month 482-2079.

24 or 28 mm wideangle lens for Exakta VX. White 332-5177.

House or apartment in Clear Lake Area for Oct., Nov., and possibly Dec. Can exchange for apartment in Honolulu during this period. Giuli 334-5360.

Canoe, 18019 ft. Minimum need paddles, preservers, car rack, etc. Alum or fiber glass Dunn 486-0808.

Late Model Pickup Truck in good condition. 488-4696 McCollum.

PROPERTY & RENTALS

Brookforest, 3 Br, 2 B, old English 2240 Sq. Ft., Detached garage with covered walkway, fireplace & built in bookcases, all formals, an excellent buy. Early move in-custom built house in excellent condition. 4 1/2 yrs. old. Sam 488-0125.

Sell/Lease: Oakbrook 3-2-2, fenced, drapes, close to shopping, park, pool & tennis courts. Avail. Sept. 1 McCollum 488-4696.

Rent-Baywind II, new 2-story penthouse, beside pool, club, tennis, carpets, drapes. $400 mo. W/o elec. Chance to buy later. 334-2402.

Rent: Lakeside vacation retreat at Cape Royale on Lake Livingston. New 3-bdrm waterfront home compl furn. Facil inc tennis, pool, golf, boat launch. Rent by wk or mo. 488-3746.

Lease: 3-2-2 Wood Meadow (near Sagemont) Refrig/Drapes $398 mo. (First & last plus deposit) 334-3202.

Vacation Lake Livingston Cape Royale a Beautiful resort community with all amenities. Enjoy charming custom 3-2-1 compl. furn. home nestled among trees by the water Rent wk/mo/yr 488-4487.

Two wooded lots in Canyon Park on Lake Livingston, water, electricity, one mile from Bridgeport KOA, $4500 R. Reynolds 554-7368.

3.3 Acre ranchette in West Magnolia Forest, 50 miles NW Houston, thickly wooded, paved roads, elect. tel. unrestricted $8000, 334-3079.

For Sale: 76 14x80 mobile home, 3bd/3bth, w/160x60 lot, League City Area, convenient to downtown, 554-6601 after 5.

Galveston West End 2-BR By-the-Sea condo, full furn, $180 wk off season, $260 wk in season. Clements 474-2622.

HOUSEHOLD ARTICLES

Rug, Early American oval, braided, 11' x 14', dark red. Good condition. $25. 488-3433 Elaine Chapko.

Window Air Conditioner, Chrysler Airtemp, 13,500 BTU, 220 volts, cools well, homemade grill. $50.00 Speier, 333-2263.

Gas Dryer, Sears, Excellent Condition $65, R. Erb, 334-3319.

Bedroom set: Midnight blue dresser, mirror, bookcase headboard, and two two-drawer nite stands $100 482-7138.

RCA console color TV 25 inch $150 firm 482-7138.

19 Cubic ft. refrig-freezer only 4 yrs. old 334-1925 after 5.

PETS

For Sale: Siamese Kittens, Seal Point, $30. Father: Registered. Ready: Aug. 26th Mayhew 333-3291.

Kittens: Lovable, adorable, and free. 526-2356 David Christianson.

MISCELLANEOUS

13 cent mint postage at 95 percent of face value. $10 minimum. Pushbutton AM Radio for Auto, $10 482-5393 after 5 Jeff Sugano.

Tire w/wheel, 6.90 X 6.00 6 ply best offer 488-4696.

Golf Clubs, best offer 488-4696.

Motorcycle Bumper Racks best offer 488-4696.

Brand new pulsor spray shower massager $12; Brand New warm & creamy (Lady Schick Facial Cleanser) $12; Lady Schick Electric Leg Shaver w/Carrying Case $15; New Red Spotlight with Stand $5; Brand New C.B. Converter $12; 1 Set Electric Fireplace Logs $14; Black Fire Place Set (screen, and irons & tools) $37; Wig carrying case w/styrofoam head $5; Sam 488-0125 or 483-2551.

Trailer, Utility, Metal Top 5 1/2' X 4' $185 Bernhard 4461.

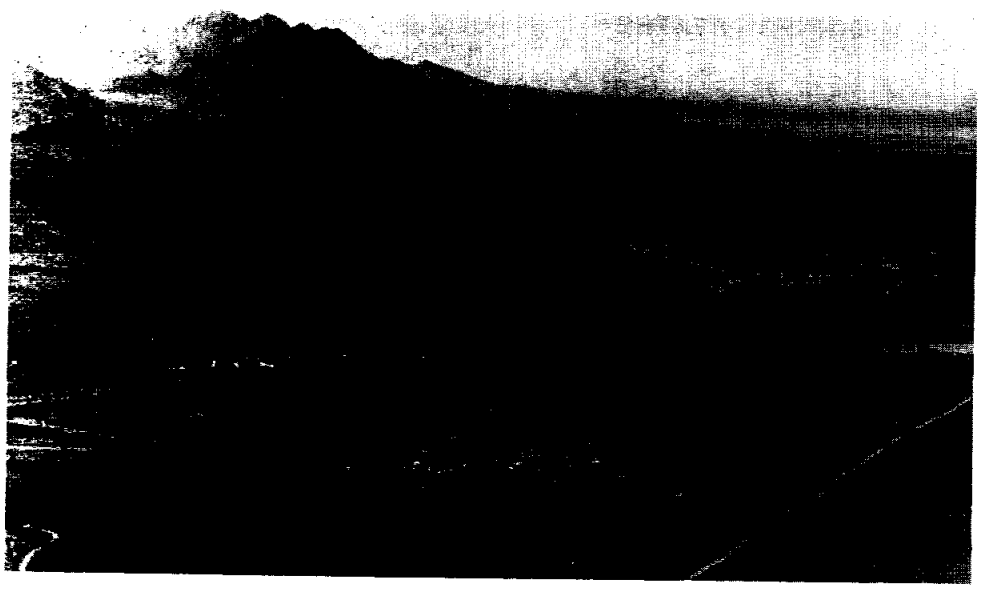
Used Tire, H78-15 Polyglass, $8.00. Plauche X-6128.

Lawnmower and Edger. Both gas. McCollum 488-4696.

13 cent mint postage at 95% of face value. $10 minimum. Pushbutton AM Radio for Auto, $10 482-5393 after 5 Jeff Sugano.

LOST & FOUND

Found: Book titled "The Complete Runner," found on Ave B. Call 4781 for return. Calanni.



Most JSC employees may tend to think of Johnson Space Center as being the group of white buildings sprawled across 1620 acres on the north shore of Clear Lake. But some 700 air miles to the west is a JSC outpost in which the main JSC campus would be lost in its 87 square miles. This outpost is the White Sands Test Facility just east of Las Cruces, NM on the western slopes of the San Andres range.

Driving east on US-70 from Las Cruces, an unprepared traveler will do a double-take as he sees the roadside sign advising "next left" for NASA Johnson Space Center. That "next left" dips for another six miles across desert arroyos until it reaches the WSTF administrative buildings.

WSTF, because of its remote location, offers an ideal location for testing of space propulsion and power systems and investigations into the behavior of propellants and other hazardous chemicals.

"We have no environmental limits for testing Shuttle systems," said WSTF Technical Manager Louis Gomez. "We recently added seven square miles of buffer along the western boundary of the facility as we saw various types of land use creeping our way from Las Cruces."

Valued at $75 million in 1973 dollars, WSTF was designed for operation by 1000 people, although current facility population is 670. Of these, only 74 are NASA employees. Most of the remainder are Lockheed Electronics Company employees on the facility maintenance and test operations contract. Rockwell International and McDonnell Douglas have people at WSTF for Orbiter maneuvering and attitude thruster testing.

WSTF manager Jesse Jones sees the facility as not only a place to test equipment and materials for JSC, other NASA field centers and government agencies, but also as a national resource for such testing.

Being in the boondocks, there is hardly anyone to complain about the noise when a rocket engine lights off in the WSTF propulsion test area. Currently in the stands are a test version of the orbital maneuvering subsystem pod, which was delivered in early July, and forward and aft Orbiter reaction control subsystems. The OMS engines are rated at 6,000 pounds thrust.

Steam ejectors can pull a vacuum of 120,000 feet equivalent altitude in two of the propulsion test chambers to allow engines to be fired in a near-space environment. Liquid oxygen and alcohol are fed to three modified X-15 type rocket engines and the plume quenched with water to provide high-velocity steam to aspirate the altitude chambers.

Not all WSTF work is noisy. In another lab complex, samples of candidate materials and substances for space application are quietly burned, stretched, pounded, heated, immersed and otherwise assaulted to find out whether they can take such punishment.

"We test the materials for their responses and make no comments of whether or not they 'pass' or not," says Materials Test Lab manager Jack Stradling.

A minimum of three tests is run on each sample. Some tests are for flame propagation in pure oxygen at varying pressures, while other test set-ups may be for flash-points and impact ignition.

"Some types of materials testing call for an initial series of 20 tests. If in that 20 there is one failure, 40 more tests are run with one failure out of 60 being acceptable," said Stradling. Some data collected form the WSTF tests eventually goes into the *Materials Data Handbook* published by the JSC Nonmetallic Materials Information Center.

Two rows of thick-walled test cells outside the materials test lab are used in tests of propellants and other hazardous fluids.

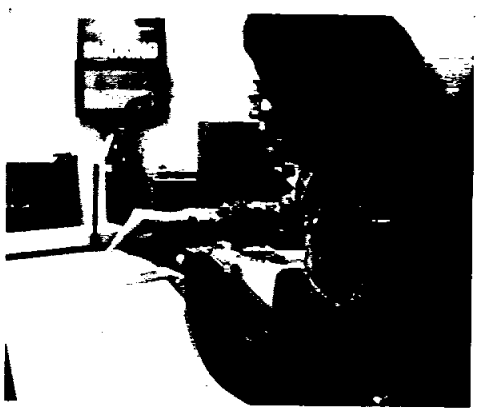
A typical test the facility is called upon to run is the decomposition of hydrazine monopropellant in reaction to groups of other materials used in the Orbiter auxiliary power unit. Small quantities of hydrazine and the test material are placed in baseball-sized containers and the temperature raised in the test cell to simulate the APU start-up and shut-down cycles and the resulting heatsoak through feedlines and tankage.

Another building in the same complex at WSTF houses the chemistry laboratory where trace materials in gases and fluids is analyzed using a mass spectrometer in conjunction with a gas chromatograph. Once a substance is analyzed, constituents are displayed numerically in a computer printout or in a line graph form.

Machines go only so far in the chem lab, for after a substance is determined to be non-toxic, teams of WSTF volunteers make subjective "sniff tests" of samples and a consensus of the odor duly entered in the test report. Prior to sniffing a sample, each volunteer's nose is "calibrated" through sniffing unmarked specimens of known characteristics.

Chem lab chief Leonard Schluter said that while many of the tests run in his lab follow standard practice, many tests he is called upon to do have no standards to follow—particularly in the more exotic materials and fluids.

When the Tracking and Data Relay Satellite (TDRS) network is on station in geosynchronous orbit for the Shuttle space transportation system, a new ground station at WSTF will be the collecting point for data and voice to and from Orbiters and other spacecraft.



TRACE TRACER—Computer operator Betty Hoffman observes a printout of trace constituents in a sample analyzed in WSTF chemical lab.

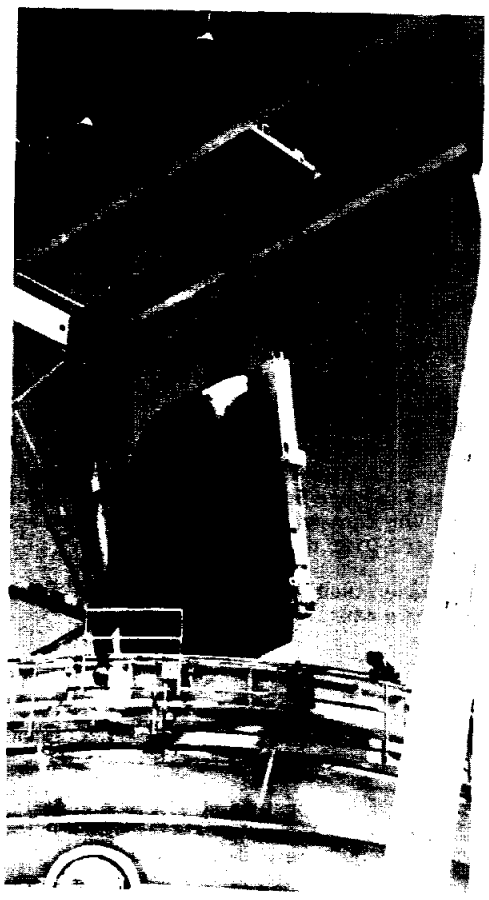
Three 60-foot diameter Ku-Band TDRS antennas and a control center/support building are under construction just to the south of the WSTF administrative area. The $4 million ground station is being built and will be manned by Western Union under a contract to NASA Goddard Space Flight Center.

Shuttle data and voice will be relayed from WSTF to other geosynchronous satellites and bounced back again by an adjacent RCA ground station to the two 30-foot diameter RCA dishes that lie between Bldgs. 32 and 9 at JSC, and thence to Mission Control-Houston. Parked at 41° W Long and 171° E Long, the TDRS's will give almost continuous coverage of Shuttle Orbiter except for a brief loss-of-signal patch over India.

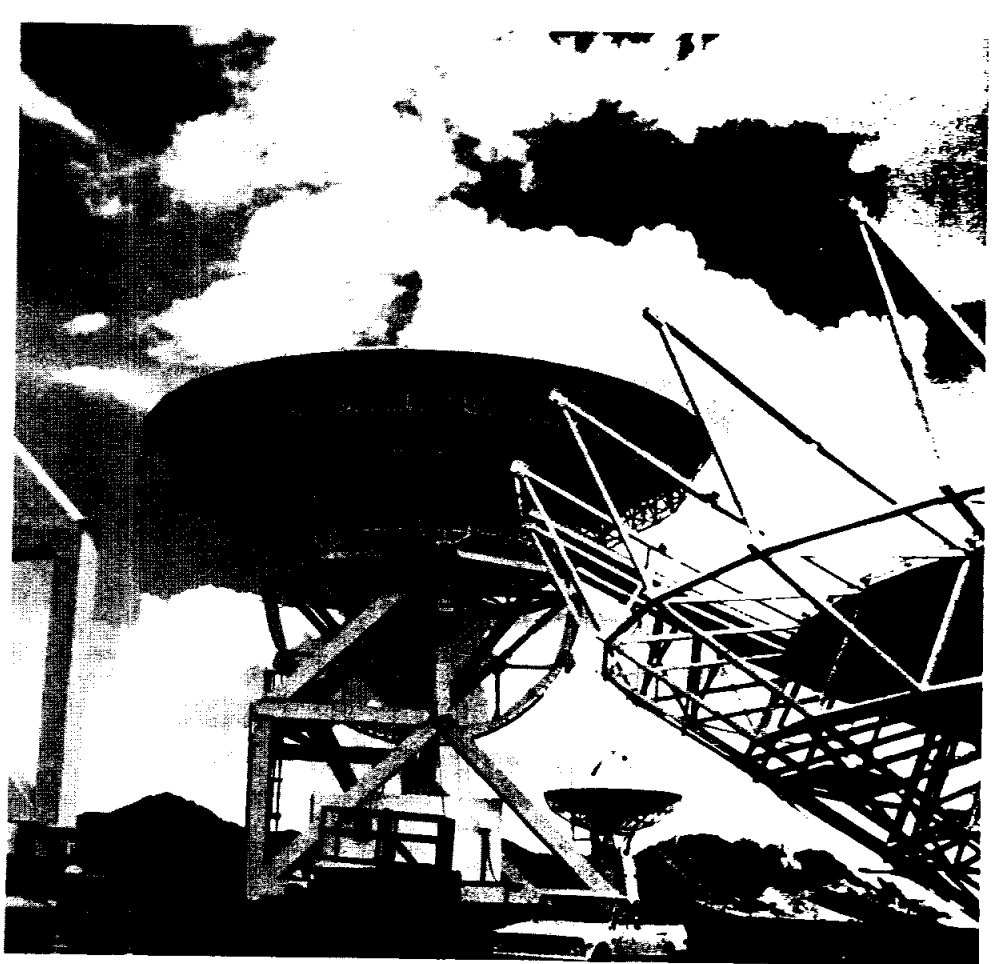
Western Union expects to have about 100 people at the ground station when it becomes operational in 1980 with an annual payroll for the Las Cruces area of about $2 million. As many of the WU operating staff as possible will be hired locally.

BURN, BABY! BURN!—Mike Mannon and Frank Melendrez monitor an upward propagation burn test in 30 percent oxygen of a swatch of fluorosilicone rubber in one of WSTF materials test lab's small chambers.

THE NOSE KNOWS—Now, what does that smell like? Ernie Ceroky tries to make up his mind what to call the odor given off by a chemical sample as Nancy Berry socks the odor to him. Subjective impressions of smell become a part of lab reports.



PIT AND PENDULUM—A test article Orbital Maneuvering Subsystem (OMS) pod is lowered into a White Sands test chamber after delivery in July. Preparations are underway for vacuum test firing of the 6000-pound thrust OMS engine later this year.



SPACE EARS—No singing telegrams will pass through these Western Union ground station antennas for the Shuttle Tracking and Data Relay Satellites at White Sands Test Facility. The 60-foot dish has been mounted on the structure in background, and the dish for the near antenna mount is being assembled at right.

NASA-JSC