

ROUNDUP

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Slayton to be OFT manager

Astronaut Donald K. Slayton has been appointed manager of the Orbital Flight Test (OFT) program for Space Shuttle at JSC.

He will be responsible for all mission-unique activities associated with the six OFT flights of the Space Shuttle. He reports directly to Robert F. Thompson, Space Shuttle Program Manager at JSC.

In his new position Slayton will represent the Program Manager across the total program to ensure timely and appropriate resolution of all OFT mission-unique issues. The OFT flights are scheduled to begin in the spring of 1979.



Donald Slayton

Contract is awarded to RCA for new TV camera system

RCA has been awarded a NASA contract of approximately \$10.5 million to supply the high-quality television camera system that will transmit "live" color and black and white TV pictures during the manned orbital Space Shuttle flights.

The closed circuit TV camera system will be installed on the Space Shuttle for earth orbital missions starting in 1979 and will be used on the subsequent flights scheduled for the 1980's.

"The TV system will assist the Shuttle crew in performing the complex tasks of deploying, retrieving and servicing spacecraft in orbit," said Bert Soltoff, Shuttle Television Program Manager, RCA Astro-Electronics, part of the company's Government Systems Division.

RCA, under contract to JSC, will provide up to 50 cameras for approximately 500 Shuttle flights planned over the next decade. Each Space Shuttle Orbiter can carry up to six TV cameras as part of the closed circuit TV system.

The system will consist of several television cameras, a video control unit, pan and tilt mechanisms, and various monitors. The TV cameras will employ a 525-line standard compatible with broadcast television.

Cameras will be installed in the crew compartment, in the cargo bay, and on a remote manipulator arm. Within the cargo bay, camera positions are located at the

forward and aft bulkheads and in the keel.

The camera in the crew compartment will be portable and capable of beaming "live" color telecasts to Earth for public affairs purposes.

"The portable television camera also may be used with astronaut extra-vehicular activity (EVA)," Mr. Soltoff said. "For example, an astronaut could leave the crew compartment with the hand-held camera to investigate areas of the Orbiter not adequately visible to the mounted cameras."

The portable camera will be equipped with its own viewfinder to enable the astronauts to focus accurately on an object of interest such as the Moon or a free-flying satellite in space.

The other fixed-position TV cameras will be black and white units with full pan and tilt movement. These cameras may be controlled remotely by the Shuttle crew or by ground control personnel at JSC.

"The TV system will be especially useful in aiding crew members to retrieve satellites from space and to remove others from the cargo bay of the Shuttle Orbiter," Mr. Soltoff said. "In addition, the cameras can provide visual assistance to the crew in repairing or replacing parts on a satellite attached to the servicing platform mounted in the Orbiter payload bay."

Honor awards are presented by Kraft to JSC employees

Individuals who made significant contributions to the programs and operations of JSC this past year were honored Feb. 10 in a special ceremony held in the ninth floor conference room, Building 1. Sigurd Sjoberg, Center Deputy Director, presided over the ceremony, and Center Director Christopher C. Kraft addressed the recipients and presented the awards.

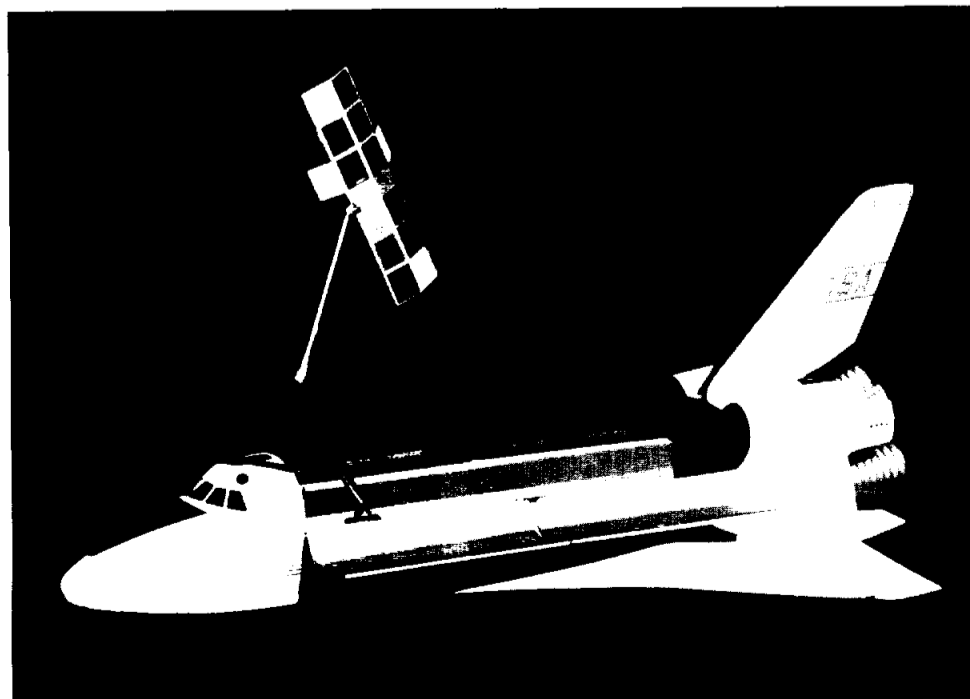
The Center's highest award, the JSC Certificate of Commendation, was received by 19 individuals: Alfred A. Bishop for his leadership in managing the planning and development activities for the Orbital Flight Test; Ausley B. Carraway, Jr., for his performance in managing the Airborne Instrumentation Research Program; Gary E. Coen for his leadership as Chairman of the Main Engine/Orbiter Interface Working Group; James L. Dragg for his achievements in planning and conducting the demonstration test portion of the Large Area Crop Inventory Experiment; John L. Engvall for his leadership in the design and development of the Delta Classifier System; Enoch M. Jones for his leadership in managing the Space Shuttle Systems Engineering Office; John J. Knochel for his contributions to the design, development, and certification of the Orbiter vehicle; Richard H. Kohrs for his leadership in managing the Space Shuttle Technical Integration Office; Daniel T. Lockard for his performance as Project Engineer for Orbiter Vehicle 101; Daniel D. Mangieri for his contributions to the development, test, and checkout of the Orbiter vehicle; Edward M. McElwee for his performance as the Center's aircraft maintenance officer; Robert W. Moorehead for his leadership while serving as Deputy Manager of the Orbiter Avionics Systems Office; Richard J. Piotrowski for his achievements in reducing energy consumption and operational costs in the Space Environment Test Division; John G. Presnell, Jr., for his performance as Project Engineer for Orbiter vehicle 101; Bass Redd for his leadership in developing analysis techniques for the design and development of Space Shuttle flight configurations; Arthur Reubens

for his performance in developing mathematical models and computer programs for intermodulation product analysis for the Space Shuttle Program; Leslie J. Sullivan for his direction of management analysis activities and for his achievements in managing and strengthening the Center's audit program; John B. Williams for his continuing leadership in the design and development of the voice and data communications system for the Mission Control Center; and Wayne K. Williams for his achievements in directing the operation of the Crew Procedures Evaluation Simulator in support of the Space Shuttle Program.

The JSC Superior Achievement Award was presented to Thomas L. Barrow; Melverd E. Coplin; R. Bryan Erb; Ronald H. Gerlach; Estella H. Gillette; Donald H. Hay; John R. Hook; Dr. Friedrich Horz; Richard E. Lindeman; Dr. Gary E. Lofgren; J. Thomas Milton; Jose R. Perez; Frederick Peters; Joe E. Pouzar; Gary R. Primeaux; William D. Reeves; Kenneth L. Schnell; Gloria E. Scott; Edwin W. Sievers, Jr.; Glenn W. Spencer; Reuben E. Taylor; Maj. Ronald D. Via; and Willie E. Wright.

Robert B. MacDonald received the JSC Group Achievement Award on behalf of the Detection and Mapping Project Team; Norris L. Taylor was presented the Group Achievement Award for the Interactive Travel System Development Team; and Dianne L. Robinson and Helon R. Crawford accepted the Group Achievement Award on behalf of the JSC Technology Transfer Team.

The last category of awards were the Certificates of Appreciation. These awards go to individuals or organizations that are not officially a part of NASA. This year three organizations and one individual received the award: the A-V Service Corp.; Bobby E. Spiers of the U.S. Dept. of Agriculture; the Chrysler Corp., Michd Defense-Space Division, Data Management Services; and the General Electric Space Division, Technical and Support Services Dept., Houston Operations.



LDEF—This is an artist's concept of the Space Shuttle Enterprise placing the Long-Duration Exposure Facility (LDEF) in orbit. The LDEF is currently scheduled as the payload for the first operational flight of the Space Shuttle in 1980.

Four science experiments are announced for LDEF

Four scientific experiments have been tentatively selected for NASA's Long Duration Exposure Facility (LDEF), including one from JSC.

The experiments will study the hazards to man of ion particles in space, the chemistry of micrometeoroids, the interstellar wind and cosmic ray nuclei.

These experiments join 23 technology experiments chosen for LDEF earlier this year.

Principal investigators for the scientific experiments represent three European universities, the European Space Agency and JSC.

The new experiments were chosen from 55 proposed experiments related to various scientific disciplines.

With selection of the science experiments, 80 percent of LDEF's experiment trays are now filled with individual research projects. The other 20 percent will contain micrometeoroid detection panels, designed to measure the number and variety of tiny meteoroid particles in Earth orbit.

The experiment on the chemistry of micrometeoroids (Investigator: Dr. Fred Horz, JSC) is designed to obtain chemical analysis of a statistically significant number of micrometeoroids, and information about micrometeoroid density, shape and mass flux. If present hypotheses are correct, that most micrometeoroids are derived from comets, their chemical characterization becomes of great significance.

Chapko, Experiments Systems Division, is selected top secretary for February

Elaine M. Chapko serves as secretary to the Experiment Systems Division staff, including the Deputy Division Chief, Dean F. Grimm. The functions performed by this staff are many and varied, requiring initiative and adaptability on the part of the secretary to different modes of operation. In addition to her regular duties of taking and transcribing dictation, maintaining the calendar, scheduling appointments, receiving telephone and personal callers, making travel arrangements, and assembling and preparing material for presentations, Chapko must also assist in compiling financial and cost data in support of budget preparation and provide a variety of services for the technical assistants, which ranges from long-range future studies to current operational programs.

Grimm says that Chapko has consistently shown flexibility in handling all of these situations and has exhibited a high degree of personal judgment in carrying out difficult assignments in a responsible manner.

"A very important part of this position," says Grimm, "is that Chapko serves as an alternate to the Division Secretary. In this capacity, she maintains a current operational knowledge of all the activities in which the organization engages and displays initiative and flexibility in performing these responsibilities when required. Her ability to adapt with composure to varying situations and to recognize discrepancies and contribute problem-solving techniques has been invaluable to this organization. Because of her superior

knowledge of office operations, she is able to determine priorities and she has never failed to meet an established deadline."

Chapko's even and agreeable disposition appears to be one of her most valuable assets. Her pleasant personality and eagerness to provide assistance have created a very favorable impression with everyone. She is considered to be one of the most uniformly courteous, efficient, dependable, objective, and professional secretaries within the Center.



Elaine Chapko



THOMAS STAFFORD — Current position has been Commander of Air Force Flight Test Center at Edwards AFB, which is part of Air Force Systems Command.

Stafford is nominated for Pentagon post

It was just announced that Thomas P. Stafford, veteran of four space missions, has been nominated by President Carter for Air Force Deputy Chief of Staff for research and development at the Pentagon. Stafford, 47, who has commanded the Air Force Flight Test Center at Edwards Air Force Base since Nov. 4, 1975, also was nominated to receive a promotion to lieutenant general. He was chosen in the second group of astronauts in 1962 and three years later piloted Gemini 6, which performed the first rendezvous in space. In June 1966, he commanded Gemini 9, which also performed docking maneuvers, and in May 1969 he commanded Apollo 10, the first flight of the Lunar Module to the Moon, two months before the first landing. Stafford also piloted the Apollo that linked up with the Soviet Soyuz in July 1975.



JSC GOLF ASSOC. WINNERS, TEXACO COUNTRY CLUB — Shown left to right, second row (standing) are winners Steve Gorman, Wakie Dunham, Bill Fullbright, Ralph Najera, and in the first row Jim Poindexter, Tom Dennis, and Ted Breezy. Not pictured but also winning were Richard Hemling and Bob Mitchell.

What's cookin' in the JSC cafeteria

WEEK OF MARCH 6 — 10

MONDAY: Cream of Potato Soup; Weiners & Sauerkraut; Stuffed Pork Chops; Baked Chicken; Meat Sauce & Spaghetti (Special); French Beans, Squash, Buttered Beans. Standard Daily Items: Roast Beef; Baked Ham; Fried Chicken; Fried Fish; Chopped Sirloin; Selection of Salads, Sandwiches, and Pies.

TUESDAY: Navy Bean Soup; Beef Stew; Liver w/Onions; Shrimp Creole; Smothered Steak (Special); Cabbage, Corn, Peas.

WEDNESDAY: Seafood Gumbo; Roast Beef; Baked Perch; Chicken Pan Pie; Salmon Croquette (Special); Mustard Greens, Italian Beans, Sliced Beets.

THURSDAY: Beef & Barley Soup; Beef Tacos; Diced Ham w/Lima Beans; Stuffed Cabbage (Special); Ranch Beans, Brussels Sprouts, Lima Beans.

FRIDAY: Seafood Gumbo; Fried Shrimp; Devilled Crabs; Ham Steak; Salisbury Steak (Special); Carrots, Green Beans, June Peas.

WEEK OF MARCH 13 — 17

MONDAY: Cream of Chicken; Beef Burgundy over Noodles; Fried Chicken; BBQ Sausage Link; Hamburger Steak (Special); Buttered Corn, Carrots, Green Beans. Standard Daily Items: Roast Beef; Baked Ham; Fried Chicken; Fried Fish; Chopped Sirloin; Selection of Salads, Sandwiches, and Pies.

TUESDAY: Beef Noodle Soup; Baked Meatloaf; Liver w/Onions; BBQ Spare Ribs; Turkey & Dressing (Special); Spanish Rice, Broccoli, Buttered Squash.

WEDNESDAY: Seafood Gumbo; Fried Perch; Tamales w/Chili; 8-oz. T-Bone Steak; Spanish Macaroni (Special); Ranch Beans, Spinach, Beets.

THURSDAY: Navy Bean Soup; Beef Pot Roast; Shrimp Chop Suey; Pork Chops; Chicken Fried Steak (Special); Carrots, Cabbage, Green Beans.

FRIDAY: Seafood Gumbo; Broiled Flounder; Fried Shrimp; Baked Ham; Corned Beef & Cabbage w/New Potato (Special); Corn, Turnip Greens, Stewed Tomatoes.

Public is invited to watch landing

Enterprise, the nation's first Space Shuttle orbiter, will be on display at Ellington Air Force Base for three days, March 10-12, 1978.

Enterprise is in route to the Marshall Space Flight Center (MSFC), Huntsville, Alabama, where it will undergo a series of ground vibration tests. The 75-ton orbiter

will be flown piggy-back atop its carrier aircraft, a modified 747 jetliner. The Ellington Air Force Base stop is a scheduled refueling stop for the 747 enroute from the Dryden Flight Research Center, Edwards, California, to the NASA facility in Alabama.

The public is invited to view the landing at 2 p.m., March 10. The 747 Orbiter combination will be on public display from 2 p.m. through 5 p.m. on March 10 and again from 9 a.m. to 5 p.m. on March 11 and March 12.

When the vibration tests are concluded at MSFC, *Enterprise* will be returned to California where it is scheduled for major modifications. The first space flights of Shuttle will be with a second orbiter now being assembled at the Rockwell International Space Division plant at Palmdale, California.

JSC Sports Section

JSCGA/78

Taking advantage of the first sunshine of 1978, 46 members of the JSC Golf Association played a best-ball tournament at Texaco Country Club Feb. 20.

Prize winners included the first place team, Ralph Najera, Wakie Dunham, Richard Hemling, and Tom Dennis; second place, George Duncan, Jake Klinar, Bob Sampson, and Walt Meek; and third place, Jerry Pels, Joe Nick Villarreal, Dave Price, and John Rector.

Other winners included Bill Fullbright, Bob Mitchell, Ted Breezy, and Jim Poindexter for closest to the pin on the various Par 3's, and Steve Gorman for the longest drive. The largest divot was made by Joe Nick Villarreal who was surprised in the middle of his backswing by an on-rushing electric cart.

The next tournament will be the first of nine competitive medal play tournaments. For Group I it is Glenbrook on Mar. 11; for Group II it is Brock Park on April 1.

MENS BASKETBALL

The Brewers won the Mens B League Basketball playoffs completed Dec. 22, 1977. First and Second place teams from two divisions, Wed. and Thurs. night, played in a single elimination tournament to determine the overall champion. In the first round the Brewers defeated the Blue Lakers 39-34, and the Blue Turkeys defeated SOPAC 55-48. This set up the championship match between the

Brewers and Blue Turkeys, in which the Brewers dominated their opponents to win 50-26. In the consolation game for third place the Blue Lakers defeated SOPAC 60-45. (Picture of the Brewers is included)

The mens A League finished as follows:

Team	Wins	Losses
Association	6	1
Pick-ups	5	2
Blades	5	3
Black Magic	1	6
Thundering Herd	1	6

With only one A Division, no tournament was necessary, and the results above are regular league play final results.

At mid season of the January-March Mens Basketball League the standings are as follows:

Team	Wins	Losses
"A" League		
Buzzards Luck	5	0
Pick-ups	3	3
Blue Lakers	3	2
Association	1	3
Court Jesters	0	4
"B" League		
Blue Turkeys	5	1
Brewers	4	1
SOPAC	4	2
LEC Kools	3	2
Blazers	3	3
Singer	3	3
Thundering Herd	1	4
Zingers	1	4
"C" League		
Knookie Monsters	5	1
Slam Dunks	1	5
Standard Hams	1	5

ROUNDUP

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Photographer: A. "Pat" Patnesky

Special Announcements

BLOOD DRIVE

The first JSC Blood Drive of 1978 will be Mar. 9 at the Gilruth Recreation Center, 8 a.m. to 4:30 p.m. For an appointment call Helon Crawford, X-3809, or Bob Jones, X-3271. It really doesn't hurt at all, so come out and give, for yourself, for your fellow employees, and for your community!

ACM MEETING

The Association for Computing Machinery is featuring speaker Gordon Stout from the Burroughs Company in Washington, D.C. whose topic will be "The New Burroughs Scientific Computer Processor" at the March 16 evening meeting. Make plans to attend now.

Special Publications

The NASA Special Publications listed below are available to JSC personnel who have an interest in the subject matter.

NASA SP-249	<i>Cosmic Gamma Rays</i>
NASA SP-257	<i>A Search for Carbon and Its Compounds in Lunar Samples from Mare Tranquillitatis</i>
NASA SP-287	<i>What Made Apollo a Success?</i>
NASA SP-330	<i>Apollo 17: Preliminary Science Report</i>
NASA SP-3016	<i>Venus and Mars Nominal Natural Environment for Advanced Manned Planetary Mission Programs</i>
NASA SP-6507, Part 2	<i>Parts, Materials and Processes Experience Summary</i>

Requests for these documents can be made by submitting a completed JSC Form 614 to JM86, Distribution Operations. The JSC Form 614 must be approved at the branch chief level or above.

LADIES EXERCISE

Ladies! Want to increase your energy and decrease your waist line? Join the lunch bunch at the Gilruth Recreation Center Mondays, Wednesdays, and Fridays 11:15-11:45 for exercise to music. Really makes you feel great and can't help but improve your looks, too! For more information, call Corinne Poel, X-3257, or Brenda Howell, X-4111.

Fun Run

All NASA employees, spouses, and dependents are eligible to participate on April 15 in the First Houston-Galveston Area Industrial Recreation Council (HGAIRC) Fun Run. JSC participants will be representing the center in the company competition. Other teams from companies such as Lockheed, Gulf Oil, Houston Astros, E. E. Lummus & Fluor will be participating.

EAA Attractions

ASTROWORLD SPECIAL

Half-price tickets (\$4.25 instead of the regular \$8.50) are now on sale at the Bldg. 11 Exchange store for JSC-EAA Day at Astroworld on Sunday, Mar. 12. The tickets are good for that day only. The park will be open 10 a.m. until 10 p.m.

EASTER EGG HUNT

The Easter Bunny and helpers will arrive at the Gilruth Recreation Center at 10 a.m. Mar. 18 for the annual JSC-EAA Easter Egg Hunt. Tickets are now on sale at the Bldg. 11 Exchange store for \$1 each. Ages for the hunt are from two to eight years old. Remember, it doesn't take long for a couple hundred kids to clean a field, so be on time! Oh yes, it's BYOB (Bring Your Own Basket) again this year.

DEFENSIVE DRIVING

Defensive driving courses will be conducted at the Gilruth Recreation Center Mar. 27 and 29 (Mon. and Wed.) and Mar. 28 and 30 (Tues. and Thurs.) from 6 to 10 p.m. Auto insurance rates are going up again this year and you can get a 10-percent reduction in rates for the next three years by attending the course. Cost of the course is \$12. Send your application from the flyer that will be distributed to all employees to Frances Barbee, SF3, with your check made out to Coaches Driving School by Mar. 17. The cost after this date will be \$14 if spaces are available. In addition to the financial benefit, you may learn some things that could save your life!

JSC PICNIC

The JSC-EAA Picnic is beginning to take shape. Committee heads are Vic Ettredge, Information Booth; Norma Godeke, Dunk Tank; Bill Gravett, Facilities; L. G. Corcoran, Organized Sports; Rita Rapp and Mary Lopez, Bingo; Charlie Ober and Kandy Hosea, Special Events; Glenda Lancon, Publicity and Promotions; Frances Barbee, Budget and Tickets; Geraldine Taylor, Sub-teen Activities; Mike Kersman, Teen Activities; Ann Walker, Adult Activities; and a couple dozen people backing these individuals. Watch for more details. The picnic is May 6 at Camp Manison.

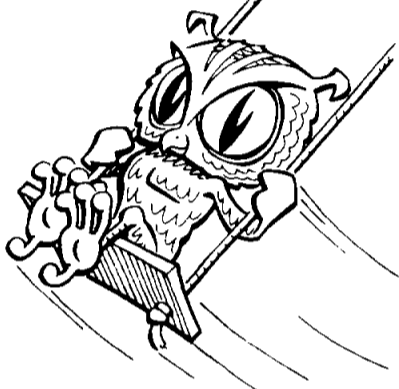
DINNER THEATER

Tickets sold at the Bldg. 11 Exchange Store for the Dean Goss Dinner Theater are intended for the use of JSC employees, contractors, and their guests. Recently, large groups of tickets have been purchased for non-JSC-related groups. If this continues, the agreement will be cancelled. Since the tickets are a good deal for everyone at JSC, please cooperate.

HOUSTON AERO HOCKEY

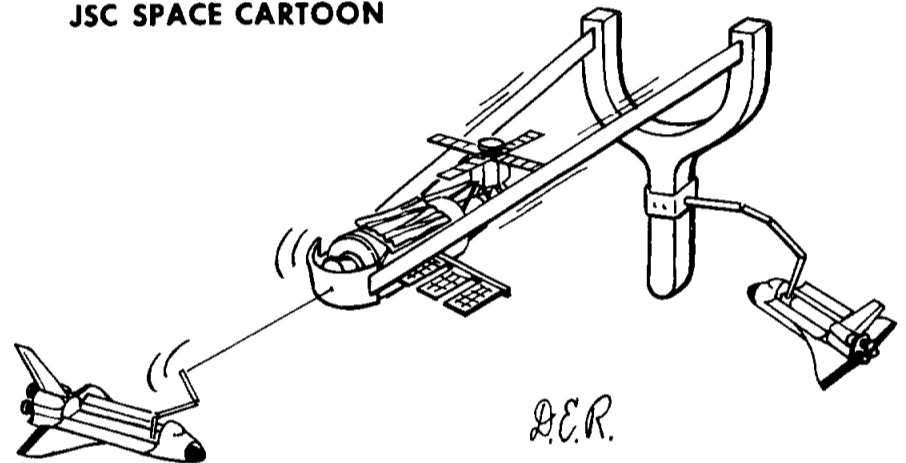
Remember the upcoming home games with Edmonton Mar. 7, New England Mar. 9, Indianapolis Mar. 12, Swedish National Mar. 15 (exhibition game), and Birmingham Mar. 17. Tickets are on sale at the special rates of \$6.50 and \$4 through EAA. Home games begin at 7:30 p.m. except Sundays, when they begin at 6 p.m.

Get in the
SWING
of cost reduction!



and when your cost
reduction swings into
ACTION, report it to,
Cost Reduction Office
on JSC form 1150!

JSC SPACE CARTOON



Roundup Swap Shop

CARS & TRUCKS

- 75 Pontiac Grand LeMans. Black w/ black vinyl top, A/C, pwr steer & brakes, bucket seats, AM-FM stereo tape deck, 2 new whitewalls. Getting company car. \$3,000. 683-0652 or 944-3244.
- 73 240Z Datsun. Green, Mags, good cond. \$3,600. 482-4677 or 333-6479.
- 74 Honda Civic hatchback w/ radio. \$1,350. Erickson, 488-1901.
- 76 Pacer. Std 6, xint cond. 19K mi. \$2,575. Bliss, X-2491 or 1-925-5470 after 5.
- 75 Fiat X-19. AM-FM 8-track, A/C, new tires. 472-5243 after 6.
- 71 Volvo 164. 4-dr, A/C, 4-spd, runs well, good body. \$1,500. 943-2668 after 6 or 472-6910.
- 76 MG. AM-FM, all equip, 24K mi. \$3,500. Cornett, X-2465 or 482-3603.
- 76 Dodge Charger SE. A/C, radio, tilt steering wheel, low mi. \$4,500. Wilmeth, X-4328.
- 70 Thunderbird. Exceptionally clean, A/C, all pwr, 62K mi. \$1,600. McMurray, X-4241 or 534-3625 after 5.
- 69 Chevelle SS. Xtra clean, runs well, A/C, turbo 400 trans, 396 engine, pwr steer & brakes, AM-FM cassette in dash. \$1,400. 534-2476 (Dickinson).
- 70 Mercedes 250. A/C, pwr, AM-FM, auto, outstanding cond. \$3,500. Sampsel, 334-1278.
- 71 Pontiac Catalina. 2-dr, A/C, pwr steer & brakes, good tires, xint cond in & out. \$900. Serpas, X-4291 or 488-2318.
- 67 Plymouth Fury II. 318 engine; good brakes, tires, & battery; dependable. \$395. Michael, X-5143 or 333-2468.
- 74 Ford Pinto Sta Wgn. A/C. \$1,500. 485-3521 after 5.
- 74 Matador. Right side damaged; drivable. Best offer. Patrick, X-2401 or 481-8237.

MUSICAL INSTRUMENTS

- Yamaha FG 160 acoustic steel string guitar w/ case. \$125. 488-2652.
- Hammond organ. Good cond. \$700. Patrick, X-2401 or 481-8237 after 5:30.

PROPERTY & RENTALS

- Lease: CLC, new efficiency Baywind condo. Fireplace, refrig w/ icemaker, drapes, private patio, pools, saunas, clubhouse. Lockard, 488-8007.
- Sale: Wooded waterview lot at Point Lookout on Lake Livingston, 75 x 137, utilities & restrictions. \$3,500. 946-7587.
- Sale: Webster, 3-1-1/2-2 att. plus carport, 100 x 125 corner lot w/ trees. New roof, 1500 sq ft, immaculate cond, energy-saving heat pump w/ xtra insulation, new carpet, covered patio w/ storage rm, immediate occupancy. \$44,500. Carolyn, X-2805 or 488-5778 after 5.
- Rent: CLC, 3-2-2A on quiet cul-de-sac, exceptional cond, freshly painted, avail now. \$400/mo. Monica, 334-5289.
- Sale: Wildwood contemp 3-2-2. Formals, 1/3 acre, landscaped, trees. 474-3470.
- Lease: El Lago, 3-2-2 w/ formals, den w/ fireplace, near elem school. \$450/mo. 334-2754.
- Rent: Beach cottage w/ wood-burning fireplace. \$35/day or \$75/3-day wknd. Horton, 334-2360.
- Sale: Cozy 3-2-2 on quiet cul-de-sac, immaculate cond, neat yard, custom window treatments, 4-1/2 yrs old. Mid 40's. 488-6012.
- Lease: New cheery color coordinated Middlebrook home. No houses in back, breakfast area, separate dining, pantry, fireplace, large master bdrm suite, covered patio, finished garage, enclosed utility area, drapes. 3-2-2 \$450/mo. 488-7232 after 5:30 or weekends.
- Rent: Lake Livingston. Cape Royale, compl furn home, 3-2-1. Fishing, hunting, tennis, golf, etc. Reserve early. Wk/mo/yr rates. 488-4487.
- Rent: Galveston West End. 2 BR by-the-sea condo apt. full furn. \$180/wk off-season; \$260/wk in-season. Clements, 474-2622.
- Rent: New Galveston Island Jamaica Beach cottage. \$175/wk or \$30/day for weekends. 334-1640 after 6 p.m.
- Sale: Beautifully wooded homesite at Columbia Lakes, 135 x 65 lot on cul-de-sac. Year round living w/ compl rec facilities. \$11,900. 488-2691 after 6.

STEREOS & SPEAKERS

- Tandberg-64 open reel tape deck. 3 hds, 3 spds, xint cond. \$120. Also lg collection open reel pre-recorded tape albums, cheap! 488-3966.
- One Fisher AM tuner, 2 Eico 60-watt amps, 1 Webcor reel-type tape recorder. All old but xint quality. Any or all at \$50 ea. Jones, 471-3303.
- Electroponic modular stereo/ AM-FM/8-trk system, 12' speaker cables, ideal f/ young person. \$75 or offer. Also AIWA Cassette tape recorder, good cond, microphone, earphone, AC or battery op. \$20. In addition, two 12-in speakers, fine sound, mounted in small wood cabinet but suitable f/ inclusion in larger speaker systems. \$25/pair. Stencil, X-6467 or 334-4707.

WANTED

- Typist chair in good cond. Wilmeth, X-4328.
- Join or start car pool! Baytown-Bldg. 4 area. Non-smoking. Ben, X-3511 or 427-1060.
- Wet suit, flotation vest, size ladies' small. Hansen, X-4801.
- Two female roommates to share lg 4-bdrm home. Must be neat & reliable. non-smokers. Norma, X-2301.
- Firefighters needed! Men and women adult residents of CLC needed to join CLC Volunteer Fire Dept. Rewarding community service. You will be trained and equipped. Call 488-0023 any time.
- Need new members f/ Bacliff Bass Club. Singles-couples welcome. Meetings, tournaments, prizes. Parker, X-4241 or Mobley, X-4428.
- Need riders for carpool from W Loop, SW Fwy. Bellaire area, 8-4:30. McLaughlin, X-5536 or 661-2974.

MISCELLANEOUS

- 12-in metal lath, Craftsman, bench model, accessories. 1-925-6780 (Alta Loma).
- Challenger # 5250, 2-gun plastic case, never used. Cost \$53.25. Will take \$45. 944-5615 after 5.

Surfboard, caster, light green, 6 ft 3 in, good cond. Board, cover, & leash \$50. McGee, X-4027.

Stan Smith tennis rackets. New, never strung, 4 5/8M plus cover & press: \$26. Slightly used 4 5/8M unstrung: \$20. Well-used 4 5/8M (new strings): \$10. Westerfield, X-5169 or 482-1717.

Partial bundle cedar shingles. Jones, 471-3303.

Left-handed golf clubs. Wilson Staff, 2 through Sandwedge irons, 1, 3, 4 woods. Xint cond. Hovendick, X-3315 or 482-0575 after 6.

CYCLES

- 77 Kawasaki 1000 LTD. Like new, only 5500 mi. 482-7858 after 6.
- 74 Honda XR 75 trail bike. Very good cond. \$350. McCollun, 488-4696 after 5 & wknds.
- 20" boys bike w/ motorcross handles & seat. Good tires. \$14. 946-4311.
- Motorcycle trailer. One-bike capacity, ideal f/ compact cars. \$95. 482-5607 after 5 & wknds.
- 75 Harley 250 CC. Less than 400 mi. \$695. Massaro, X-2631 or 482-5218.

BOATS

- Fast 19-ft offshore Chrysler ski/fish boat. Center console, trailer. \$6,500 new; \$3,600 float away. Horton, 334-2360.
- Ranger Bass rig (TR-3). 71 xint cond, 60 HP Evinrude w/ SST prop, Dilly trailer, two locators, trollmotor, custom carpet, many extras. 333-4732 after 6.

HOUSEHOLD ARTICLES

- 2 living rm tables, Mediterranean style, wood. \$75 each. Patrick, X-2401 or 481-8237 after 5:30.
- Color TV. 25" Sylvania & one Zenith. Xint cond. \$250 ea or best offer. Massaro, X-2631 or 482-5218.

PETS

- Basset hound puppies, AKC, 6 wks old Easter. \$150. Maley, X-2118 or 488-6871.

There's no "lull" from the inside looking out

November 15 is the target date for completing some important changes to the Mission Control and Simulation areas for the upcoming Orbital Flight Test (OFT) missions.

"The two areas must be ready to integrate their new systems," says Jim Stokes, Chief, Ground Data Systems Division, "for simulations of the actual OFT missions that begin on November 15."

The Building 5 simulation area will be the spacecraft and the areas included in OFT missions. Data will be transmitted to Building 30 from the simulation area just as though there were a real mission. At first, the groups will concentrate on flight data, but provisions are being made to handle payload data in the same manner.

The Shuttle Mission Simulator (SMS) currently undergoing testing and development in Building 5 will provide the simulated spacecraft and network data for training for the OFT missions. For full-up mission training for the flight crews (in the SMS) and flight controllers, data from the simulator in Building 5 will be transmitted to the Mission Control Center in Building 30.

A sketch of the SMS is shown below. The major elements consist of two crew stations (a fixed base and motion base), a landing model system of the Edwards Air Force Base area, a Network Simulation System (tracking and telemetry simulation), a digital scene generation system and a large UNIVAC digital (host) computer complex. Small digital computers (Interdata 8/32's) are used to interface the host computer to the other simulator elements — crew stations, visual systems, and flight hardware.

scenes during the various mission phases. This system through the digital computer and special techniques of shading and generating shadows, will simulate the scenes that the astronauts see through the Orbiter windows from liftoff into orbit and back through the entry, approach and landing. Also the landing model system utilized with the OAS will be interchangeable with the digital system to provide the out-the-window visual during the approach and landing phase.

Stokes says the primary reason for changing anything in the mission control areas is the increased volume of data that will be coming from the Shuttle. To aid in processing and disseminating this data, a new concept known as the "bent pipe network" has been agreed upon by the Goddard Space Flight Center (who manages the Spaceflight Tracking Data Network) and JSC as the best method of getting this tremendous amount of data to the various users.

In the past, each site received telemetry data from the spacecraft and they each had data processors that formatted and "transmitted" the portion that was needed at the MCC and threw away the rest. Having to maintain all those computers and mission-unique software at the remote sites became an expensive process. "During the Apollo Soyuz Test Project (ASTP)," states Stokes, "about 20 sites were involved."

The change to a "bent pipe network" concept means essentially that all the data coming from the spacecraft will be transmitted to JSC, where it will be processed only once for presentation to flight

controllers within the MCC and sent directly to other users as required.

"It's more cost-effective," says Stokes, "to do the processing at one place in one set of computers than at several places through many computers. One of the reasons something like this wasn't done before," he explains, "is because the cost of data lines was expensive. But in the past five or six years, mostly due to the additional communications satellites and to new technology, the cost of transmitting a bit of information per mile is significantly less. So now we can afford to transmit that total volume which will come from the Shuttle at relatively low cost."

Of course this new concept places JSC in a more major role as far as processing is concerned. "Our role will be much more central," says Stokes.

The "bent pipe" concept dictates that the entire communication front end of the control center has to be redone. The front end will be comprised of microprocessors interfaced to 1.544 Megabit communication lines and Interdata 8/32 Mini-Computers which will perform the first level of telemetry processing. These are the same type of small digital computers used in the simulations area. This equipment replaces three UNIVAC 494 computers used during the previous manned flight projects.

"On previous missions," says Stokes, "we used the IBM 360 computers in the Real-Time Computer Complex to do the majority of the data processing. They received the tracking data and did the final processing on the telemetered data and output it on displays for JSC flight controllers and other personnel that require it. But because of the larger volume of data, we determined that these computers couldn't handle the job. Instead, the 360/75's have been allocated to the onboard software development process."

The new system is called the Shuttle Data Processing Complex and uses three IBM 370/168 computer. Each of these computers is equal to about three of the IBM 360's. The entire first floor is being rearranged to house the new communications and data processing equipment.

The second floor Mission Operations Control Room (MOCR) will not receive much in the way of new equipment except for some additional consoles to cover the needs of added vehicle dis-



SHUTTLE MISSION CONTROL COMPUTERS — IBM programmers check out computer displays during installation of the third IBM System/370 Model 168 computer at the JSC. The three computers and associated communications equipment make up the Shuttle Data Processing Complex that will provide all Shuttle information except voice exchanges to the flight controllers in the Mission Control Center. The combined computers contain a total of 21 million bytes of memory for performing the computations to monitor and control each Space Shuttle mission.

ciplines. The main job of implementation in this area will be rearranging consoles, moving walls, and regrouping staff support rooms. "Display and Control modules on consoles will be rearranged, mostly," says Stokes, "because the controller will be doing a different function there."



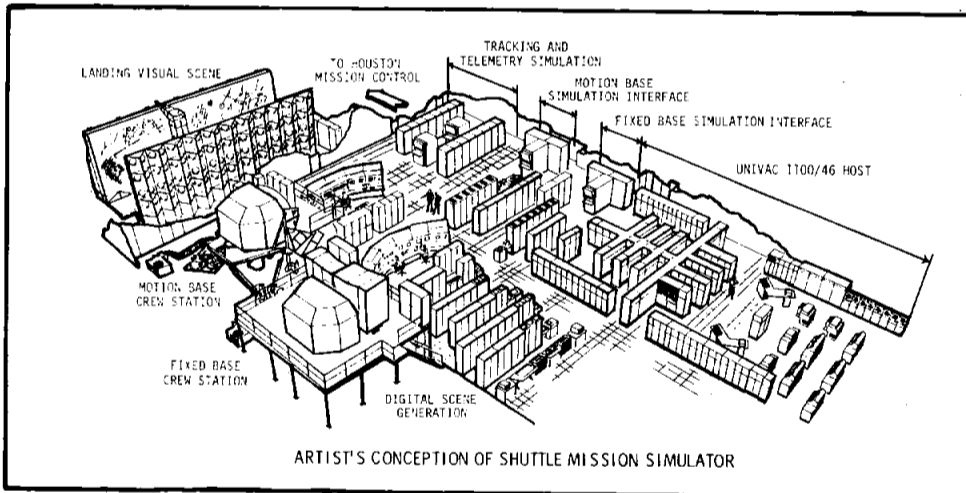
Wiring the computer termination cabinet, Bldg. 30.

The task does not sound unduly complicated, only a matter of switching or replacing equipment. It looks that way until you see literally miles of wiring strung across rooms and hallways, multicolored small wires pulled out from their console fittings, bundles of larger white wires placed into heavy black insulated cables streaming down all the hallways, and men in headsets placing thousands of all-red wires into the cable termination cabinets.



Cables contain 108 wires each.

Yes, there is quite a bit more than casual activity going on at JSC right now. It may look like a lull period from outside of the building or from the visitor areas, but try telling that to anyone on the inside looking out!



Crew training for the OFT flight crews will commence August this year, utilizing the fixed base system (see photo), according to Pete Woodling, Chief, Flight Simulation Division. The fixed base crew station will provide a training capability for all flight functions performed from the Orbiter upper flight deck. For later missions, the fixed base will be used to train the total Orbiter crew — pilots as well as mission and payload specialists.

Work also underway in Building 5 is the upgrading of the Orbiter Aeroflight Simulator (OAS) (See Oct. 14, 1977, *Roundup* from the training configuration utilized during the Approach and Landing Test (ALT) flights to become the motion base portion of the SMS. "For OFT simulations, an additional degree-of-freedom (approximately 90° pitch) will be activated on the motion system," says Woodling, "in order to place the astronauts on their backs to simulate the attitude of the spacecraft during the vertical liftoff and powered ascent into orbit. The motion cues provided by the base are an important aspect of the training during this critical phase of the orbital mission."

The ALT controls and displays in the OAS cockpit are being replaced with the simulated OFT instruments. Like the OAS, the SMS will use flight type onboard computers, display units, and associated keyboards. Real flight software programs (tapes) will be loaded into the flight computers for all OFT training.

The digital scene generation system will provide simulated out-the-window

