

# Space News Roundup

Vol. 31

August 28, 1992

No. 33

## JSC starting to put Total Quality to work

By Kelly Humphries

After reviewing the results of the 1992 Total Quality Survey, JSC's Executive Council has put its seal of approval on a set of actions designed to make Total Quality a part of every employee's daily life.

The actions fall into six basic categories — leadership, process improvement, strategic planning, measurement and benchmarking, customer/supplier partnerships and training. The Executive Council — made up of the center's directors and office managers — has approved the

implementation plans developed by the Total Quality Steering Committee subcommittees working on each of these areas.

"The thrust of these decisions is to put Total Quality on the management agenda on a regular basis," said JSC Acting Director Paul J. Weitz, the head of the council. "We expect our center's leaders to set the example for all employees, because Total Quality is everybody's business."

In the area of leadership, top executives and all levels of managers and supervisors are going to be required

to get directly involved in quality improvement activities, and the center director will give a quarterly all-hands total quality status briefing.

The leadership subcommittee, led by Space and Life Sciences Deputy Director Don Robbins, is calling for directors and office managers to report their Total Quality goals and progress at weekly senior staff meetings and quarterly status meetings with the director, and work to create an environment that is conducive to empowering employees.

To set the example, directors will

learn how to use Total Quality tools, then use them, teach others about them and inspect how well they are being applied to the organization's work.

Over the next several months, the subcommittee will concentrate on three areas identified in the Total Quality Survey as needing work — empowerment, rewards and recognition, and communications.

Since the survey showed that employees don't feel more empowered than they did a year ago, the leadership subcommittee is going

to continue to work on an understandable definition of empowerment attributes, behaviors and measurements, and to communicate a common understanding throughout the center.

The training subcommittee, led by Human Resources Development Branch Chief Susan Braymer, is undertaking a Total Quality training needs assessment to get input from knowledgeable employees and identify gaps between current and required knowledge.

Please see **ACTIONS**, Page 4

### Why metric?

## Industry needs system to stay competitive

The United States is going to transition to the International System of Units as the official measurement system, and that includes JSC.

While SI, as it is called, is often referred to as the metric system it is but one of several metric systems in use around the world. The reason America is shifting to the system is to help American industry compete in European markets, which use the SI standard. It's also easier to use — once you get used to it.

Posters that promote "Metric, A Perfect 10" are beginning to show up

around the center. The perfect 10 refers to the SI system, which is based on units of 10. For example, there are 10 millimeters to a centimeter, 10 centimeters to a decimeter and 10 decimeters to a meter. In contrast, there are 12 inches in a foot and 3 feet in a yard under the customer inches and pounds system.

According to JSC's Metrication Committee, the President issued Executive Order 12770 directing the transition to SI. In turn, he appointed the Department of Commerce as the lead agency for the national efforts to convert. NASA has issued instructions for the conversion in NASA Management Instruction 8010 and various NASA Transition Plans.

NMI 8010 identifies the basic reference to be used within NASA for this transition to SI as Electrical and Electronic Engineers Standard 268, Metric Practice. The JSC Technical Library in Bldg. 45 has copies of IEEE 268 for reference.



Sylvia Rice, a secretary for RMS Photographic Services in Bldg. 8, covers the computer and typewriter equipment in her office Tuesday. Many JSC employees took such precautions when it was still possible Hurricane Andrew might make landfall near here.

JSC Photo by Robert Markowitz

## JSC was ready for Andrew

By Kari Fluegel

All eyes on the Gulf Coast watched and waited this week as Hurricane Andrew slowly took aim at Louisiana, and though the Houston-Galveston area escaped Andrew's wrath, the storm's westerly movement was enough to initiate preliminary preparations.

At the beginning of hurricane season, JSC moves to Level 1 of the Severe Weather Plan which calls for a state of continual preparedness. But, when a hurricane forms in the Gulf of Mexico, the center's state of preparedness gradually escalates until the storm strikes.

Bob Gaffney, JSC's emergency planning officer, said the center never officially moved to a Level 2 status but center operations per-

sonnel took preliminary precautions to secure loose objects around JSC.

"We would not have had much time to respond to the threat if the hurricane had come in here," he said.

Outdoor trash cans and covers were collected, construction sites were inspected and a skeletal rideout team was formed to watch Andrew's progress until its path was clear. NASA aircraft also were moved to safer locations in San Antonio, El Paso and Florida.

The Image Sciences Division helped by broadcasting hurricane preparedness videos and employee announcements.

"We would have been ready if the hurricane had continued moving west," he said.

## Endeavour crew skirts hurricane

By James Hartsfield

The STS-47 crew skirted Hurricane Andrew on Tuesday night as it flew to Kennedy Space Center for a dress rehearsal of *Endeavour's* upcoming countdown.

The crew — Commander Hoot Gibson, Pilot Curtis Brown, Mission Specialists Mark Lee, Jay Apt and Jan Davis, and Payload Specialist Mamoru Mohri — left JSC a day early and arrived at the launch site without difficulty.

The terminal countdown demonstration test, a full rehearsal for the launch team and crew, began Thursday and will conclude today at Launch Pad 39B. *Endeavour* was moved from the Vehicle Assembly Bldg. to the pad early Tuesday. This weekend, technicians will make a final check of the electrical and hydraulic systems in the main engines. Shuttle managers are scheduled to meet Tuesday for a final review of all launch preparations, after which a launch date will be announced.

Next up after *Endeavour*, *Columbia* is in preparation for an October launch on STS-52, carrying the Laser Geodynamics Satellite-II. In KSC's Bay 1 processing hangar, technicians began installation of the mechanical arm, worked inside the crew cabin and replaced an overhead window. The STS-52 crew will check the equipment and preparations at KSC next week.

Elsewhere, *Discovery* is being readied for a Department of Defense-dedicated flight in November. Work this week included putting on the landing gear tires, filling the freon coolant loops, testing the left orbital maneuvering system pod, and installing brakes.

In the Bay 2 hangar, *Atlantis* is being prepared for shipment to Rockwell's Palmdale, Calif., shuttle factory in October where it will remain a year undergoing upgrades, inspections and modifications. Current plans for that upgrade period could include installing a Russian-manufactured airlock and docking system or moving *Atlantis'* airlock into the cargo bay and installing a Russian docking system atop it. This week, the communications system was modified, the three auxiliary power units were removed and the main engines were dried.



## NASA studies ocean plant productivity

NASA researchers have begun a three-week airborne study to increase understanding of microscopic plant productivity in the equatorial region of the Pacific Ocean.

The principal scientific objective is to understand why microscopic plant productivity is so limited in the Pacific compared to the Atlantic Ocean, according to Dr. Frank Hoge, principal investigator from Goddard Space Flight Center's Wallops Flight Facility.

Microscopic plants, called phytoplankton, are an important part of the marine food chain as nutrition for small animals and fish. Phytoplankton also plays an important role in the absorption of carbon dioxide from the atmosphere. Carbon dioxide is a "greenhouse gas" that traps heat near the Earth's surface. Increasing concentrations of carbon dioxide in the last 100 years, primarily through humans' use of fossil fuel, has led to

concerns that human activity may be increasing the Earth's temperature.

Hoge points out that the Pacific Ocean equatorial region has amounts of nutrient concentrations, sunlight and phytoplankton seed similar to those found in the Atlantic Ocean. But phytoplankton in the Atlantic is more abundant than in the Pacific, he said.

The NASA-Wallops researchers are conducting their study during four flights at 500 feet altitude, slightly less than the height of the Washington Monument, using the Airborne Oceanographic Lidar and other instruments aboard Wallops' P-3B aircraft. The flights are expected to last about 12 hours each.

The Wallops instruments on the aircraft allow researchers to survey large stretches of the Pacific Ocean. Hoge said the researchers will use active and



**Earthwatch**

Please see **TINY**, Page 4



Joe Engle

## Engle receives award for lifetime of achievements

Former astronaut Joe Henry Engle, now a consultant and simulation evaluation pilot for the National Aero Space Plane, will receive the Lloyd P. Nolen Lifetime Achievement in Aviation Award next week.

The commander of the second space shuttle mission will receive the award from the Wings Over Houston Airshow's executive committee at a media preview at Ellington Field on Tuesday.

Engle, a retired major general in the Air National Guard and the U.S. Air Force, now lives in Mission Hills, Kan., He has been a pilot since 1957, when he entered flying school.

Please see **ENGLE**, Page 4

JSC

## Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Gift Store from 10 a.m.-2 p.m. weekdays. For more information, call x35350 or x30990.

Lovin' Feelings Concert (7:30 p.m. Sept. 26, Summit): \$21.  
Texas Renaissance Festival (9 a.m.-6 p.m. weekends Oct. 3-Nov. 15): adult, \$9.25; child (5-12): \$5.55.

Ski Sun Valley (Jan. 9-16, Sun Valley, Idaho): \$100 deposit for first 37 people. Metro tickets — Passes, books and single tickets available.

Fiesta Texas Park (San Antonio): adult, \$19.50; child 4-11, \$13.55.  
Sea World (San Antonio): adult, \$18.90 (child free with paying adult); child 3-11 \$13.55.

Astroworld, \$16.95 and \$14.95 (child under 54 inches), \$44.95 (season pass) and Waterworld, \$9.50.

Six Flags, \$16.95 (one-day) and \$22.95 (two-day).  
Movie discounts: General Cinema, \$4; AMC Theater, \$3.75; Loews Theater, \$4.

Stamps, Walt Disney Club memberships also available.  
Upcoming events: Deep Sea Fishing Trip (Oct. 17): on sale Sept. 14.  
Texas Renaissance Festival bus trip (Oct. 24, Nov. 7): on sale Sept. 14.

JSC

## Gilruth Center News

**Sign up policy** — All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a badge or EAA membership card. Classes tend to fill up four weeks in advance. For more information, call x30304.

**EAA badges** — Dependents and spouses may apply for photo identification badges from 6:30-9 p.m. Monday through Friday. Dependents must be between 16 and 23 years old.

**Weight Safety** — Required course for employees wishing to use the Gilruth weight room is offered from 8-9:30 p.m. Sept. 8. Preregistration is required; cost is \$5.

**Defensive driving** — Course is offered from 8 a.m.-5 p.m. Sept. 12. Cost is \$19.

**Aerobics** — High/low-impact classes meet from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32 for eight weeks.

**Exercise** — Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays. Cost is \$24.

**Aikido** — Martial arts class meets Tuesdays from 6:15-8 p.m. Cost is \$15 per month.

**Country and western dance** — Country and western dance lessons for beginners will be offered from 7-8:30 p.m. Mondays beginning Sept. 14. Advanced classes will be from 8:30-10 p.m. Cost is \$20 per couple; classes run for six weeks.

**Flag football** — Officials are needed to work flag football games during the fall season. For details, call the Gilruth at x30304.

**Sign language** — Classes in the third-most used language in the United States will be offered from 6:30-8:30 p.m. Mondays beginning Sept. 14. Cost for the six-week course is \$55.

**Safety awareness** — Constable Bill Bailey's office will present a seminar on crime prevention through safety awareness from 5:30-6:30 p.m. Sept. 10 in the Gilruth ballroom. To reserve a seat for the free seminar, call x30304.

**Fitness program** — Health Related Fitness Program includes medical examination screening, 12-week individually prescribed exercise program. Call Larry Wier, x30301.

JSC

## Swap Shop

Swap Shop ads are accepted from current and retired NASA civil service employees and on-site contractor employees. Each ad must be submitted on a separate full-sized, revised JSC Form 1452. Deadline is 5 p.m. every Friday, two weeks before the desired date of publication. Ads may be run only once. Send ads to Roundup Swap Shop, Code AP3, or deliver them to the deposit box outside Rm. 147 in Bldg. 2. No phone or fax ads accepted.

### Property

Lease: Baywind One condo, 2-1.5-2, all appll, W/D, ceiling fans, lg upstairs unit, \$485/mo. L. Das, x33235 or 488-5532.

Sale: Friendswood, 3-2-covered patio, ceiling fans, corner lot, det garage, \$60k. Billjo, 482-3005.

Sale: Lux French Country estate 4-3.5-3D, private, on 5.25 ac, another 5.75 avail, \$365k. 996-8471.

Sale: 117.8 ac Hill Country, cattle pasture, fenced and cross-fenced, 4 tanks, county roads on 2 sides. \$700/acre. 532-3348.

Lease: Shoreacres, 4-2-2, 2000 sq ft, lg fenced yard, near HYC, no pets, avail Sept 1, \$650/mo + dep. 488-5501.

Sale: Heritage Park, 3-2-2, lg living area, FPL, deck, fans, blinds, microwave and garage dr opener, \$79.5k. x32886 or 482-8373.

Rent: Seabrook condo, 1-1-cp, Natchez Landing, \$375/mo. 326-3169.

Sale: '78 14x80 Lancer mobile home, 2-2, w/8x10 port bldg, 10x30 awning, 8x12 deck, \$18k. Linda, x32891 or 554-4228.

Lease: 2 story townhome, 3-2.5-1, W/D, refig, new carpet, paint. 480-2654.

Rent: RCI condo timeshares, bargain rates, stay almost anywhere at anytime. 474-2857.

Sale: Meadowbend 3-2-2, cul-de-sac, landscaped, \$79,950. 334-1043.

Lease: Pasadena, 3-2-2 brick, \$600/mo + dep. Trish, 282-6627 or 477-4609.

Sale: Pipers Meadow, 4-2-2, 2-story, FPL, fans, new carpet, vinyl, wallpaper, \$74.9k. Greg, 286-0356 or 470-0433.

Rent: Breckenridge, CO ski house, sleeps 12, overlooks Breckenridge ski area. 303-482-9124.

Lease: CLC/Ellington, 2 BR condo, new paint, vaulted ceiling w/fans, W/D hookups, \$450/mo + dep. 538-3680.

Sale: Dickinson area, 3-2.5 on 2 acres, \$74.9k. Rick, x32695 or 559-2735.

Sale: Sycamore Valley near Ellington, 3-2-2, corner lot, new carpet, new floor in kitchen, hugh deck, FPL. 484-9373.

Sale: Nassau Bay TH, 2-2.5-2cp, FPL, patio, pool, new kit, spacious, \$74,490. x36665 or 333-9733.

Sale: Clear Lake Shores, 3-2-3D, contempo, vaulted ceiling, loft, game rm, FPL, new carpet, vinyl, paint, boat slip, \$142k. Bill 538-1849.

Sale: Galv Island beach house, 3-2, CAH, furnished, 1200 sq ft, \$75k. Ed Shumilak, x37686 or 326-4795.

Sale: Pipers Meadow, 3-2.5-2, formals, FPL, loft, master dwn, ceiling fans, garage dr opener, deck, 2,070 sq ft, \$90k. Dennis, x34405 or 532-3312.

Sale: Lake Livingston, Impala Woods at Onalaska, 30x70 lot, paved roads, \$3k. Teena, x37787 or 422-6369.

Rent: Galveston condo, furnished, sleeps 6, Seawall Blvd & 61st St, wknd/wkly/dly rates. Magdi Yassa, 333-4760 or 486-0788.

Sale: 71 acre Webb County ranch, deer blinds, deer feeders, 2 BR house, water well, elect, mineral rights, \$120k. 326-1833.

### Cars & Trucks

'84 Cadillac Eldorado, all pwr, A/C, AM/FM/cass, V8, leather seats, ex cond, \$4650 nego. Larry, x31794 or 481-9058.

'80 Chevy Camaro, ex cond, \$1500. 471-5251.

'84 Dodge PU, trlr brakes, 2500 lb, receiver and gooseneck hitches, 318 motor, new tires, 2 spares, truck box, BO. 252-2593.

'91 Eagle Talon Tsi AWD, ex cond, loaded, \$14k. David, 280-8693.

'91 Chevy Corsica, 24k mi, 4 dr, , white, tilt, cruise, V6, AM/FM/cass, warr, \$8450 OBO. Ron, x34713 or 333-2273.

'90 Toyota 4-Runner SR5 V6, AT, AM/FM/cass, pwr sunroof, windows, locks, 4 dr, cruise, ABS, low mi, \$16,950. Linda, x32891 or 554-4228.

'86 Chevy Silverado PU, custom camper, PB/PS, A/C, gray, \$5500. 420-2504.

'88 Toyota Camry DX, 52k mi, 5 spd, allow wheels, loaded, ex cond, \$7k. 282-2810 or 554-6138.

'89 Ford Escort, blk w/gray int, 2 dr, A/C, AM/FM/cass, tint, rear window defroster, new batt, 692-7191 or 893-9425.

'90 Mazda Protegé, 1.8 L, 4 dr, take over prmts, \$298/mo at JSC Credit Union, \$8k note. 252-2593.

'90 Mitsubishi Galant LS, auto, pwr windows, locks, A/C, cruise, PS/AB, AM/FM/cass, warr, 31k mi, \$11,250 OBO. 484-9233.

'89 Ford Tempo, loaded, low mi. Robert, 472-6323 or Tamela, x36155.

'89 Merkur XR4TI loaded, leather, sunroof, 5 spd, 53k mi, \$7575. 339-2949.

'89 Camry, blue, 37k mi, \$8600. 488-4576.

'86 Mitsubishi Mirage, 2 dr, blk, A/C needs repair, \$1k. x33683.

'79 Plymouth station wagon, needs minor body work. Magdi Yassa, 333-4760 or 486-0788.

'77 Volkswagen Westalia camper, sleeps 4, sink, stove and refig. Joe, 484-9373.

'85 Dodge Daytona turbo, auto, A/C/ 6 spkr stereo, gold/blk, \$2695. Bob, x33057 or 538-3431.

'82 Mazda 626 coupe, 5 spd, good cond, \$14.5k. x38925 or 480-0359.

'91 Previa Luxury edition, 15k mi, ex cond, privacy glass, 4 capt chairs, AM/FM/cass, CD equalizer, 9 spkr. Dennis, x39012 or 992-5285.

### Boats & Planes

'18 CC SeaRay, 135 Merc, 50 hrs, SSP, alum P, 3D Hum, VHF, Bimini, full instr, console cover, \$16k OBO. Scott, x49854 or 554-6167.

Evinrude 15 HP O/B motor, long shaft, elec start, fresh water only, \$900. 488-4850.

JSC

## Dates & Data

### Today

**Cafeteria menu** — Special: fried chicken. Entrees: fried shrimp, baked fish, beef stroganoff. Soup: seafood gumbo. Vegetables: okra and tomatoes, buttered broccoli, carrots in cream sauce.

### Saturday

**LLTV reunion** — The Apollo Program Lunar Landing Training Vehicle Project will commemorate its 20-year anniversary with a reunion at 6 p.m. Aug. 29 at the Gilruth Center. All former LLTV team members and their guests are invited. Cost is \$10 per person for food; reservations are required. For more information, call Herb Noakes at x34325, Peggy Zahler at x35511 or Ron Blilie at 244-3917.

### Monday

**Cafeteria menu** — Special: meat sauce and spaghetti. Entrees: franks and sauerkraut, sweet and sour pork chop with fried rice, potato baked chicken. Soup: cream of potato. Vegetables: French beans, buttered squash, lima beans.

### Tuesday

**Blood drive** — The next JSC On-site Blood Drive will be from 8 a.m.-3:30 p.m. Sept. 1 at the Gilruth Center. This also will be the first opportunity for employees to register to become bone marrow donors. Appointments are required; call Helon Crawford at x34159, Dan Mangieri at x33003, or Mary O-Rear at x36531.

**Cafeteria menu** — Special: smothered steak with dressing. Entrees: beef stew, liver and onions, shrimp

Creole. Soup: navy bean. Vegetables: buttered corn, rice, cabbage, peas.

### Wednesday

**Toastmasters meet** — The Spaceland Toastmasters Club will meet at 7:15 a.m. Sept. 2 in the Bldg. 3 cafeteria. For more information, call Darrell Boyd at x36803.

**Cafeteria menu** — Special: salmon croquette. Entrees: roast beef, baked perch, chicken pan pie. Soup: seafood gumbo. Vegetables: mustard greens, Italian green beans, sliced beets.

### Thursday

**Cafeteria menu** — Special: stuffed cabbage. Entrees: beef tacos, ham and lima beans. Soup: beef and barley. Vegetables: ranch beans, Brussels sprouts, cream style corn.

### Sept. 4

**Cafeteria menu** — Special: Salisbury steak. Entrees: fried shrimp, deviled crabs, ham steak. Soup: seafood gumbo. Vegetables: buttered carrots, green beans, June peas.

### Sept. 7

**Pressure Systems Week** — JSC will observe Pressure Systems Week Sept. 7-11, focusing on the use and safety of compressed gas cylinders. Short safety films aimed at preventing deadly mistakes will be shown from 2:30-4 p.m. Sept. 10 and 2-3:30 p.m. Sept. 11 at the Bldg. 226 Training Center.

### Sept. 9

**Toastmasters meet** — The

Spaceland Toastmasters Club will meet at 7:15 a.m. Sept. 9 in the Bldg. 3 cafeteria. For more information, call Darrell Boyd at x36803.

### Sept. 10

**AIAA lunch and learn** — The American Institute of Aeronautics and Astronautics Houston Section and its Guidance, Navigation and Flight Control Technical Committee will present a lunch and learn meeting at 11:45 a.m. Sept. 10 in the Bldg. 3 cafeteria. Victor Bond of McDonnell Douglas will discuss a "Double Lunar Swing-By." For more information, call David Clark at 486-6468, or Rob Carmody at 283-4101.

### Sept. 14

**Blood pressure screening** — The JSC Clinic and the American Heart Association will offer free blood pressure screening Sept. 14-18 at various times and locations around the center. For a detailed list of the times and places, call the clinic at x34111.

### Sept. 15

**Toastmasters meet** — The Spaceland Toastmasters Club will meet at 6:45 a.m. Sept. 15 at the Ramada Kings Inn on NASA Road 1. For reservations, call Steve Shields at x31941, or 474-5988 by Sept. 9. For more information, call Darrell Boyd at x36803.

### Sept. 23

**Toastmasters meet** — The Spaceland Toastmasters Club will meet at 7:15 a.m. Sept. 23 in the Bldg. 3 cafeteria. For more information, call Darrell Boyd at x36803.

The Landing, LC, \$275 + 1/3 util. 554-4944.

Want female non-smoker to share Seabrook house w/mother and 2 kids. 474-7783.

### Miscellaneous

Astronomy slide collection, x31883.  
Norwegian Cruise Line discount coupon, \$1000 off cruise for 2, asking 1/2 coupon value; solid wood gun cabinet, \$100 OBO; red Early American style rocker; corner 1-dwr student desk, \$10. X34354.

Entertainment center w/glass dr, ex cond, \$300; pair of Fisher speakers, \$50/pair. Robert, 286-7046.

Approx 10 doz duck decoys, Mallard and Pintail, w/weights, \$10/doz or 1 ea. Kim, x45425 or 559-2764.

EAZ-lift trlr tow pkg, up to 850 lb tung wt and sway control, \$75. 337-4319.

Arnold Palmer Hot Z The Axima Pro Tour golf bag, red, ex cond, BO. 337-4440.

Golf clubs 1, 3, 4, 5, 7 metal woods w/new grips, \$100. Art, 480-9186.

Sears Kenmore elec dryer, \$50. 480-6743.  
Fish tanks and equip, 29 gal, \$20; 20 gal, \$15; 10 gal, \$10; 3 air pumps, pwr heads, filters, lg Oscar fish, x37318.

Pair O'Brien water skis, ex cond, \$40. Kristal, x30804 or 585-6789.

Man's 10 lb Ebonite Rainbow lt blue bowling ball, \$50; GM AM car radio, \$25; new Emerson AM/FM digital clock radio w/snooze, \$15. Edward, x36250.

New 5'x8" utility trlr, 14" rims, loading tailgate, 2" sq steel const, treated wood floor, \$700 OBO. 996-0060.

280Zx service manuals, Nissan Service Manual and Haynes Repair Manual for '82, \$17/both. 996-0981.

Drafting table, 48"x36", oak trestle base w/lt green Vyco cover, ex cond, \$75; Cole drafting stool, blk vinyl seat and back, \$40, or both \$100; Bell 2-line phone w/30 number memory, \$30. James, 523-6616 or 641-2442.

58 gal oceanic aquarium w/finished wooden stand, pwr heads, undergravel filter, gravel, decorations, Eheim canister filter, all chemicals. Bill, 283-8129.

Soloflex machine w/butterfly attachment, all weight straps, additional iron wts avail. Bill, 283-8129 or 286-0637.

Four Dunlop D40 tires, sz 255 ZR 16, good cond, \$100. Bob, x32350.

Road Patrol XK radar detector; microcassette recorder w/extra tapes, ex cond, BO. Ron, x30887.

Black plastic storage/tool box for full sz truck bed, \$45 OBO. 332-9105.

Tool box w/lock for mid sz truck, \$100 OBO; spare tire w/rim, 4 bolt pattern, \$30 OBO. Youm, 283-4813.

Nordic Trac, ex cond, \$350. 1-424-1168.  
Four '92 Chevy Silverado alum rims and tires, Uniroyal Tiger Paws 235/75 R15, 30 mi, \$400 OBO. Kevin, 320-2410.

LT paneled storage chest on casters, 2'x4', \$99 OBO. 332-1614.

Portable dog pen, \$50; 4'wx6'h chain link gate, \$50; 6'x12' dog kennels, \$100 ea. Mark, x38013 or 992-4132.

\$60; whitewashed table, 5 chairs w/lt mauve seats, ex cond, was \$900, now \$475. 482-1505.

Black matrix17" color TV monitor, 134 ch, remote, stand, ex cond, \$250. x9552 or 480-4990.

Country French china buffet, lt finish, no flaws, ex cond, \$350. 992-5745.

Glass, brass, wood, DR table w/4 chairs, tan uphol, \$100; 2 twin beds w/matt, \$40. 337-6831.

Chromecraft dining table w/6 velvet uphol swivel chairs, \$250 OBO; Chromecraft dining table w/4 vinyl uphol swivel chairs, \$200 OBO. x35025 or 488-5989.

Maytag washing machine, good cond, \$100; Maytag washing machine, needs new timer. \$35; Kenmore elec dryer, ex cond, \$150. Darrell, x31496 or 538-1717.

Full sz head/footboard, Graco brougham stroller, Fisher Price play pen, Simmons crib w/matt and sheets, diaper pail. 286-3266.

Gas dryer, \$250; refig, \$100 OBO; portable dishwasher, \$50. Maria, x32608 or 474-3576.

Matching sofa and chair, lt blue floral pattern, ex cond, \$150. Ignacio, 282-3661 or 486-1078.

Girl's yellow BR set, dbl headboard, chair, nite table, dbl dresser, mirror, \$375. 480-2188.

LR furn, sofa, end tables, coffee table, recliner, all for \$175 or \$40 ea; 2 lamps, \$10 ea. Karen, 480-1658.

Extension table, 84", dk wood finish, \$125; Castro loveseat, beige stripe, \$190. x36665 or 333-9733.

Contempo sofa and matching chair, \$125. Terry, 283-6646 or 554-6631.

Entertainment center, dk oak, 52x55x17, ex cond, \$225. 538-1090.

### Wanted

Want printer and programs for IBM PC Junior. Don, 585-2132.

Want one rm A/C temp control and sm refig, good cond. Elie, 733-4123.

Want Tethered Satellite System (TSS) patch for STS-46, will buy or trade. Andrew, 280-0647.

Want Used Soloflex exercise machine, bar and bench only for \$400. Tim, 280-8102.

Want Ace publications of Tolkien's LOTR (1960's). Brad, x35461 or 332-0580.

Want 14' or larger flat bottomed (jon) boat w/motor. 488-6460 or 944-5615.

Want riders for vanpool, S Post Oak — S Braeswood to JSC/CLC. Richard, x37557.

Want backpacking equip, pack, stove, tent, etc, in good cond. David, x38990 or 338-2046.

Want roommates, non-smoking M/F to share lg 4 BR in South Shore Harbour, Harbour Park. Tim, x31456 or 538-1596.

Want non-smoking female roommate to share 3 BR in El Lago, \$350/mo + 1/2 util. Brenda, x36037.

Want roommate to share 2-2 apt, M/F, avail 9/1, \$310/mo. Tom, 333-7820 or 286-5136.

Want female roommate to share 3BR in Lakeside, non-smoker. \$370/mo incl util + dep. Ann, 282-3790.

Want female roommate to share 3-2-2,

# Total Quality Survey

## JSC's 1992 self-assessment shows off pockets of progress, exposes areas that need work

By Kelly Humphries

The results are in from JSC's 1992 Total Quality Survey, and while they indicate that employees and executives alike are seeing progress in some important areas they also point out that there's still a lot of room for continuous improvement.

Some of the best news is that employees see a greater centerwide focus on targets for improvement, and that those people who have become directly involved in Total Quality have a high opinion of the work that's been done so far.

On the down side, most employees don't feel more "empowered" than they did a year ago and many still see Total Quality efforts as a drain on the center's resources.

JSC Associate Director Dan Nebrig, who has been shepherding JSC's Total Quality efforts on behalf of JSC Director Aaron Cohen and JSC Acting Director Paul J. Weitz, said the survey results lead him to give the center a high "C" or low "B" for its efforts so far.

"While some of the results would appear to be discouraging, knowing that we got more favorable response in the areas that we concentrated on — strategic planning and training — I think we have established a good platform of understanding and knowledge from which we can continue our improvement process," he said.

Nebrig pulled no punches, however, when it came to the areas that need the most improvement such as empowerment, rewards and recognition and communications. "Some of them are just down, we've got to get them up."

JSC's Total Quality Steering Committee this week released the analysis of the '92 survey, which pulsed 325 randomly invited JSC employees in April and compared the results to a similar survey taken a year before. A separate survey was put to a small group of managers at JSC's four largest contractors —

Rockwell, Lockheed, Loral and McDonnell Douglas.

The survey ranked responses from 5, or most favorable, to 1, or least favorable. The results were computed and analyzed by the Cumberland Group under the supervision of Human Resources' Diane DeTroye and Chris Parker, and expressed as means.

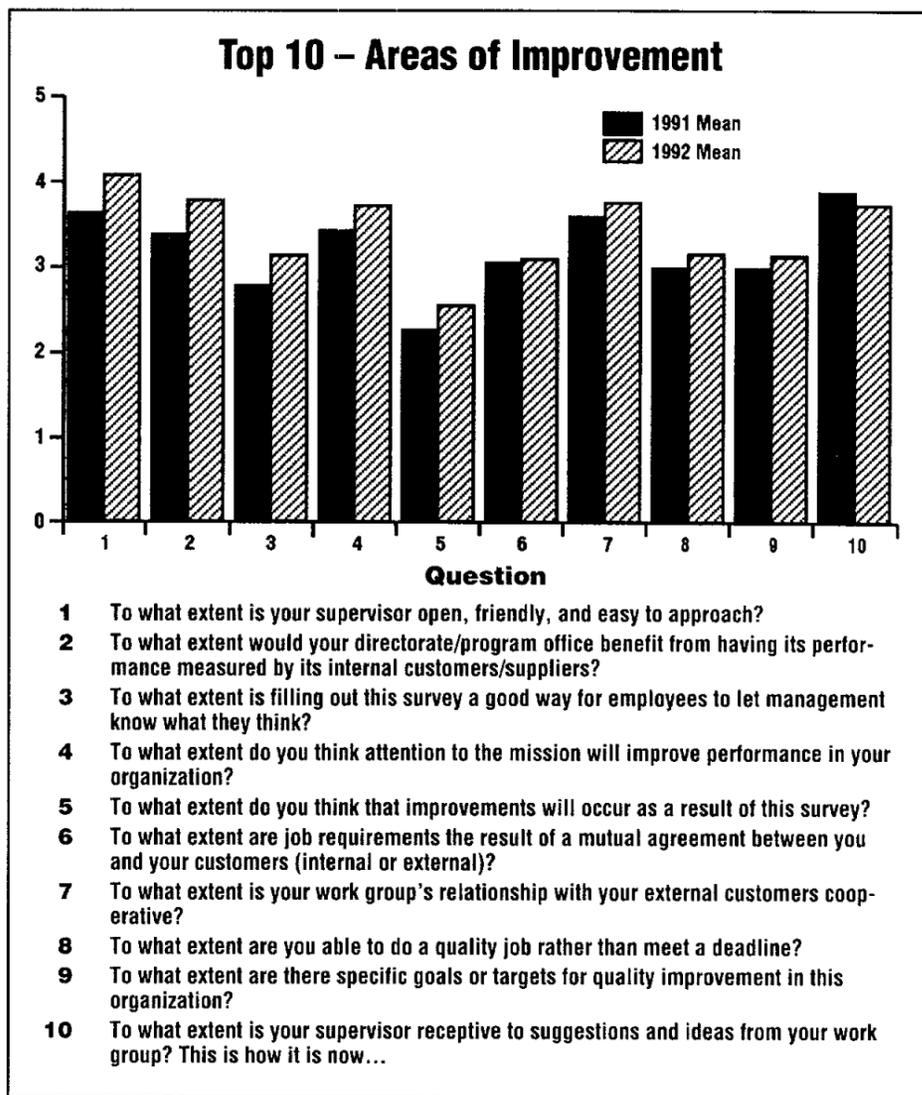
In addition, the Human Resources Development Branch put the same questions to JSC's Q+ teams and their leaders, and set up penetrating interviews with 18 of JSC's senior managers. The interview responses were then presented anonymously.

"We tried to take each of the executive interview sessions and find supporting documentation or differences in the quality questionnaire," said Development Branch Chief Susan Braymer. "We tried to correlate their comments with the responses to the employee questionnaire."

The steering committee's five subcommittees then pulled together all five different data sets, comparing, contrasting and correlating the results along the lines of criteria used to select winners of the President's Award for Quality — management leadership and support, employee empowerment and teamwork, strategic planning, focus on the customer, quality assurance activity, quality and productivity improvement results, measurement and analysis, employee training and employee recognition.

Out of these seven self-assessment criteria, JSC took a dip in all but two — training and strategic planning. But the results weren't unexpected, because many corporations that are farther along in their journeys toward Total Quality have experienced similar dips when their focus is improved through a better understanding of the continuous improvement process.

"When you have a very shallow awareness of what the Total Quality process is about, you tend to believe you're doing better than you are," Nebrig said. "Once you understand what the process is really about, it's not unusual to experience this dip. The



challenge, of course, is to rise from there."

In the plus column, JSC employees displayed an increased awareness of the JSC Strategic Plan and of the structure in place to facilitate Total Quality implementation. They also exhibited a belief that there has been a greater centerwide focus on goals for improvement, including an obvious time and budget commitment to training and implementation.

Those who have been directly involved in the Total Quality process — Q+ team chairs, for example — gave a more favorable impression of implementation efforts and of the success of strategic planning.

Question 98: JSC will be successful in adopting a continuous improvement philosophy. JSC mean score: 3.3, Q+ teams mean score: 3.66.

The biggest gain in the survey from 1991 to 1992 was found in employees' belief that supervisors are open, friendly and easy to approach. The jump was from a mean of 3.63 in 1991 to a mean of 4.06 in 1992. Employees also seemed to raise their expectations of supervisors as well, with the score relating to how employees would like their supervisors to act moving up from 4.45 in 1991 to 4.64 in 1992.

Question 56: To what extent is your supervisor open, friendly and easy to approach? Mean score: 4.06, up from 3.63 in 1991.

The survey showed that team participation is a positive experience that generates enthusiasm, that employees are willing to share their ideas, that supervisors maintain high standards, that employees feel their organizations are committed to meeting customer requirements and that employees agree with the center's stated mission.

Several leadership issues made the room for improvement column, including a perceived lack of active involvement by senior managers in changing JSC's culture to Total Quality, a perceived "passive resistance" to Total Quality by some supervisors and managers, inconsistent levels of training — both formal and informal — below the branch level, and a perception that Total Quality represents a significant resource drain.

Question 90: To what extent is higher management receptive to change? Mean Score: 2.71, down from 2.74 in 1991.

JSC's Strategic Plan is not being implemented as fast as some employees and managers believe it should be, and the implementation process is still unclear for many, according to the survey. In addition, employees responding to the survey didn't see the level of JSC's top management involvement in strategic planning and their assessment of JSC's progress in strategic planning wasn't as high as the senior staff's. There also is a lack of understanding about how the strategic planning goals of directorates and program offices fit into the overall center plan and a belief that there is a lack of shared vision, goals and strategies that cross organizational lines.

Employees and managers alike reported that inter-organization teamwork could stand some improvement. The results tend to indicate that JSC cooperates well in a crisis, but not in day-to-day operations. There also is a perceived lack of joint planning and of a structure for working multi-organizational issues, such as opportunities for improvement, or OFIs, that involve multiple organizations.

Question 26: To what extent do different directorates and program offices plan together and coordinate their efforts? Mean score: 2.53, down from 2.94 in 1991.

Both the survey responses and interviews with executives revealed a lack of emphasis by management in the area of Total Quality measurement and Isics, something that NASA Administrator Daniel Goldin has stressed in his talks about continuous

improvement. JSC has not yet honed its focus on the measurement of processes, measurable improvement goals have not been established and employees' work is not being measured against specific performance standards, according to the data.

Question 29: To what extent does your directorate/program office have work standards or other criteria which enable measurement of performance? Mean score: 2.58, down from 2.97 in 1991.

The importance that senior management has placed on improving processes is not being communicated to employees well enough, according to some of the survey answers. There is a lack of identification and prioritization of the work processes and a lack of customer identification and customer requirements. Both of these points are fed by the fact that the overall philosophy of customer focus is not yet well understood throughout JSC.

Question 31: To what extent would your directorate/program office benefit from having its performance measured by its internal customers' suppliers? Mean score: 3.77, up from 3.37 in 1991.

Finally, in the area of empowerment, there is still no consensus among employees and managers about what constitutes empowerment. Employees surveyed said they don't feel more empowered that they were a year ago, and managers feel they are empowering employees just by communicating knowledge to their employees.

The survey shows employees do not see much movement toward empowerment, they don't believe center decisions are made at the level where accurate information is available and they don't feel like they are encouraged to take risks to improve performance.

Question 89: When decisions are made, to what extent are the persons affected asked for their ideas? Mean score: 2.73, up from 2.69 in 1991.

There were mitigating circumstances that may have colored some of the survey responses, Nebrig said. For example, the new administrator's decision to put together a set of red and blue teams to challenge the content, timing, technology and management of NASA's programs combined with the demands of putting together the agency's portion of the 1993 budget submission to the President have stalled implementation of the JSC Strategic Plan somewhat. When those efforts are completed and folded into the planning process, the implementation of the plan will begin in earnest.

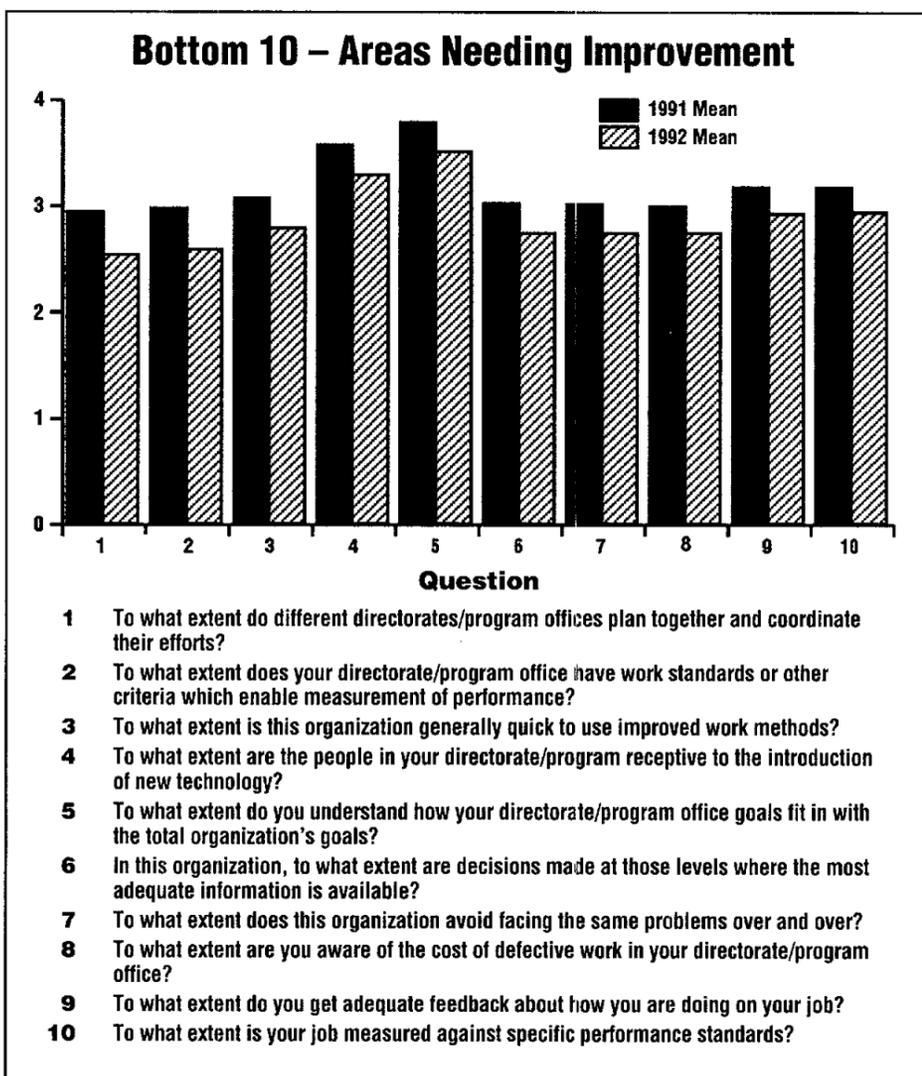
Disconcerting results in another area — the perception that Total Quality represents a significant resource drain on the center — should be accepted with the knowledge that Total Quality is a long-term effort and that benefits aren't being seen early on. As Total Quality projects begin paying off, the "drain" may be seen as more of an investment, Braymer said.

Nebrig said the survey was successful in providing a milestone by which to judge how far the center has traveled on its Total Quality journey.

Many of the trouble areas already are being addressed by the Total Quality steering committee. The committee met Monday to discuss the status of the effort and decided to concentrate on empowerment, strategic planning, process improvement and measurement in the next several months.

In one troubling area, that of measuring improvement, Cohen has challenged each organization to develop five measures of performance, which he will review quarterly. The data will be compiled so that trends can be identified and addressed appropriately.

"The survey indicates that to make progress we must improve the lows and sustain or improve the highs," Nebrig said, "and the center will need the enthusiastic support of all employees to accomplish this." □



- 1 To what extent do different directorates/program offices plan together and coordinate their efforts?
- 2 To what extent does your directorate/program office have work standards or other criteria which enable measurement of performance?
- 3 To what extent is this organization generally quick to use improved work methods?
- 4 To what extent are the people in your directorate/program receptive to the introduction of new technology?
- 5 To what extent do you understand how your directorate/program office goals fit in with the total organization's goals?
- 6 In this organization, to what extent are decisions made at those levels where the most adequate information is available?
- 7 To what extent does this organization avoid facing the same problems over and over?
- 8 To what extent are you aware of the cost of defective work in your directorate/program office?
- 9 To what extent do you get adequate feedback about how you are doing on your job?
- 10 To what extent is your job measured against specific performance standards?

# NASA, DOE select Sprint for communications services

NASA and the Department of Energy have selected Sprint to provide broadband communications services that will upgrade the technology of three of their national research data networks.

The contract has an estimated value of more than \$50 million over the next five years. Sprint will use a new technology based on high speed transmission of fixed length cells of data to enable the communications networks to increase speed tremendously, from 1.5 million to 622 million bits per second.

This contract is expected to accelerate Sprint's schedule in

making the new technology available on a nation-wide commercial basis, originally not expected before 1994.

Four companies will work together on this state-of-the-art technology. Sprint, Kansas City, Mo., will provide fiber-optic communications facilities. TRW, Redondo Beach, Calif., will provide new broadband access switches developed by their Space Communications Division. Cisco, Menlo Park, Calif., will supply network routers and Digital Equipment Corp., Maynard, Mass., will be responsible for the network management software.

DOE's Energy Sciences Network (ESnet) and NASA's AERONet and Science Internet (NSI) provide high-speed, nation wide and international data communications to support a variety of open research and educational programs in energy, aeronautics, space and Earth sciences. Universities, laboratories and research centers use the networks.

This activity is funded under the Federal High Performance Computing and Communications program. The program was a 1992 Presidential initiative and was authorized in the High Perform-

ance Computing Act of 1991. A fundamental objective of the initiative is to promote U.S. competitiveness in the fields of scientific computing and communications.

The program is a nine-agency effort with four major components, including High Performance Computing Systems, Advance Software Technology and Algorithms, National Research and Education Network (NREN) and Basic Research and Human Resources. The selection of Sprint represents one of the first major contracts to be established under the network component of the program.

This contract makes Sprint the first carrier to provide wide area Asynchronous Transfer Mode, an emerging technology. The ATM technology is considered the precursor to a broadband technology, called B-ISDN, that will support future multi-media universal transmission. This technology will be capable of simultaneously carrying voice, data and video communications traffic as well as bandwidth-intensive applications, for example, the transfer of high definition television images and links for networks with high capacity Local Area Networks.

## Pressure Systems Week will focus on gas cylinder safety

Use and safety of compressed gas cylinders, sometimes referred to as "sleeping giants," will be the focus of discussions during the annual Pressure Systems Week, Sept. 7-10, at JSC.

Compressed gas cylinders provide the ease of transportation and accessibility of various gases, but in the hands of a careless user, the cylinders can be hazardous.

Since 1976, JSC has operated a certification program eliminating many hazards. Basic rules for operating pressure systems include identifying the contents of all cylinders,

keeping protective caps in place, storing cylinders in clean, dry and well-vented areas and keeping them away from heat sources.

During pressure systems week, short safety films will be shown that will emphasize safe use of a compressed gas cylinder. Films will be shown at the Training Center, Building 226N, from 2:30 to 4 p.m. Sept. 10 and from 2 to 3:30 p.m. Sept. 11.

Representatives from the Pressure Systems Group also will be on hand to answer questions.

## Goddard historical essay contest begins

Entries are now being accepted for the 1992 Robert H. Goddard Historical Essay Award Competition sponsored by the National Space Club.

The annual contest is open to any United States citizen and carries a \$1,000 prize.

Essays may explore any aspect of the historical development of rocketry and astronautics, and will be judged on originality and schol-

arship. They may bring new information to light or cast new and different light on events or individuals influencing rocketry and astronautics.

Entries must be submitted by Dec. 4, to the Goddard Historical Essay Contest, c/o National Space Club, 655 15th Street N.W., Suite 300, Washington D.C., 20005.

The winner will be announced at a ceremony in March 1993.



JSC Photo by Mark Sowa

**SHAPING UP** — Space Center Houston is really shaping up, with the building exterior complete and its parking and tranway system nearly finished. This aerial photo shows where the last section of parking lot will be laid now that JSC's old Bldg. 100 has been removed. In the upper right, the new road for the trams that will carry visitors through JSC can be seen snaking from the rear of Space Center Houston, under a Saturn Lane overpass and toward Rocket Park. Work on the interior also is progressing, and the grand opening remains scheduled for Oct. 16.

## Actions put Total Quality on daily agenda for JSC management, workers

(Continued from Page 1)

A training survey will go to eight different groups involving executives, supervisors, employees and Q-team members and look at the concepts, skills and tools needed to implement Total Quality, identify what employees know now and what they need to know and determine the priority areas for training.

In addition, the Executive Council has institutionalized Total Quality training by assigning the Development Branch to perform the assessment and implement the plans that are formed, with the help and guidance of the training subcommittee.

The subcommittee on process

improvement, led by Space Shuttle Engineering Integration Deputy Manager Lee Norbraten, is continuing to put together a plan to promote a continuous improvement culture at JSC.

All organizations are being required to identify and prioritize their work processes, and to establish and track process measurements. They also will be asked to promote the formation of process improvement teams that cross organizational lines and to promote a customer satisfaction focus.

Weitz has taken the action to work out a schedule for the implementation of the process improve-

ment recommendations.

The strategic planning subcommittee, led by Mission Operations Deputy Director John O'Neill, is working with each directorate to develop two-phase implementation plans. Initial plans are due in September, and the final plans are due in November. As soon as the NASA-wide red and blue teams and NASA 1993 budget submission to the President are completed this fall, the group will fold the decisions into JSC's planning process, and move wholeheartedly into implementation of the updated JSC Strategic Plan. The subcommittee also is investigating the feasibility of

centerwide resource accounting and reporting.

The measurement and benchmarking subcommittee, led by Safety, Reliability and Quality Assurance Deputy Director Gary Johnson, will develop and implement a JSC Benchmarking Plan. The plan will be designed to communicate a basic understanding of how benchmarking — a comparison of like processes with those of other organizations or companies — works, and outline the steps it will take to put benchmarking to work for JSC.

The subcommittee is working with the International Benchmarking Clearinghouse and its parent, the

American Productivity and Quality Center in Houston, to incorporate lessons from other Total Quality programs around the country. JSC represents NASA as a member of the clearinghouse.

The customer/supplier partnerships subcommittee, led by New Initiatives Deputy Manager Jerry Craig, this week began visiting various contractor locations to see what kinds of partnerships are already in place that might serve as models for agreements that encompass both internal and external customers and suppliers. The subcommittee also is investigating alternative contracting and acquisition methods.

## Tiny ocean plants are subject of environmental research project

(Continued from Page 1)

passive data-collection techniques to help them develop analytical tools for future satellites that will map phytoplankton concentrations on a world-wide scale.

In addition to measuring the phytoplankton, the researchers also will measure dissolved organic matter in

the ocean. Hoge said the organic matter interferes with gathering accurate satellite phytoplankton measurements.

The AOL transmits a green light pulse from a laser into the water where the light is absorbed by the phytoplankton. A receiver on the aircraft detects the green light reflected

from the water surface and red light which is emitted by chlorophyll pigment in the phytoplankton.

At the same time, another instrument on the aircraft is taking measurements from sunlight reflected from the water and light emitted by the chlorophyll. Satellites, which lack the facilities to power a laser

system, measure changes in ocean color that indicate where concentrations of phytoplankton are located.

Wallops researchers are basing their flights from Hilo, Hawaii. Measurements will be taken in conjunction with a University of Washington scientific research vessel.

Once the P-3 aircraft reaches 3

degrees south of the equator, the P-3 will turn toward the west taking measurements on both sides of the equator as the plane advances toward Christmas Island.

The NASA project is part of the Joint Global Ocean Flux Study supported by the National Science Foundation.

## Engle earns lifetime achievement award for making aviation history

(Continued from Page 1)

and served with the 474th Fighter Day Squadron and the 309th Tactical Fighter Squadron at George Air Force Base, Calif., before attending the Air Force's Test Pilot School and Aerospace Research Pilot School at Edwards Air Force Base, Calif., in 1960.

While at Edwards, he was assigned to the Fighter Test Branch and flew numerous test projects including the X-15 rocket research plane. Three of his 16 flights in the X-15 exceeded an altitude of 50 miles. Engle joined NASA in 1966 and

served as backup lunar module pilot for Apollo 14. He commanded one of two crews that flew the approach and landing test flight of the Space Shuttle *Enterprise*. He flew *Columbia's* second flight and commanded *Discovery's* crew on STS-511.

Engle also served as deputy associate administrator for manned space flight at NASA Headquarters.

He has logged more than 224 hours in space, and more than 13,000 flight hours in more than 160 types of aircraft.

The Wings Over Houston Airshow will be Oct. 3-4 at Ellington Field.

## Space News Roundup

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

Dates and Data submissions are due Wednesdays, eight working days before the desired date of publication.

Editor ..... Kelly Humphries  
Associate Editor ..... Kari Fluegel

## Bowling leagues begin seasons

Two NASA bowling leagues are beginning their seasons.

The JSC Men's Bowling League, which bowls at Alpha Bowl at 6 p.m. Thursdays, began its season yesterday and will continue through May 20. Each team consists of five men.

For more information, call Roy Hatch at x32158.

The NASA Mixed Bowling League

will begin its 1992-1993 season next month at Alpha Bowl. The league bowls at 6 p.m. Tuesdays.

The league is comprised of 16 teams with five bowlers per team and at least two women in the lineup.

For more information, call Jim McGavern at 283-4387, or Leona Kain at 282-2544.

## LLTV team reunites Saturday at Gilruth

The Apollo Program Lunar Landing Training Vehicle Project will commemorate its 20-year anniversary with a reunion at 6 p.m. Saturday at the Gilruth Center.

All former LLTV team members

and their guests are invited. Cost is \$10 per person for food; reservations are required. For more information, call Herb Noakes at x34325, Peggy Zahler at x35511 or Ron Blille at 244-3917.