

# ROUNDUP

Lyndon B. Johnson  
Space Center

NASA

October 3, 1980 Houston, Texas

Vol. 19, No. 20

## 1-G Trainer Mods at Cape made in 9A & vice versa

The crew systems engineer carries his black box to Building 9A. It is a model of a piece of equipment that will fly on the Shuttle in an operational flight in the mid-80s.

Inside the building the engineer climbs the stairs of the 1-G trainer, enters the cabin, and gets to work. He carefully measures millimeters and computes the exact location for his black box, only to find one already there.

It's back to the drawing boards.

In Building 9A is the 1-G trainer—with a crew cabin that is an exact replica of the cabin in the orbiter *Columbia* being prepared for launch at Kennedy Space Center.

The trainer is used to test-run mission procedures. Astronauts, crew trainers, fire and rescue personnel, and crew procedures engineers use the trainer for everything from emergency egress exercises to VIP tours. They check to see that lockers fit, doors open, and checklists are practicable.

The 1-G trainer has been at JSC since January 1979, and since that time engineers at JSC, Rockwell Downey, and the Cape have generated over 190 changes in its design.

That's what the trainer is for. "If there is a new piece of equipment, we have to find a place for it," says Bob Bond of the Spacecraft Design Division, "and we have to make sure it fits."

For example, an astronaut running a procedures simulation in the orbiter at the Cape may find that a stowage container is blocking his access to the optical scanner. He explains the problem to a Rockwell representative, and their engineers at Downey hit the drawing boards to come up with an improved design.

The modification is then made in the trainer at JSC where it is tested, and if it works the same changes are made on the orbiter at the Cape.

Engineering evaluations are the primary generators of modifications, but the need for changes can be discovered in a variety of ways. A subsystem manager may find a new requirement in the area of the cabin for which he is responsible, a problem could come up during a training or engineering development test, or someone at Downey could just have a better idea.

There are cases where cables have to be redesigned so they can go under and around other objects in the cabin. Sometimes a stowage container does not fit into a stowage compartment, so the container has to be redesigned.



STS program office displays launch fever (Sept. 12)

## JSC engineers create 'supermetal'

**QUESTION:** What metal is lighter, stronger, and stiffer than aluminum and carries a lifetime guarantee in space?

**ANSWER:** Supermetal! Aluminum or magnesium laced with thousands of hair-thin strands of graphite fibers. Technically named, "metal-matrix composites."

Sandwiched between aluminum or magnesium, the feather-light graphite makes the finished materials stronger, about four times more rigid, and up to 35% lighter.

Unlike other metals in space, the composite also provides thermal stability—remaining unaffected by heat or cold since graphite-metal matrix composites

will not expand or contract significantly.

Because they resist solar radiation and do not "outgas," they are almost indestructible and should function in space indefinitely, said Glenn M. Ecord, senior metals engineer in the JSC Structures and Mechanics Division.

The new supermetals are being developed for space operations of the future. They will be used for large, permanent space structures, antennas, geodetic beams, solar arrays, booms and masts, large mirrors and their supports, and deployable space antennas, Ecord said.

Supermetal composites also promise to benefit the construc-

## Brains of the Shuttle are the 'flight critical' 5 onboard computers

Describing a fail-operational/fail-safe system and computers that vote to make majority rule decisions, Richard P. Parten told a crowd of media reps and space program personnel last week that he was glad the second in a series of briefings on the Space Transportation System was to cover the topic, "Onboard Data Processing Technology in the Generation of Piloted Spaceflight," as the onboard com-

puters "are literally the brain of the Space Shuttle vehicle," he said.

"We recognized early on in the Shuttle program that in order to make the Space Shuttle economical, it would be necessary to dramatically reduce the amount of ground control support required," Parten, who is Chief, Spacecraft Software Division of the Data Systems Analysis Directorate at JSC, said.

In the information-packed hour that followed, he described the hardware, the complex mass memory units, the extensive use of redundancy in the system, and the importance of synchronization.

All the Shuttle software and a large part of the operating system are "implemented with a high order language that we call HAL (High Order Assembly Language)," Parten said. (It is only by coincidence that "Hal" is the name of the computer that controlled Stanley Kubrick's space ship in 2001.)

A kind of continuing computer summit meeting takes place among the four GPCs throughout the flight. Each is loaded with identical software. If they are functioning properly, the same answers will be computed by the four flight computers.

"In the event that one of the computers calculates a different output from the other three, we have a capability down at the actuator level to overcome that particular 'vote,'" Parten said.

Onboard the orbiter are five General Purpose Computers. Four perform processing for functions which are flight critical such as navigation, guidance, and flight control. The fifth provides backup—should all four flight GPCs fail, the fifth could return the vehicle safely to Earth.

"For instance, if one vote comes in to drive to a different pressure level, this is overpowered by the three remaining votes (the other three computers)," he added. "As a consequence, the 'bad' command gets voted out and overridden.

"It is a majority voting concept," Parten said. "The computers that agree are considered to be the good computers."

Synchronization is paramount in a redundancy system such as the Space Shuttle's. Differences in computation speeds can be measured in microseconds or milliseconds, and over a period of time the computers could get "out of sync."

For this reason, the onboard computers go through a synchronizing process approximately 350 times per second.

A "fly-by-wire" system has been used for a number of years in military aircraft though it is a "first" in spaceflight with the Space Transportation System.

Magnified 160 times, this end view of a metal matrix composite, actually about the thickness of a credit card, shows thousands of dark graphite strands embedded in mag-

nesium to form a metal stiff and light enough for the requirements of large space structures to be built in the future.

(See story above)

## JSC employees honored by President

Three JSC employees were honored as recipients of two Presidential Ranks—Distinguished Executive, for extraordinary accomplishment, and Meritorious Executive, for sustained accomplishment—at a ceremony September 10 at NASA Headquarters.

Center Director Dr. Christopher

C. Kraft, Jr., was named a NASA Distinguished Executive, an award which carries a lump sum payment of \$19,517.

Dr. Maxime A. Faget, director of Engineering and Development, and Eugene F. Kranz, deputy director of Flight Operations, were selected to the Rank of Meritorious Executive, whose award carries a

lump sum payment of \$10,000.

Dr. Kraft's award cites his leadership and contributions to the nation's manned space flight programs since the first suborbital Mercury flight of 1961.

"One of your most important singular achievements was your foresight and leadership in per-

See 'Employees' p. 4

See '1-G Trainer' p. 4

See 'Onboard Computers' p. 4



October is Indian Awareness month. Watch employee announcements for JSC's programs.

## Cookin' in the cafeteria

Week of October 6 - 10

**Monday:** Chicken & Rice Soup; Texas Hots & Beans; BBQ Ham Steak; Steak Parmesan; Beef & Macaroni (Special); Green Beans; Carrots; Au Gratin Potatoes. Standard Daily Items: Roast Beef; Baked Ham; Fried Fish; Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

**Tuesday:** Tomato Soup; Potato Baked Chicken; BBQ Spare Ribs; Mexican Dinner (Special); Squash; Ranch Beans; Spanish Rice; Broccoli.

**Wednesday:** Seafood Gumbo; Baked Turbot; Liver & Onions; BBQ Ham Steak; Baked Meatloaf w/Creole sauce (Special); Beets; Brussels Sprouts; Green Beans; Whipped Potatoes.

**Thursday:** Beef & Barley Soup; Chicken & Dumplings; Corned Beef w/Cabbage; Smothered Steak w/Cornbread Dressing (Special); Spinach; Cabbage; Cauliflower Au Gratin; Parsley Potatoes.

**Friday:** Seafood Gumbo; Pork Chop

w/Yam Rosette; Creole Baked Cod; Tuna & Salmon Croquette (Special); Brussels Sprouts; Green Beans; Buttered Corn; Whipped Potatoes.

Week of October 13 - 17

**Monday:** HOLIDAY

**Tuesday:** Beef & Barley Soup; Turkey & Dressing; Country Style Steak; Beef Ravioli; Stuffed Cabbage (Special); Corn Coblette; Okra Tomatoes; French Beans.

**Wednesday:** Seafood Gumbo; Catfish w/Hush Puppies; Roast Pork w/Dressing; Chinese Pepper Steak (Special); Broccoli; Macaroni & Cheese; Stewed Tomatoes.

**Thursday:** Cream of Tomato Soup; Beef Tacos; BBQ Ham Slice; Hungarian Goulash; Chicken Fried Steak (Special); Spinach; Pinto Beans; Beets.

**Friday:** Seafood Gumbo; Liver w/Onions; Deviled Crabs; Roast Beef w/Dressing; Seafood Platter; Tuna & Noodle Casserole (Special); Whipped Potatoes; Peas; Cauliflower.

## As secretary she organizes & supervises

Often a secretary, in the course of carrying out her work, acts more as an administrative assistant than a clerical worker. Marilyn J. Abbe, who is secretary to the Chief, Reliability Division, acts as a supervisor and an organizer, and her performance has earned her the Outstanding Secretary award for August.

First, as should any good secretary, Abbe has outstanding clerical skills, she is acutely aware of office protocol, and she has a sense of responsibility and good judgment. But she carries her work one step farther.

"What makes Mrs. Abbe outstanding," says Supervisor Joseph H. Levine, "are her personal traits and accomplishments. For years the Reliability Division has used part-time VOE secretarial help. Mrs. Abbe has taken as an active challenge the opportunity of molding these high school girls into efficient office help and she has been remarkably successful."

She also is responsible for the accuracy of the work of five support contractor secretaries in the Reliability Division.

The Reliability Division, by nature of its work, requires the preparation of a large amount of correspondence. Abbe developed a system for tracking the Division correspondence on a weekly basis, a challenging task as some of the division correspondence re-



Marilyn J. Abbe

quires as many as 10 concurrences.

She also assisted in developing a system of assigning, tracking, and closeout of the average of 10 to 12 actions a week that come from other offices within JSC.

In all, her superior performance, ability to devise work systems, leadership ability, and ability to train and gain respect of the VOE's are the reasons Marilyn J. Abbe has received the Outstanding Secretary award for August 1980.

## Obituary

**Edward W. Van Ripper, 53, died Sunday, September 14, 1980, in San Antonio. Van Ripper retired from the JSC Directorate Support Branch of the Flight Control Division on December 31, 1979. He is missed by his numerous friends and co-workers at JSC.**

## 'NASA must keep its cadre of talent'

*Michener, an optimist, speaks on the future*

"The next 30 years are going to be an explosion of knowledge," James Michener said. "We're going to have to have our seatbelts fastened."

The author of 26 epic novels spoke at a press conference in Building 2 last week during his five-day stopover at JSC where he held interviews with NASA officials. Michener sits on a 12-member NASA Advisory Committee which acts as consultants to the Administrator and at times testifies for NASA before Congress.

"I saved Houston for last," he said of his tour of NASA centers. And with that tour he has fed his tendency to "brood about the future," he said. "About the year 2010 is my horizon."

"I believe the U.S. has no option but to maintain its capacity to be technologically viable," he said. "NASA has to keep its cadre of talent, and it's got to be funded adequately."

Saying he is more an optimist



James Michener at JSC briefing last week

than a pessimist, Michener added that "we are currently in a downward trend, but we have the capacity to recuperate."

"Societies rise and fall in relationship to their interest in the great problems of their day," he

said. "A society that withdraws ebbs. Society must move forward in medicine, government, education, and all aspects."

"There is an ebb and flow, of course, but we have to keep the basic capacity alive."

## Credit union in loan business again

The credit union is back in the loan business again. The JSC Federal Credit Union has reopened its loan program and is accepting applications for all types of loans except real estate.

The credit crunch of recent months had forced the credit union to temporarily suspend

much of its loan business. However, with the passage of important legislation allowing federal credit unions to increase interest rates on loans, they are now able to offer a complete loan program.

Available are shared secured loans, signature loans, auto loans,

recreational vehicle loans, motorcycle loans, boat loans, share certificates secured loans, and home improvement loans.

For more information come by the credit union and speak with a loan officer, or call the office at 488-7070.

Roundup deadline is the first Wednesday after publication.



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

**A HISTORICAL REUNION took place when the Administrators who have directed the U. S. space program since the establishment of NASA in October 1958 met at a NASA Alumni meeting held in Washington last summer. Shown here are, left to right: James E. Webb (1961-1968), Dr. T. Keith Glennan (1958-1961), Dr. Robert A. Frosch (1977 to present), Dr. Thomas O. Paine (1969-1970), Dr. George M. Low (acting 1970-1971), and Dr. Alan M. Lovelace (acting 1977). Not pictured is Dr. James C. Fletcher, who was Administrator from 1971-1977.**



# Bulletin Board

## Bike Club to Take a 30-Mile Ride

Election of officers of the JSC Bike Club will take place at the October 6 meeting at 5 p.m. in Building 350. The election marks the end of the club's first year in which contacts were made with local and federal officials about encouraging bicycle transportation, and 10 rides totaling 275 miles were sponsored. The club has made suggestions for the planning of bike traffic on the new road north of JSC to the Harris County Engineer.

Thirty-mile ride around Clear Lake begins at 9 a.m. at Space Center and Bay Area Blvds. on Sunday, October 5. For information, call Brian Morris at X5293.

## No More Excuses for Not Writing to Aunt Gladys

U.S. postage stamps are now available at the Exchange Store (Building 11) and also at Buildings 1, 3, 4, 12, 30, and 45, for the convenience of space center

employees and visitors. Fifteen cent, first class postage stamps are available in S3 books at Building 11 and via vending machines (eight stamps for \$1.50) in other locations. This service is made available by the NASA Exchange/JSC in response to recent employee requests.

## Roll Up Your Cuffs and Put On Your Kicker Boots

All you urban cowboys mark your calendars for October 11. It's time for the semi-annual country/western dance at Gilruth Rec Center. Tickets are \$9 per person and include beverages beginning at 7 p.m., bar-b-que dinner from 8 to 9, and dancing to The Night Time Friends from 9 p.m. to 1 a.m. Tickets can be purchased at the Building 11 Exchange Store through October 7.

## For Those Who Want More Depth in Life

Let the "Lunarfins" be your guide to the deep. This sport diving club is over 100 members strong and is one of the most ac-

tive scuba clubs in all the Houston area. Rental scuba equipment is available to members along with free airfills for 'members' tanks. Basic and refresher scuba courses are given regularly. Visit our monthly meeting and enjoy the entertaining and informative programs. Next meeting is at the Clear Lake Park Building, NASA Rd. One, Wednesday, October 15. For more information, call 480-1340.

## On Sale at the JSC Exchange Store

(Store hours 10 a.m. to 2 p.m.)  
ABC theatre tickets: \$2  
General Cinema tickets: \$2.40  
Astroworld tickets: \$8  
Six Flags Over Texas discount tickets

Sea-Arama Marineworld Fun-Time Cards: Free

Postage stamps can now be purchased from the JSC Exchange Store in Building 11. We offer 20 15-cent stamp books for \$3.

## Roundup's face is red

It all looked so legitimate. A man carried an announcement into the Roundup office, and we ran it thinking it would be a service to JSC employees.

It turned out to be fraudulent information that has been appearing in newspapers around the country for 20 years.

The NASA Office of Inspector General at JSC made an inquiry into the article titled "Attention, WWII Veterans," which ran in the September 19, 1980, edition of Roundup.

In 1952 Congress did pass a law authorizing payment of a dividend to WWII veterans enrolled in the National Service Life Insurance Plan. However, the statute authorized payment for a period of six years which expired in 1958.

Any inquiry to the address listed in the Roundup article will result in a response from the Veterans Administration saying they are sorry, but "the information you received regarding such a dividend is a hoax. We are aware that this rumor has been spreading around the country. Although we have attempted to dispel the rumor, the hoax continues to crop up in new areas of the country."

In our continuing effort to deliver all the late news to JSC employees, Roundup apologizes for any inconvenience caused to the Veterans Administration and WWII veterans who may have responded to the announcement. In the future Bulletin Board announcements will be more carefully scrutinized and validated.

## Rec Center offering more programs

**Men's & Women's Basketball** - Registration is now being conducted at the Gilruth Rec Center for Men's and Women's Basketball Leagues. Men's leagues will consist of A, B, and C Leagues. Cost is \$100 for EAA teams and \$150 for non-EAA teams. Pre-season tournies will be held in both leagues. Registration is first come first served.

**Saturday at the Movies** - The next Saturday morning movie will be the Disney classic **The Love Bug**. Showtime is October 18 - 10 a.m.-NOON. Cost is \$1 per

person which includes popcorn and Coke. Tickets are on sale at Bldg. 11 Exchange Store.

**Intermediate Auto Mechanics** - a course designed for the backyard mechanic. Learn to perform your own auto repair. Class consists of four lectures and two Saturday labs. Class begins October 23. Cost is \$33.50 per person.

**Dancercise** - a chance to get into shape for the upcoming holidays. Class is part dance - part exercise. Cost is \$20 for this 6-week

course which meets Tuesdays and Thursdays beginning October 7 - 5:15 p.m.-6:15 p.m.

**Hatha Yoga** - a course designed to teach you the art of stress reduction; release from tension and fatigue; toning muscles and weight reduction. Class begins Tuesday, October 20 - 5:15 p.m.-6:45 p.m. for 6 weeks. A free introduction to Hatha Yoga will be held Tuesday, October 21.

For any information concerning upcoming sports events or Leisure Time Classes, please call Carl McCollum or Ken Keeler at X3594.

## United Way Campaign Off and Flying

The six-county United Way and Combined Federal Campaign Kickoff was held September 5 in the Greenway Plaza, complete with two marching bands and a NASA astronaut launching balloons to illustrate this year's theme, "Off and Flying."

Astronaut Sally Ride represented Johnson Space Center, emphasizing the importance of federal employees in supporting community, national, and international agencies involved in "People Helping People."



## People Helping People The United Way

The Center's campaign, underway since the 10th of September, is approaching the midpoint of the drive. If you have not yet made a pledge or contribution, please contribute as generously as you can, so that your community will be able to provide needed help to your neighbors, friends, or perhaps even a loved one.

# Roundup Swap Shop

Ads must be under 20 words total per person, double spaced, and typed or printed. Deadline for submitting or cancelling ads is 5 p.m. the first Wednesday after publication. Send ads to AP3 Roundup, or deliver them to the Newsroom, Building 2 annex. No phone-in ads will be taken. Swap Shop is open to JSC federal and on-site contractor employees for non-commercial personal ads.

## Stereos & Cameras

Med. cabinet stereo w/am/fm radio \$125. Call after 4:30. 333-3425.  
Teac A 3605 cassette deck with Dolby Noise Reduction and fully adjustable bias/equalization. Excellent condition, \$225. Jeff x6385, 480-2001 after 5.

## Household Articles

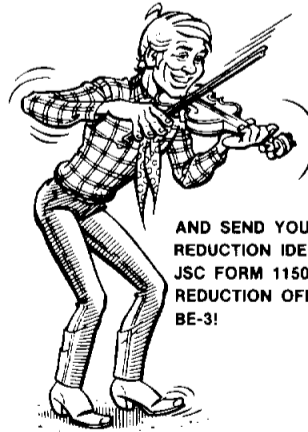
Dinette-new woodgrain formica plus 4 chairs. Andy 488-4366.  
Baby Crib, Hi-Chair, walker and car seat. \$15 each. 487-8633.  
FOR SALE: 1066 RCA 25 inch color TV, does not work. Make offer/Doherty 488-0182.  
Mont. Wards Signature gas dryer, 20lb. cap., harvest gold, 2 yrs old, exec. cond. \$150. 3201 or 479-5231. B. Garrett.  
For sale: Antique wall telephone, complete with mechanism, mouth, ear piece and bells. Can be converted to a workable wall phone. Exc cond. \$125. x4381, 488-1256.  
For sale: 4 Redwood pl boxes, 47" long, 9" wide, 7" deep. \$5.00 for the 4. x4381, 488-1256.  
2-1/2 ton central a/c. 2 blowers, condenser and evaporator heat exchangers, and thermostat good. No compressor. \$65. Martin x3343 or 554-7157.

## Miscellaneous

Professional size air hockey table (36 x 75), four years old, Cost \$350, will sell for \$75. McPhillips, 337-1647.  
For sale: Sliding Glass shower door and tracks 69-1/2" x 30-3/4" \$15. 333-2787 or x5630.  
Golf shoes, size 10-1/2 no leaks, \$8. 333-2787 or x5630.  
Audio 10VOX TP-1200, am-fm 8-track, 10 watts, 4-way fader and JSL-7 band, 60 watt parametric equalizer/booster. \$150 for both. Rick 333-3056.  
1974/1976 Chevrolet car and truck manuals. \$12. Jack Dial x6434.  
Set of new H7815 tire chains, \$10. Jack Dial x6434.

Target-Rifle 308 cal. savage bolt action-floating hart stainless barrel. \$350. 487-8633.  
Infant and toddler girl clothes and shoes. Famous brand-names. Newborn to size 4. All in excellent condition. 488-6521.

## WHY DON'T YOU STOP FIDDLING AROUND?



AND SEND YOUR COST REDUCTION IDEA ON A JSC FORM 1150 TO COST REDUCTION OFFICE AT BE-3!

Cartoon by Russ Byther

## Wanted

12-ga. shotgun in good, working condition. Call Ray x5250.  
Four tickets to any Oilers home game. F. Bittinger at 481-5541. after 5:30 pm.  
For sale: Olympic Portable typewriter; Porter microscope Lab No. 2105, 70 to 425 power, and Chemistry Set Lab. No. 6105; and GE Coppertone Buldt-In Oven. 471-0262 after 6 pm.  
For sale: 7' pool table, cue stick, balls, rack. \$30. Speier 333-2263.  
For sale: AM-FM car stereo, perfect condition. \$50. 339-1793 after 4:30 pm.  
For sale: Tires: Four new Dunlop GT Qualified Bias Belted Tires. Size B70-13. Roberto x5841.

## Pets

Young female Cockatiel with cage, \$50. Barbara 337-3683 after 6.

AKC Registered Toy Black Poodle, shots, 4 yrs. old, male \$65. 944-7042.  
AKC Cocker Spaniel, female, 8 mos old, shots, very playful. Moving, must sell. \$150. Terry x3035 or 554-6339.

## Cycles

Yamaha MX100 dirt bike. \$200. 334-2294.  
'72 CB 450 Honda. Runs well. \$550.  
B. Levitan x5156, 328-5017 (nights).  
79 Suzuki, MS100 dirt bike, almost brand new, \$500. x5565 or 334-2894. R. Morton.  
FUGI 'Special Road Racer', 21", V.G.C., \$125. Rawlings MJ47 Catchers Mitt \$35. or trade Prog. Calc. Contact Bill Wainwright, x4907.  
1974 Honda CB360G. Very good condition. Runs well, new tires, recent tune-up. \$675. Handley x6196 or 482-7041.  
For sale: Honda ATC110 C 3-Wheel, off-road cycle. Like new. Great Xmas gift. \$800. 946-7011.  
Suzuki RM-250, 1976 1/2. excellent condition. Strong! New back tire. Must sell. \$545. 944-6513.

## Property & Rentals

Seashore Vacation: Bolivar beach house, \$30 per day. Very private. Horton x5266.  
Lots for sale: 100' x 150' next to elementary school. Block from Bay. \$7000. Owner will finance. Horton x5266.  
Lake Livingston lot, Stephens Hills, assessed value \$2839, sell for \$1830. 488-5445.  
Lease: Dickinson (Bayou Crest) 2 story Old English, w/pool & many extras. \$550. + dep. x2025 Esther.  
Sale/lease: 4-2-2 Heritage Park. New air cond., drapes, pleasant trees, \$460/mo or assume 9.0% loan, 333-3544.  
Sale: League City: Brick 3-1-1 1/2-2a, fenced-in back yard. \$10,000, equity and assume 10% non-escalating VA loan. After 4:30 332-6940.  
Lease: Wedgewood-Friendswood, 3-2 1/2-2 house, fireplace, fenced

yard. Good location. \$475. a month + deposit. 486-8578.

Sale: Pecan Forest, League City, 4-2-2a, like new, large kitchen, walk-in closets. Immediate occupancy. Low 60's, 554-2934.

Rent/sale: League City: 3-1 3/4-2, fenced, \$380/mo; 3-1 3/4-2, fireplace, \$475/mo, or purchase, \$62,000, assume 8 1/2% VA loan; inquire 554-6200, 212 Pecan Dr.

Sale: Seabrook Beach House, 3-2-2, built for year round living. Beautiful water view. Many extras. 8 1/2% assumption. Will not escalate. 474-4892 after 5.

Sale: Countryside, 9 1/2% non-escalating 3-2-2, fireplace, fenced back yard. Local pool, tennis. 1525 sq. ft. \$14,500. Terry x3035, 554-6339.

## Musical Instruments

Aria Drum Set with bass drum snare, mounted Tom-Tom, mounted symbol, hi-hat and sticks. Like new. 481-5541 after 5:30.

## Boats & Planes

"L 100-14" Sailboats: New/Used-Family sailing/racing. Popular boat/big fleet. Excellent investment. 334-2392 or 482-7305.

Chris-Craft-26 ft., sleeps 4, head & Galley, 185 hp, CID V8 engine. Good condition, bargain, Seabrook Shipyard, Shed K-29. 643-7460.

Boat, Trailer, 75 hp Evinrude. Asking \$995. 482-3678 after 5 pm.

Grumman Tiger for rent. Clove field. 160 mph cruise. \$35/hr wet. 2 hr/day minimum XC. 486-8045 or 482-1228.

16'7" TANA bassboat, 50 hp, Evinrude, Motor Guide trolling motor, two 6 gal. gas tanks, low hours. \$1500. 477-2220.

Sailboat: 25 ft. Good sails, sleeps 5. Head and Galley. x6444 or 486-1766.

For sale: 1963 Cessna 150. 730 hours SMOH. King KX 160 NAVCOMM. Good condition. \$5000. 482-4280.

## Cars & Trucks

Rent: Utility trailer 6x8. 1,000 lb

max, hitch required \$5 a day. 488-5445.

77 Dodge Sportsman Royal 8 pass. Van. a/c, pb/ps, cruise control, privacy glass, am/fm/tape. \$3895. 488-7140 after 4 pm.

For sale: Ford LTD 1975 Brougham. Perfect condition. 4 door. 538-1222.

1967 Mustang Convertible, 289 Auto. \$2500. 337-3387.

Corvette Convertible, 1974. \$7950. x4010 or 486-1766.

79 Cutlass Brougham. Baby blue/Landau top. Small V-8, excellent condition. Night phone: 484-1246.

1969 Mustang Convertible, ps. 18+ miles. Very restorable. 302 V-8. Many extras, all major systems restored. To a good home only. Mike x4326 or 482-9103 nites.

1976 Chevy Van. Air, pwr, 350 V-8, std. Long wheelbase. Versatile Interior. Excellent condition. 43,000 miles. \$2800. Steve at x3057 or 554-2435 after 5 pm.

For sale: 78 Datsun King Cab, runs good, clean, some body damage, am/fm cassette, extras, no AC. \$3500 firm. Call Dave x4321 after 5:30 call 482-9398.

77 Mustang II: Vinyl top, side moldings, 4-cylinder 4-on-the-floor, am/fm, 23+ mpg, \$2650 negotiable. 641-4854/449-1172.

70 Dodge Polara, 383 auto, hd hitch. Engine, transmission, interior, excellent. \$475. B. Levitan x5156, 328-5017 (nights).

1949 Chevrolet Delux. Partially restored. 331-3465 evenings. x5169 ask for C.W.

1975 Elite, ps/pb, AC FM 8-track 351 CID. Very attractive, \$1400. 641-1832.

## Carpools

Need one rider from the Southwest area, 7:30 to 4:00, Bill Joe x6421 or 6422.

Wanted: Nonsmoking carpool member, Join existing 3-person carpool from Alvin to reserved parking at Bldg 7, 8-4:30. Ferguson x3771.

# Firefighters

*There could be a hero working right down the hall*

It's a hot summer night in Friendswood. Two figures tromp through the muddy field to a pre-designated spot. They set off a flare.

A firefighter posted in the street gets on his hand-held transceiver. "Number 81, we have a house fire."

In the distance the lights of a firetruck come around a corner. The firefighter in the street again speaks into his transceiver. "Number 83, it looks like we're going to need your help."

From the opposite direction another firetruck approaches.

"Water!" calls out the first crew when they reach the scene.

"Water!" calls out the second crew.

Within seconds a blast gushes from each hose, and the firefighters have to brace their feet to counter the pressure. After a few minutes they switch positions, each taking a turn at the nozzle, trying the hose at different levels of spray, until the exercise is over.

They go back to the trucks, change positions, and run the exercise again.

It is Tuesday night—training night for volunteer firefighters in the Bay Area. Many of them are NASA employees.

They're the people on site with beepers on their belts who have been known to leave half-eaten lunches on cafeteria tables or to cut off a phone call and disappear from their desks when a fire breaks out in the area.

There is provision for U.S. government employees to take

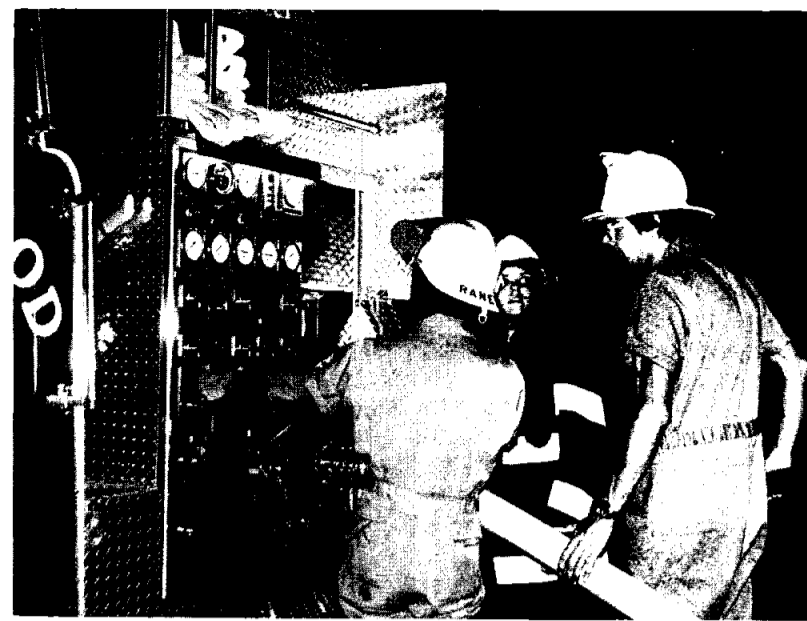
administrative leave in emergencies when the employees are volunteers with fire departments, emergency medical corps, the Civil Air Patrol, or the National Guard.

"I'll only respond from work if it is a major fire," said Dusty Samouce, who with Dave Herbek, Pete Cunningham, and Tom Linbeck is a volunteer with the Friendswood Fire Department. Herbek was recently named First Assistant Fire Chief with the department, and he was in charge of the training run, called a pump relay, described above.

Fire Departments in Friendswood, Clear Lake City, Seabrook, Brook Forest, Webster, and Forest Bend are staffed by volunteers many of whom are NASA, contractor, and Air Force space division personnel. They are on call 24 hours a day to fight fires in their own cities or to provide mutual aid for each other in major fires.

"I remember two Christmases ago when a grain elevator exploded in Galveston," Samouce said. "We just happened to be having our Christmas party at the fire station so we heard about it in advance and when the call came for mutual aid we were ready, manned, and rolling down the freeway."

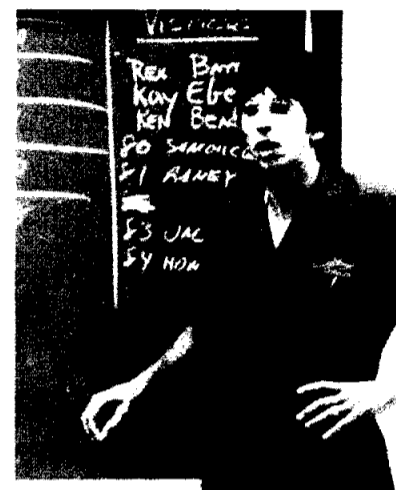
A local volunteer fire department can expect around 150 calls a year. Some are minor, some are false alarms, and some are stand-bys such as when a gas well blows out at a petrochemical plant. Grass fire season is January,



Weekly sessions mean thorough truck check-outs



A blast gushes from each hose



Herkbek prebriefing

February, and late November, and firefighters can expect a large number of calls during those months.

Samouce and a reporter are driving through the streets of Friendswood after the training session is over, admiring the spacious suburban homes. "A lot of these people have just moved here from Houston, or the North," Samouce says. "They take the fire department for granted. They don't

realize it's made up of volunteers.

"And we really need more volunteers," he adds, especially persons who are available during the day.

"It's gratifying work, and a fun, social organization. Fighting a fire is very stimulating and exciting with a lot of hard work and camaraderie."

A Tuesday night training session could be pump relays, or pump races where different teams

see who can turn the hoses on each other first, or a monthly business meeting. They start the night checking out the trucks and end up with review over refreshments.

The firefighters have a lighthearted attitude—they can switch to serious during training or an actual fire. They give up a night's sleep or a Saturday afternoon ball game, but the satisfaction of saving lives and property is more than worth it.

## At least we're healthier

Amid strikes, storms, and St. Louis encephalitis, there's some good news to report:

- The national infant mortality rate is at an all-time low: 13 per 1000 lives.

- In the past decade, death from heart disease has declined by 23%.

- Death from stroke has declined 26% in the past decade.

- Life expectancy in this country increased by three years (to 73.2 years) in the past ten years.

So cheer up. Take a deep breath of that Gulf Coast air.

A Norther should be blowing in soon, and everything will be cool.

## Onboard Computers

From Page 1

"The crew flight controls are electrically connected by wire—by a twisted pair of wires—through the system of sensors, computers, and actuators to the control surfaces such as the elevons, the rudders, and speed brakes," Parten said.

"Because of this, reliability in the computer system becomes an overriding criterion."

The crew interfaces with the data processing on a multi-function cathode ray tube display and keyboard system—"a first"—and there are two mass memory units on the vehicle—"also a first"—which each hold in the area of 134 million bits of information.

There are few functions of a Space Shuttle mission for which software does not perform an essential service.

"The general requirement is to remain fully operational after a single failure—fail operational—and to remain safe even after two failures—fail safe," Parten said.

"We have error recovery techniques, and finally we have the backup system which is available should all four redundant computers fail.

"The backup system is completely independent, programmed by a different group of people."

The groundrules for this complex, challenging, and critical system are identical software and identical input, Parten said.

Third in the series of briefings will take place at Marshall Space Flight Center October 14 on the topic "Propulsion Systems."

At JSC Aaron Cohen will brief reporters on "The Orbiter" October 24, and Deke Slayton will speak on the first four orbital test flights November 5, under the current schedule.

The briefing series was set up to provide news media with background information on various aspects of the Space Transportation System in preparation for its first orbital flight scheduled for March 1981.

## Employees honored by President

From page 1

ceiving the necessity for establishing alternate courses of action and detailed procedures in the event of system failures and other contingencies during space flight," the citation reads.

"You have been responsible for developing entirely new concepts in science and engineering, bringing to the forefront the abilities of others, and meeting the demands for new and improved aerospace technology."

Dr. Faget's award cites his international reputation for original design concepts and basic ideas that have been incorporated into every manned spacecraft the U.S. has flown since Mercury. The award points out Dr. Faget's "engineering genius" which has been evident from his early research in supersonic flight to his current leadership in design and development of the Space Shuttle.

"In addition to being a foremost

technical expert, you have been an able and progressive manager of your personnel and fiscal resources for the 18 years you have managed the largest directorate at the Johnson Space Center," Dr. Faget's award reads.

Eugene Kranz's award says he is the "leading expert on the flight control of manned spacecraft," and points out his capacity to carry the responsibilities and meet the demands unique to a flight director's position.

"A recognized leader, you have been the key individual who has established much of the personnel philosophy within the Flight Operations Directorate which is known for its excellent morale and is unparalleled in its accomplishments," Kranz's award reads.

A total of 25 NASA employees received the two awards, among them a number of former JSC employees. Dr. Anthony J. Calio

was named a NASA Distinguished Executive. Dr. Calio, who was formerly Director of Science and Applications at JSC, is now Associate Administrator for Space and Terrestrial Applications at Headquarters.

Former JSC employees among the NASA Meritorious Executives are Gerald D. Griffin, former flight director, Robert E. Smylie, former Chief of Crew Systems, and Dr. Walter C. Williams who was once Deputy Director of JSC and mission director during the Mercury program. All three are now working at Headquarters.

These Ranks were awarded by the President to career federal employees in the Senior Executive Service whose performance has been exceptional for a period of several years.

The Ranks were authorized in the Civil Service Reform Act of 1978.

## 1-G Trainer

From Page 1

During one exercise at JSC, engineers found that equipment retention devices needed new clips to keep the equipment from floating around the cabin in the reduced gravity of orbit. During another exercise at the Cape, the crew discovered problems closing the airlock hatches. A new hatch closing guide was designed at Downey and tested in the trainer at JSC, then installed on *Columbia*.

"The kinds of problems we find

are not the kind that would keep a mission from flying," Bond said, "but they would affect the timeline on orbit. It could just be a problem of an open space where an astronaut could lose a pen in the middle of a notation, or it could be a case where two different engineers decide to put a piece of equipment in the same location."

The 1-G trainer at JSC is in use approximately 80% of the workday, with engineers running through procedures, going through checklists step by step. When they find a problem, they then

decide if it is in the procedures, the hardware, or the location in the cabin.

New tools or modification kits are built either in the Nelson and Johnson mockup shop in Building 259 or the Tech Services shops in Buildings 9 and 10.

During a Shuttle mission, the crewmembers have the hundreds of engineers and technicians at the Cape, Downey, and JSC to thank when they don't bump their heads on the remote manipulator controls and when their spare socks fit into their lockers.