Space Administration

Lyndon B. Johnson Space Center Houston, Texas



NMA award winners

JSC Deputy Director Paul Weitz and two other center employees were honored by the National Management Association. Story on



Dawn's early light

The STS-41 crew uses a Texas sunrise as the backdrop for its official crew portrait. Photos on Page 4.

pace News Roundup

July 20, 1990

Class of '90 begins year of training

Twenty-three of America's finest reported here for duty this week as the astronaut class of 1990 began a year of candidate training and evaluation for what some have called the best job in the world.

The reinforcements are a welcome relief as NASA resumes Shuttle flight operations with an active schedule ahead, according to Chief Astronaut Dan Brandenstein. Since the last selection, three years ago, the astronaut roster has dwindled from 98 to 84

At an informal reception on Monday to introduce the candidates to news media, Brandenstein called them his "Excedrin group."

"These guys are going to relieve a lot of my headaches," he said.

Selected from nearly 2,000 qualified applicants earlier this year, the group consists of seven pilot and 16 mission specialist candidates. Among five women selected are three military officers, including the first woman to be named as a pilot candidate, and the first Hispanic woman to be selected. There are 11 civilians and 12 military officers total.

After being indroduced by their new boss, the candidates mingled and talked with national and local news correspondents about joining the ranks of the astronaut corps, particularly at a time when NASA has

Please see TRAINING, Page 4



Chief Astronaut Dan Brandenstein introduces the astronaut class of 1990. From left to right are, first row, William Gregory, Daniel Bursch and Carl Walz; second row, Richard Searfoss, Donald Thomas, Nancy Sherlock and Ronald Sega; third row, James Halsell, Eileen Collins, James Newman and Leroy Chiao; fourth row, Charles Precourt, Michael Clifford, Ellen Ochoa and Kenneth Cockrell; fifth row, Janice Voss, William McArthur, Susan Helms and Peter Wisoff; and last row, Thomas Jones, David Wolf, Bernard Harris and Terrence Wilcutt.

Atlantis test to determine launch schedule

A third liquid hydrogen tanking test on Atlantis is scheduled Wednesday to either prove that the leak discovered on the flange of the 17-inch disconnect is repairable on the pad or that the vehicle must be returned to the Vehicle Assembly Building for repair.

If the leak proves to be fixable on

the launch pad, Atlantis and its Department of Defense payload could be launched on the STS-

38 mission as early as Aug. 10, according to Associate Administrator for Space Flight William Lenoir.

If the leak can not be repaired on the pad or is determined to be out of flight specifications, Atlantis will be returned to the VAB and Columbia will take its place on launch pad 39A for preparations leading to launch on the STS-35 Astro-1 mission in late August or early September.

Columbia is now outfitted with the 17-inch disconnect from Endeavour, NASA's newest shuttle currently under construction in California. Columbia's external tank also is the leakage detected during the outfitted with a new disconnect

In analyzing launch scheduling, Lenoir said Tuesday there is one sequence of events that permits two flights to be launched prior to the STS-41 mission on Oct. 5.

"It requires some luck on our part" to fly the STS-38 and STS-35 missions first, he added.

If STS-38 launches about Aug. 10,

Columbia could be in position to carry out its Astro-1 mission postponed from June around the

second week of September

The team charged with finding and fixing the hydrogen leaks discovered on Columbia in May and Atlantis in June is closer to wrapping up its investigation of the problem, Lenoir

"Not only do we see the light at the end of the tunnel, but I believe we are out of the tunnel. And that we are out in the daylight ourselves," he said.

In preparing tor Wednesday's tanking test on Atlantis, plans continued this week to further understand

Please see ATLANTIS, Page 4

Total Quality Management targets excellence

By Kelly Humphries

JSC Director Aaron Cohen is ready to shoot for a tenfold increase in the quality of JSC's products, services and processes by 1995 using a new weapon called Total Quality Management, or TQM

TQM is not just another productivity improvement "buzzword," nor is it another acronym to rattle off, according to proponents that include NASA Administrator Richard Truly and other top managers. It is, however, a set of principles, processes and techniques that is working for other world-class organizations and can help make a good NASA organization better.

Companies that have made significant quality

improvements through TQM in recent years include Xerox, which achieved 13 times fewer production line defects; Motorola Inc., which achieved tenfold reductions in defects three times in 10 years; and Westinghouse Commercial Fuel Division, which achieved a reliability rate of 99.9995 percent in its 30 plants.

According to its NASA proponents, TQM eventually will personally involve every civil service and contractor employee. There won't be many big changes, but many small changes will deeply affect individual workers.

If TQM works, everyone will be carefully planning their work, listening to each other, working together, receiving special training,

systematically searching for ways to improve, measuring their performance and developing an esprit de corps that comes from feeling appreciated. Each of these factors will build on the others and be guided by a shared vision of what's important.

"At the very core of TQM is the continual striving for excellence. You can't slack off, you've got to keep after it," said JSC Associate Director Dan Nebrig, who has been assigned by Cohen to lead the center's implementation working group. "It really gets down to every employee having to embrace and strive for implementing the principles of TQM."

And the pressure is on for employees to jump

on the TQM bandwagon, because Truly has targeted 1991 as the year NASA will try to win the President's Award for Quality and Productivity.

The President's Council on Management Improvement and the Office of Management and Budget are urging all federal agencies to implement TQM.

With the efforts already under way and a renewed thrust, NASA can become a model agency' for TQM as already signified by Lewis Research Center and Johnson Space Center's receipt of the OMB Quality Improvement Prototype Award," Truly stated in a recent letter.

Please see TQM, Page 3

Apollo-Soyuz crews to reunite 15 years after space rendezvous

American and Soviet crew members of the Apollo-Soyuz Test Project (ASTP) will return to the Johnson Space Center on July 24 for a reunion observing the 15-year anniversary of their historic mission.

Astronauts Tom Stafford and Deke Slayton, both now retired, and Cosmonauts Alexey Leonov and Valery Kubasov will join in a tour of three NASA centers to celebrate history's first international joint space mission. Astronaut Vance Brand, commander of upcoming Shuttle mission STS-35 and a member of the ASTP crew, will participate in the JSC events if schedules permit.

Spouses and family members of the crew also will take part in the reunion activities.

The party will arrive Tuesday morning at Ellington Field where Center Director Aaron Cohen will

Employees who worked on ASTP and who can be spared from their regular duties are invited to form a welcoming group in the breezeway between Building 2 administration wing and the Visitor Center. Participants should be in place by 10:30 a.m. Tuesday.

A press conference will be held at 10:45 a.m. in the JSC press briefing room, building 2, room 135. Following the press conference, the ASTP crews and their families will be guests of Stafford and Cohen for a luncheon at the Gilruth Center.

In the afternoon, the group will tour the Weightless Environment Training Facility, Mission Control, the Shuttle trainer and the Space Station Freedom full-scale mockups.

At 3:45 p.m., the party will return to the press briefing room for the signing of a letter of agreement between the Soviet Soyuz All-Union

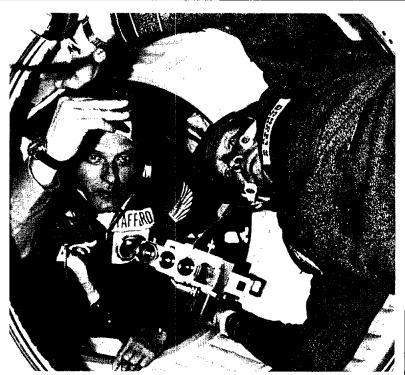
Aerospace Youth Society, acting on behalf of Gosteleradio (USSR television), and the producers of Houston Public Television's new PBS children's space science series, "The Spacewatch Club." The

agreement finalizes arrangements for two television projects to be jointly produced by the Soyuz Society, Gosteleradio, PBS and Spacewatch.

Kubasov will sign for the Soyuz Society and James S. Miller, executive producer of "The Spacewatch Club" series, will sign for Houston Public Television.

An evening reception sponsored by the Space Foundation will be at the Lunar and Planetary Institute adjacent to Johnson Space Center. The group will depart Ellington Field Wednesday morning for a reunion celebration at the Marshall Space Flight Center in Huntsville, Alabama.

Please see ASTP, Page 4



Astronaut Thomas A. Stafford and Cosmonaut Aleksey A. Leonov pass photographic equipment through the Apollo Docking Module during their historic two-day link-up.

Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Gift Store from 10 a.m. to 2 p.m. weekdays.

General Cinema (valid for one year): \$3.75 each. AMC Theater (valid until May 1991): \$3.50 each.

Sea World (San Antonio, year long): adults, \$17.25, (2-day, \$21.95); children (3-11) \$14.75, (two-day, \$18.95).

Astroworld (valid 1990 season): season, \$39.95; regular, \$15.97; children, \$9.21; Waterworld, \$8.15; two-day—AW/WW, \$18.47.

Gilruth Center News

Sign up policy—All classes and athletic activities are first come, first served. To enroll, you must show badge or EAA card and pay at the Gilruth Recreation Center. Classes tend to fill up four weeks in advance.

EAA badges—Dependents and spouses may apply for a photo I.D. 6:30 p.m.-

Defensive driving-Course is offered from 8 a.m.-5 p.m. Aug. 18 and Sept.

Weight safety-Required for use of weight room. The next class will be from 8-9:30 p.m. July 26; cost is \$4.

Aerobics and exercise—Both classes are ongoing

Ballroom dance—Classes begin Aug. 2. Cost is \$60 per couple.

Mixed Volleyball—Registration will be held on July 31. The league will meet on Monday and Friday nights. NASA badged teams will sign up first.

Fall Basketball—Registration for basketball leagues will be held on August & 2. This season will consist of a Wednesday B, Thursday C, & Tuesday C. NASA badged teams will sign up first.

Technical Library News

These new publications are available in the JSC Technical Library, Bldg. 45,

Systematic Systems Approach: An Integrated Method for Solving Systems Problems, Thomas H. Athey.

Advances in Thermoplatic Matrix Composite Materials, ASTM.

Digital Control System Design, G.H. Hostetter.

MOS Switched-Capacitor and Continuous-Time Integrated Circuits and Systems: Analysis and Design, Rolf Unbehauen.

Boundary Layers, A.D. Young. Technology and the Civil Future in Space: 26th Goddard Memorial Symposium, American Astronautical Society.

Dates & Data

Today

Space art lecture—The Institute for Electrical and Electronic Engineers will host a lecture and art exhibit on "Space Art: Windows on the Future" by SAIC's Pat Rawlings at noon July 20 in Teague Auditorium. For more information, call Spaceweek at 333-3627

Space society meets—The Houston Space Society will meet at 7:30 p.m. July 20 in Rice University's Space Science Bldg., Rm. 106. Jim Jordan will speak on "Lunar Resources." For more details call 639-4221.

Cafeteria menu-Special: tuna and noodle casserole. Entrees: broiled codfish, fried shrimp, baked ham. Soup: seafood gumbo. Vegetables: corn, turnip greens, stewed tomatoes.

Monday

Chiller Facility Open House-JSC's new auxillary chiller facility, Bldg. 28, will be open to JSC and contractor employees for ribbon cutting ceremonies and viewing from 1-4 p.m. July 23. The new plant is located on Fifth Street just north of the Bldg. 35 parking

Pressure Systems Week-This year's theme is "Safe Under Pressure." Topics this year will focus on pressure vessels used at work and at play. Today's presentation will be at 1 p.m. July 23 in Bldg. 350, Rm. 130, Call O.T. Lewis, x35710, for more information.

Cafeteria menu-Special: meatballs and spaghetti. Entrees: weiners and beans, round steak with hash browns. Soup: chicken noodle. Vegetables: okra and tomatoes, carrots, whipped potatoes.

Tuesday

Pressure Systems Week -Today's presentation will be at 9 a.m. July 24 in Bldg. 9, Rm. 113. For more information, contact O.T. Lewis, x35710.

BAPCO meeting—The Bay Area PC Organization (BAPCO) will meet at 7:30 p.m. July 24 at the League City Bank & Trust. For more information call Earl Rubenstein, x34807, or Tom Kelly, 996-5019.

Cafeteria menu-Special: fried chicken Entrees: beef stew, shrimp creole, sweet and sour pork chop with fried rice. Soup: beef and barley. Vegetables: stewed tomatoes, mixed vegetables, broccoli.

Wednesday

Threshold Group meeting—The Threshold Group will hold its next meeting from 4-5 p.m. July 25 in Bldg. 45, Rm. 351. For more information contact James Sturm, x33085.

SCS meeting—The Society for Computer Simulation (SCS) will meet from 11:45 a.m.-12:45 p.m. July 25 in the Bldg. 3 cafeteria. JSC's Frank Hughes will speak on "Prospects for Simulation at NASA/JSC." For more information call Robin Kirkham, 333-7345, or Wade Webster, 486-6450.

JSC Astronomy Seminar—The seminar will be a Rice University videotape featuring Dr. Edison Liang-"Gamma Rays From Nearby Supernovas" from noon-1 p.m., July 25, in Bldg. 31, Rm. 129. For more information call Al Jackson, x33709

Cafeteria menu—Special: Swiss steak. Entrees: fried perch, New England dinner. Soup: seafood gumbo.

Vegetables: Italian green beans, cabbage, carrots.

Thursday

JSC-ARC meeting—The monthly meeting of the JSC Amateur Radio Club will be held from noon -1 p.m. on July 26 in Bldg. 16, Rm. 253. For more information, call Gil Carman,

Pressure Systems Week -Today's presentations will be at 10 a.m. and 2 p.m. July 26 in the Gilruth Center, Rm. 204. For more information contact, O.T. Lewis, x35710.

Exploration seminar-The Solar System Exploration Division Seminar Series will present Dr. Larry Nyquist. who will speak on "146Sm-142Nd: A Short-Lived Nuclide Makes Good as a Long-Lived Chronometer," at 3:30 p.m. on July 26 in Bldg. 31, Rm. 129. Call Nadine Barlow, x35044, for more information.

Cafeteria menu-Special: stuffed bell pepper. Entrees: turkey and dressing, enchiladas with chili, weiners and baked beans. Soup: cream of chicken. Vegetables: zucchini squash, English peas, rice.

July 27

Pressure Systems Week -Today's presentations will be at 9 a.m. and 3 p.m. July 27 at Ford Aerospace, Rm. 206. For more information contact O.T. Lewis, x35710.

Cafeteria menu—Special: Salisbury steak. Entrees: baked scrod, 1/4 broiled chicken with peach half. Soup: seafood gumbo. Vegetables: cauliflower Au Gratin, mixed vegetables, buttered cabbage, whipped potatoes.

Swap_

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 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

Rent: Lake Livingston, waterfront, 3-2, CA'H, furn., wk or wknd rates, 482-1582.

Sale: 60 acres, 3 mi. from Karnes City, Tx, on Hwy 80, 50ml from San Antonio; 2-story house on 1.5 lots, fruit trees, El Campo, Tx. 783-9164 Sale: Pipers Meadow 2-2-2, fenced, clean,

vaulted ceiling, mini blinds, refrig., \$650 mo. + dep., 1-yr lease. 486-0315. Lease: South Bend/San Jacinto College South

3-2-2, formal dining, FP, fenced, no pets, gas utility, \$595 mo. 482-6609. Sale: 2 lake lots on Toledo Bend Lake, Toledo

Beach Subdiv., water, elect., septic tank, \$10K. Sale: .86 acres res. restricted, all utilities avail.,

Magnolia/Woodlands area, \$10K, OBO. Rob, x33484 or 481-6185. Rent: Furn. 1 bdrm studio in home on waterfront near NASA, pool, flex. lease, util. paid, ref., \$385/ mo. + dep., discount avail. for gardening serv.

Mario or Sue, x32799 or 532-1725 Rent: Dickinson, 3 BR, 3-car garage, lg kitchen, workshop, game/exercise rm, on 1 acre, fenced, oak floors, ceiling fans, FPL, \$1050/mo. 337-5990. Rent: Lake Travis cabin, private boat dock CA/H, fully equip., accom. 8, summer/fall \$425/

5/\$80 day, 326-5652. Sale: LC/Dickinson, 3-2-2 plus, lg guest/game rm, screened porch, 1 acre, \$77K. 534-6641. Sale: Vacation resort, 2-2 furn, condo, sleeps

6, pool, hot tub, steam/weight rm. 45 min from

JSC, \$12K. Steve, x38204 or [409] 938-3171 Sale: Heights 3-2-2 completely remod., CA/H, FPL, large closets, game rm. corner lot, deck, porch swing. Tom, x31418 or 863-7561.

Bent: Rm in lg., clean, cool house, quiet usually. no hassle, \$270/mo. Eric, x38420 or 484-9179. Sale: Lot, Dixie Hollow Subdiv., Pearland, all utilities, concrete with curbs, \$9500. x39530 or 482-2455.

Sale/Lease: Friendswood/Wedgewood, 4-2-2, FPL, A/C, rent \$700 to \$725 + dep. and ref., avail. Aug. x37041 or 996-0033.

Sale: Green Acres, 2-2.5-1+1 townhome w/ garage, \$7K assume FHA fixed rate, no approval loan, new roof, A/C, oven & range, FPL, deck. x35250 or 333-2636

Sale: Pebblebrook Condo, 1-1-1, lq LR, lq walkin BR closet, near NASA, \$24,900 or lease \$385/mo. James. 282-3750 or 482-6744

Sale: Wedgwood Village, Friendswood, 3-2-2, new paint, FPL, cul de sac, \$64,900 or lease \$750/ mo. James, 282-3750 or 482-6744.

Cars & Trucks '88 Acura Integra LS, 27K mi., AC, PW PL, AM/

FM/cass., gray, ex. cond., \$11K. 996-8410. '85 Buick Electra-Park Avenue, 4-dr. power, AM/FM/cass., like new cond., 66,600 mi., new

tires, \$6,550. 482-1535. '82 Celica Supra, 84K mi., loaded, \$4K, OBO.

474-4084. '88 Toyota Supra, black, gray cloth, elect. sunroof, 5-spd, motion alarm, tinted windows, ex.

cond. \$16,200. Ray, x33737 or 331-5382.

'77 Corvette 350, auto, A. C. T-tops, garage kept, ex. cond., 78K mi., \$7K. Ken, x37620 or 486-5432. '82 Porsche 924, shows & runs like new, well naintained, \$5,950, 280-8796.

'80 Toyota Corolla liftbk sport coupe, 5-spd, A. C, stereo, Michelins, low mile., runs good, \$2350. x30092 or 481-3637.

'81 Chev. Caprice diesel, one owner, 79K mi., fully equip., \$1,000. 280-5159 or 326-2986.

89 Olds Calais, med. metallic gray, 5-spd quad 4, FE3 suspension pkg, loaded, 25K mi., \$10K. James, x37548 or 470-8759.

'76 Triumph TR6 roadster, ex. driving car, \$3K. '86 Pontiac Grand Am LE, 66K mi. ex. cond..

new tires, loaded, maroon/gray, \$5250. x37999 or 474-5453. '81 Plymouth Reliant, needs timing belt, \$750.

643-7827 '87 Olds Cutlass Supreme, 37K mi., like new

cond. Glen, x37850 or 332-8103.

Cvcles

Honda Elite CH80, 80cc, 300 mi., ex. cond, \$500. Elena Clark, 333-6078 or 484-3309.

'82 Harley Davidson MC Sportster XLH, elec. start, ex. cond., low mi., new batt., \$2875. 481-

Omni 10-spd Huffy, blue, fair cond., \$40. Christie, x30366 or 326-1006.

Boats & Planes

6' California Company surfboard, dark yellow, 2 ankle cords, good shape., \$30, 482-7873. '86 Prindle-18 catamaran, ex. cond., white hulls,

multicolor sails, beach wheels, extras. Carol, 335-Mistral Maui windsurfer, complete, good cond.,

\$500. John, x37999 or 486-6133. '86 19'6" Sea Ray Monaco, 175HP I/O, new bottom paint and engine overhaul, low hrs, extras,

ex. cond. skis and vests incl., \$8K. Kenneth, 333-17' O'Day Day Sailer w/mahogany trim and bilge boards, dacron sails and spinnaker, trlr., \$950; Mariner 4HP long shank outboard, almost

new, \$300. x32864 or 486-841 **Audiovisual & Computers**

IBM XT, IBM hard disk, IBM keyboard, IBM monitor, clone printer, \$975. x30092 or 481-3637. Zenith laptop PC, 640K RAM, 10.5" 25x80 backlit LCD screen, RS-232 serial port, two 3.5" disk drives, parallel port, RGB port, internal clock/calendar, 2400 BPS modem, full graphics capability. Raymond, 333-7803 or 488-2327

Sony F-30 8mm camcorder w/video light, new \$1K, now \$750; Fujica Ax-3 camera, Fuji lenses, 50mm, 35-70mm, w/macro, 135mm tele, 28mm wide angle, 300SX strobe flash, autowind, ex. cond. all for \$500. x33233 or 480-5061.

Bose 501 speakers, ex. cond, \$300; Clarion-Audia car stereo w/2 speakers, \$100. Joe, 996-Cambridge Z88 laptop, 160K RAM, 128K

EPROM, 1200 baud modern, SW, Centronics printer cable, manuals, \$750. Greg, 280-8818. Sony CDP-670 CD player, 8X oversampling, optical digital output, 20 trk programable, remote,

mo. old., \$220. x34397. Microsoft QuickC/\$50, QuickBasic/\$50, Macro

Assembler/\$80, and Word/\$100 SW: Lotus 1-2-3 compat. spreadsheet SW, \$50. Martin, x31692 or 488-0949

Satellite TV system w/descrambler, 10' Winegard antenna, 3 yrs. old, ex. cond., warr., \$1200. Jerry, x38922

Atari 800 w/cass. recorder, \$100; Akai reel-toel, 4 channel, \$100. 282-6650 or 482-6744.

Musical Instruments

Lowery organ, good cond., \$200, OBO. 996-1442.

Bach 42B trigger trombone, \$650; PSE Pulsar adjustable weight draw compound bow w/extras, neverused, \$110. Scott, 944-5624.

Red 70's Fender Mustang 6-string elec. guitar, ood cond., new strings, tremelo bar, hard case, 175; Ventura 12-string acoustic guitar, new strings w/case, \$150.996-9701.

Yamaha V50 synthesizer, 16-note/8-voice multi-timbrel polyphony, built-in 8-track sequencer, rhythm section, digital effects, 600 total pices, performances, and rhythm patterns, \$1150. Martin, x31692 or 488-0949.

Holton model H179 French horn, prefessional double silver horn, used, good cond., 3 mouth pieces and case, \$1500. Michelle, x38289 or 585-

Pets & Livestock

7/8 Arabian mare, 13 yrs, ex. child's horse, trail horse; weanling Limazar/Aga Thabit bred purebred Arabian colt. 473-4433.

Free puppies, delivery date approx 4 July, sire mixed Beagle, bitch mixed Dachshund (white). Aaron Brown, 944-0493.

Beautiful AKC reg. Cocker Spaniel pups, 12 wks old, have shots, Buff, 1M, 1F, \$150 ea. Leti or John, x36502 or 481-8858.

Keeshound (Chow family) & Lab mix puppy, all black f Lab/Cocker/Setter outdoor dog, 1 yr old female, black, shots, spayed, free to loving home. 283-4116 or 996-9415

Mixed-breed dog, 9 mo. old, medium size male, all shots, free. 337-5990 or 333-7521. Doberman Pincher, AKC, red puppies, docked tails and declawed, champion blood lines, parents

on premises, \$200 ea. (409) 945-8681. Exotic, Vietnamese miniature pot-bellied pigs, great pets and even a better investment as breeders, \$1000 to \$3500; finches, doves, guinea pigs avail. 282-6650 or 482-6744.

Household

996-1442.

Tall carved wood floor lamp, \$95; pair old Lenox vases, \$50; antique corner rush seat chair, \$50; rope bottom rocker, \$50; tall corner lamp, \$15; Iceland sheep rug, \$40; misc. pictures. 488-5564. Antique blanket chest, primitive, includes chest and 2 drawers, \$200; full size sleeper sofa, \$100.

Kg sz red/black satin comforter, \$50. Joselyn, x37527 or 795-5962. Couch, \$100; dinette and 4 chairs, \$100; stereo

and speakers, \$150; 2 30-gal. aquariums and stand, \$100; 16 ft canoe and trailer, \$700; rattan couch and chair, \$1500. Lavon, 486-1187. Stuffed pheasant, L/R-wide lined drapes, brown couch and love seat, ex. cond.: men's

boots sz 10, \$35; wrought iron patio table, chairs and umbrella, \$85. Ethel, x36148. Sofa bed, 20 gal. acquarium, lamps, desk. Jan, Sears Coldspot 22.3 cu ft freezer, \$275; sleeper

couch, \$75; rollup blinds, 4 white vinyl, 3'x6', \$5 ea., \$15 set. Mario or Sue, x32799 or 532-1725. Persian rugs, 9.5 x 11.5 Kashan, appraised \$7000, asking \$3500; 4 x 5 Torkaman, \$750. 333-7180 or 558-9130. Wanted

Want: Baby crib, chest of drawers, good cond.

Sergio or Janae, 484-7121. Want: Triumph cars, any model, any year, restorable cond. Renzo, 894-8380 or Bob, 578-

Want: Clean fill dirt, no lumber, concrete or

trash, Beltway 8 at Pasadena Bivd. area. 473-

Want: Roommate to share house in Meadow

Green, \$275. John, 480-9825. Want: Carpool from Cypress/290, or Grant or Jones Rd area to JSC, Deena, x32427 or 338-

Want: Early to mid 80s VW Rabbit or Jetta 4 dr, A/C, standard, with diesel engine. Boykin, x37341 or 326-1267.

Want to buy bike rack for trunk or roof of car,

gas edger. 334-4894. Want: Roommate to share Ig house in Sage

Glen, all util. paid including maid service, \$270. Eric, x38420 or 484-9179. Want: GBC Binder for church, to \$50. x38039 or 333-1751.

Want: Heavy duty bench grinder, drill press and air compressor. x38039 or 333-1751. Want: '79 Ford Courier V6 motor, running, will

pay \$100, OBO. (409) 948-1361. Want: Encyclo. Britannica, 9th ed. or earlier, (1890), full or partial set, also any book published/ printed prior to 1890. Ben, 335-2848 or 482-8998. Want: Volvo 15 in. Turbo Wheel (5 spokes)

in good cond. x30874. Original Band looking for a keyboard player.

Drummer wanted for Clear Lake band, 482-

Miscellaneous

Toyota PU alum. camper shell, fits std sz bed, \$135. Tommy, x38204 or 643-7827.

Dhurie 9 x 11.5 rug, \$450; Sony 19 in. color TV w/programmable channels, \$200; weight bench, extras, \$50; Sharp, 9 in, B/W TV, \$40; antique mantle mirror, \$200; all OBO. Raymond, 333-7803 or 488-2327.

Roval Academy portable typewriter w/case, \$80; typewriter table, \$20; desk lamp, \$7.50; barometer, \$12; sm handmade, 2-shot, .22 pistol, collector item, \$100.488-5564. Eureka upright hand vacuum, good cond., \$35.

x33233 or 480-5061. Super Lobo remote control car, batt. pack, stick controller, batt. charger, \$75. Aaron Brown, 944-0493.

Sears Best Weatherbeater exterior latex sating paint, Woodland Fern, 1 gal. purchased 6/28/ 90; \$15. Richard, 481-1518.

Sears port. elect. typewriter model 500, w/ RS232 port, \$50. 486-8266.

Aircraft propeller, Sensenich 74DM6-0-58, overhauled and yellow taged, fits some Beech, Piper PA-18, PA-22, PA-28 series aircraft, \$900. 538-2299. 3 Sega video games, \$15 ea.; 2 antique school

desks, perfect cond.; Schwin Letour ladies 10spd bike. 333-9242. Remington rifle made in Belgium, new; Argus C-3 camera; Answerline machine, new, many feat., car radio access. Erwin, x36148 or 485-

20-gal. aquarium w/complete set-up except

lights; Norelco microwave, good condition, \$75.

One R/T airline ticket to Pittsburgh on Continental leave Hobby 8/9/90, return 8/14/90, \$163. Debi, 280-5225. Pressure washer, 2000 psi, portable w/8HP Honda, runs excel., \$1100; New Whirlpool ice

maker, \$60. Mike, 333-6821 or 326-3474 Five Single hung alum. windows, 2'8" x 5'0", good cond., w/screens, \$20 ea.; Mita copier,

desktop originally \$1,600 will sell for \$500. 339-Furniture, clothes, appliances, hardware, tools,

kitchen items, etc. 339-1337. 25' Sportsman shrimp net w/boards, \$150. x33224 or (409) 986-6641.

Antique design, white gold ring w/13 dia. total wt. 60, \$275; TX nug. ring w/6 3pt dia., \$200. Bev, x34015 or 339-1432. Cooper Discovers, 33 in. all terrain tires, less

than 3K mi., \$300 OBO. Bev, x34015 or 339-1432. Engagement ring, 18 karat yellow gold, round diamond solitaire (.68 carats) w/6 round diamonds (.18 carats). Original cost, \$1,500, asking

\$1,200. x30874. Older (c.1965) IBM electric, desk top typewriter, good cond., \$25; 11 in. B&W Sony TV, \$25. Bob,

Plate glass, 1/4 in., various sizes; Hibiscus plants. 482-5226.

Smith Corona port. elect. typewriter, \$70; dropleaf walnut-finish typing stand w/wheels, \$20. Angela, 488-5172. Nolan Ryan baseball cards, 1990 Upper Deck

and Mothers Cookies. 482-7005.

d \$40. 3 coto 32", \$20 ea.; 2 antique brass chandeliers, \$45 ea.; 3 sets drapes, 84" L x 45" W, beige, open weave, \$25 ea.; glass shower doors, \$35; 3 6'H

shelves, pine veneer, \$25 ea.; dehumidifier, \$60;

Sears power mower, \$90; Malibu outside lights,

brass fire place screen, \$60; 4 wall shelves w metal braces, 25" W x 12" deep, \$20. 335-8581. Rowing exercise machine, \$50, OBO; misc. baby items, stroller, toys, etc. 534-6641

Ladies 14K yellow gold bridal set, \$1,800, OBO. Terry, x33814 or 486-5126. Sliding glass 58 in. shower doors, 2 sets, 3 panel w/hdwr, \$75 ea. or \$140 pr; twin mattress and box spring, \$25; 2 auto AM/FM/stereo cass.

decks, \$20 ea. or \$35 pr. Mario or Sue, x32799

Dewalt contractor's model radial arm saw, 12 in. blade, 3.5HP, stand included, never used, was \$1400 now \$1100. x37041 or 996-0033.

or 532-1725.

Royal portable elect. typewriter, good cond., \$25. Shirley, 488-3238.

Craftsman 21-in, rear-bagger lawnmower, Briggs engine, runs great, BO. Ray, x53954 or 422-0502 Modular 41 in. walnut-finish computer desk,

\$50; two 24 in. modular walnut-finish computer

printer units, \$30 ea. Angela, 488-5172.

Bose 601 speakers, \$250; 19 in. color TV, cab. rdy, w/rem., \$80; dinette set, \$40; full sz matt and box springs, new, \$50; maple dbl bed ex. cond.,

\$30. John x37999 or 486-6133. Spalding executive iron golf clubs, 3 thru SW, 2 yrs old, \$150. Kyle, x38653.

Ring, 4 diamonds and 3 sapphires, sz 6, \$80; rabbit fur coats, white w/tan stripes, sm., \$75 and grey w/fur-lined cuffs and collar, med., \$90; prom dresses, it. blue, sz 7, \$90, and green, sz 5-6, \$90. Michelle, x38289 or 585-4936.

Total Quality Management

Holistic effort to provide tools for improvement



JSC Electronic Photo

(Continued from Page 1)

At the heart of TQM are policies and techniques that mobilize each individual in an organization toward excellence as a common goal.

"I'm concerned that our systems and procedures are aging," Cohen said. "If we are to continue to have a high performance organization, it won't just happen, we will have to work at it."

TQM is the brainchild of Dr. W. Edwards Deming, one of the world's foremost quality gurus since 1941 and credited with inspiring Japan's world-renowned management style. Charles Harlan, JSC's director of safety, reliability and quality assurance, arranged for Deming to teach a 3 1/2-day course in TQM for JSC and contractor managers this week at the Hobby Airport Holiday

"Since it's based on common-sense logic, proven practice sorts of things, it's very easy to accept, not just as the buzzword of the day, week or month, but something that, for a change, is going to be worthwhile in a real, practical sense," said Max Engert, deputy director of Engineering and a member of the TQM working group.

Nebrig said JSC is about a fourth of the way into the TQM implementation process. Several seminars have acquainted top managers with the terms, process and philosophy behind TQM, and the implementation team is forming its recommendations to Cohen on how to involve the rest of JSC's senior staff. The next move is to communicate the importance of TQM to employees and train them how to use TQM to improve the quality of their work product.

Les Sullivan, chief of JSC's Management Analysis Office, said TQM is a way to integrate JSC's existing quality and productivity improvement efforts. All of these efforts-Team Excellence, strategic planning and culture surveys—ultimately were designed to improve the overall quality of the work product at JSC. TQM will help coordinate those efforts.

Sullivan said large companies such as Xerox, which began its productivity improvement efforts in 1978, are five years ahead of JSC in beginning their TQM efforts and are now beginning to reap significant benefits. With JSC's workload expanding to accommodate new programs and the budget increasing only marginally, the effort to increase quality by simultaneously working to drive costs down and productivity up must begin now, Sullivan said.

"We've got to change because our business is changing," he said. "We've got to do the right thing right the first time."

Management can't blindly legislate TQM principles on the organization, though. That's not the way it works.

'You have to lead everyone to an understanding and a belief in the principles and then it has to be adaptable to their particular work situation," Nebrig said.

That means adapting TQM to program and business management, flight operations and engineering, which can be done most effectively by letting each directorate decide how they will implement it as long as they

follow some guidance and agree to measure their progress, Nebrig added.

NASA will try to learn from those who have begun implementing TQM, particularly those with similar jobs such as the Department of Defense and aerospace companies.

'If we can achieve even partial success in some of the things that our contractors and other government agencies have achieved, it will be a great boon to what we are doing here," Nebrig

Concurrent engineering is one of the TQM tools best suited to the kind of projects in which JSC is involved, Nebrig said.

Concurrent engineering means that from the very start of the design process, you plan not only the design but the development, the manufacturing and the field employment of the product that you're designing," Nebrig said

Engert said concurrent engineering will help his

organization develop robust designs for vehicles and systems that will help NASA achieve the country's space exploration goals. Robust designs are those that allow systems to work together and stand up to the tests of reliability, flexibility and adaptability. They are easy to produce, test and maintain, he said

Other than that, the primary elements of TQM are things that relate to how efficiently the organization works, Engert said. A multitude of processes are involved in doing the jobs that need to be done, and the TQM approach is to analyze processes, develop quality measurements and

t the very core of

TOM is the con-

tinual striving for excel-

lence. You can't slack

off, you've got to keep

use them to make the processes efficient.

Engineering already begun developing flow charts of vehicle processing. One example is the orbital maneuvering system (OMS) —JSC Associate Director Dan Nebrig subsystem manager's shuttle tur-

> naround activities. Charts of just one chunk of the highly complex process can cover a whole room, but will allow managers to reveal and reduce bottlenecks, and change designs so that turnaround is easier and faster. This process eventually may be expanded to encompass all turnaround activities.

> "Eventually to make this sort of thing effective, engineering has to work with the program office, MOD and our contractors. We're all involved in this process and we all need to work together to see how we can make it more efficient," Engert

> TQM also urges cultural changes that involve wiping out turf barriers among organizations and individuals. Everyone must think of the people they deliver work to as customers that need to be satisfied. And they must think of the people who provide their raw materials or data as suppliers who can only be counted on if they

understand what is expected of them.

The Mission Operations Directorate (MOD) is one of the "customers" Engineering must serve. MOD Deputy Director John O'Neill said TQM is just a more systematic way of encouraging good engineering and management practices.

MOD had already begun considering flight preparation activities as a specific kind of process. Because of the bottoms-up reevaluation of the shuttle program after the Challenger accident, the shuttle process is well defined, O'Neill said. But he plans to see how TQM can further refine and

Concurrent engineering, which emphasizes including the eventual users of systems in the development cycle, should be especially helpful in the development of space station-era facilities such as the space station mission control center and training facility, he said. It will help designers see the life-cycle process going from requirements, design, development, test and checkout through sustaining engineering and operations.

TQM's requirement for changing the organization's culture should fit well with MOD's openness to new technology and processes.

"The idea of having an even more focused way to build in quality in those tools and processes will naturally have appeal to our people," he said. "I don't think it's going to change our basic culture because it's always been one where we're trying to maintain a solid foundation and at the same time have the flexibility to respond to new challenges and opportunities," O/Neill said.

"We don't plan to make TQM a separate initiative but will instead stress the management learning process and educate our people so that it becomes an inherent part of the way we do

Once JSC's TQM strategy is complete, Nebrig said, JSC management will be in position to train people who want to employ its principles, offer the encouragement of entire management chain and empower individuals to use TQM principals by making the system work with them.

'There's too much success in industry and government elsewhere to ignore it," Nebrig said. "It's paying off handsomely, so there has to be a payoff for us as well.'



Top: TQM originator Dr. W. Edwards Deming, right, autographs a copy of his book for Joseph D. Atkinson, chief of the Equal Opportunity Program, at this week's TQM training seminar. Bottom: One of the Total Quality Management techniques being tried by the Engineering Directorate is making detailed flow charts of space shuttle subsystem turnaround processes. Above from left John Hooper, deputy chief of the Propulsion and Power Division's Systems Branch, Max Engert, deputy director of Engineering, and Bill Nash and Peter Lange of KPMG Peat Marwick go over the flow chart for just part of the orbital maneuvering system (OMS) turnaaround process.

TQM's pathway to quality

- Provide top management leadership, personal involvement and long-term commitment.
- Promote team goals for world-class levels of quality and performance.
 - Support new technology and modernization.
- Create an innovative and challenging team climate.
- Use participative management techniques to increase individual/team contributors.
- Develop effective communication among employees, contractors and customers.
- Stimulate and promote individual involvement.
 - Commit resources to education and training.
- Develop and implement means to evaluate and measure team performance.
 - Focus on the customer.

Blanchard new Solar System chief

Douglas P. Blanchard, Ph.D., has Planetary Materials Laboratory. been appointed chief of the Solar System Exploration Division in the Mars Rover Sample Return mission Space and Life Sciences Directorate.

Blanchard, who has been chief of the Planetary Science Branch for the past nine years, replaces Michael Duke, who is now chief scientist for the Lunar and Mars Exploration Program Office.

Blanchard has more than 17 years of experience as a geochemist and planetary scientist in the division, including seven years as lunar sample curator and manager of the

He is JSC project scientist for the

planning activity, chair of the Mars Science Working Group, and a member of the Lunar and Planetary Sample Team, the Antarctic Meteorite Working Group and the Cosmic Dust Committee.

Arbuthnot accepts Washington job

Richard E. Arbuthnot, special assistant for external affairs in the JSC Comptroller's Office, has accepted a one-year assignment to serve as the NASA liaison to Sen. Robert Byrd, D-W.Va.

Arbuthnot, who joined JSC in 1985, will move to Washington, D.C., and assist Byrd in all space program matters. He will work with Martin

Kress, acting assistant administrator for legislative affairs at NASA Headquarters.

Fox receives honor

Elizabeth A. "Ann" Fox, secretary

to the director of Safety, Reliability

and Quality Assurance, recently

received the Marilyn J. Bockting



Arbuthnot



ization made up of numerous div-

isions and staff offices, was commended for her keen awareness of policies regarding technical and managerial matters and her knowledge of protocol, procedures and

Award for Secretarial Excellence. Fox, lead secretary for an organcorrespondence formats.

Training begins

23 astronaut candidates report to JSC

(Continued from Page 1) come under fire both in the Congress and in the press.

Enthusiasm and confidence in the agency was evident as many of the candidates spoke of mankind's need to go to space and their own ambitions to be a part of that.

While their first week on the job consisted primarily of orientation briefings and tours, they also received altitude chamber training as a prerequisite to T-38 flight training which begins next week.

The next several months will consist of intensive instruction in the fundamentals of aerodynamics, electronics, and computers, as well as in shuttle systems and operations. Several trips are planned to other NASA field centers for briefings and tours, as well as for water and wilderness survival training.

Training as pilot candidates are Kenneth D. Cockrell, Air Force Mai. Eileen Collins, Air Force Capt. William G. Gregory, Air Force Maj. James D. Halsell, Jr., Air Force Maj. Charles J. Precourt, Air Force Capt. Richard A. Searfoss, and Marine Maj. Terrence W. Wilcutt.

Mission specialist candidates are Navy Lt. Cmdr. Daniel W. Bursch; Leroy Chiao, Ph.D.; Army Maj. Michael R. U. Clifford; Bernard A. Harris, Jr., M.D.; Air Force Capt. Susan J. Helms; Thomas D. Jones, Ph.D.; Army Maj. William S. McArthur, Jr.; James H. Newman, Ph.D.; Ellen Ochoa, Ph.D.; Ronald M. Sega, Ph.D.; Army Capt. Nancy J. Sherlock; Donald A. Thomas, Ph.D.; Janice E. Voss, Ph.D.; Air Force Capt. Carl E. Walz; Peter J. K. Wisoff, Ph.D.; and David A. Wolf, M.D.

Task force to study future An independent task force to be

appointed by NASA Administrator Richard Truly will study the future direction of the national space

The yet-to-be-named task force is being established in response to a request from Vice President Dan Quayle as chairman of the National Space Council.

Space continues to be a top priority for this administration, according to a statement released by the Office of the Vice President Monday. "We all want the best ideas on how we can move into the next century maintaining our leadership in space.

The task force does not represent a White House investigation of NASA, the statement said.

During subsequent appearances on "The MacNeil-Lehrer Reports" and "Good Morning America," Truly said he would actively seek leaders from both government and the private sector to be a part of the task force.

"I'm pleased the vice president has expressed his confidence in NASA, as he has many times in the past," Truly said in response to the directive. "NASA will continue to work closely with the Space Council in pursuit of the president's remarkable vision for America's space

Truly and the task force will directly report their recommendations to the vice president.

NASA, OSC sign contract

NASA's efforts to foster a strong commercial space industry took another step forward with the recent signing of an Orbital Sciences Corporation (OSC) of Fairfax, Va., agreement for support of the firm's Pegasus and Taurus commercial launch vehicle programs.

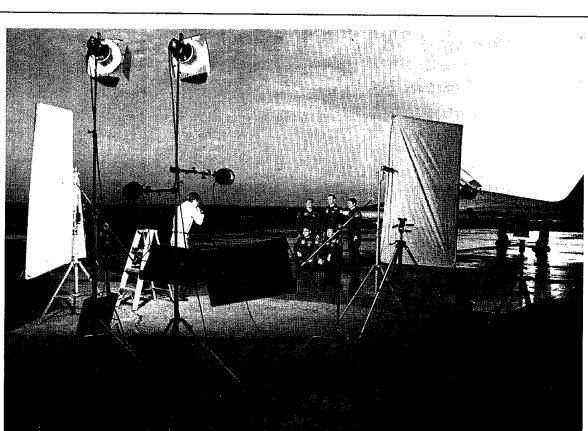
Terms of the five-year agreement allow OSC to enter into specific subagreements with NASA installations wherein NASA will provide, on a costreimbursable basis, access to agency launch support property and

As part of NASA's effort to promote the commercial launch vehicle industry, government property and services are made available to the private sector, on a reimbursable basis, when such property/services cannot be provided by commercial sources.

Similar agreements have been negotiated with General Dynamics, McDonnell Douglas, Martin Marietta and LTV Corp. NASA also is conducting discussions with other U.S. expendable launch vehicle firms for possible support agreements.

NASA installations involved in specific sub-agreements with companies include the Kennedy, Lewis, Goddard and Marshall centers.

NASA is committed to facilitating and encouraging the commercial use of space by U.S. firms. The Commercial Space Act and its 1988 amendment, as well as the National Space Policy of November 1989, underscore the importance of government support to the emerging American commercial launch vehicle industry.



JSC photographers and the STS-41 crew met at Ellington Field at 4 a.m. to capture the dramatic backdrop of a Texas sunrise for the official crew portrait. Mark Sowa, shown above, took the portrait with the help of Scott Wickes and Sheri Dunnette. The STS-41 crew, left, which is scheduled to fly in October, is composed of pilot Robert Cabana and Commander Richard Richards, both kneeling, and, from left to right, mission specialists Bruce Melnick, Thomas Akers and William Shepherd.



NMA recognizes three JSC managers

were honored for their management and leadership skills by the JSC chapter of the National Management

Directorate, was honored with the 1990 Silver Knight of Management Award and John Chisler, business manager for the Mission Operations Directorate, received the NMA Leadership Award.

The Manager of the Year Award is presented to an individual who is dedicated to the principles of the

and two other JSC officials recently manager in a business, industry, him to suggest substantive improvegovernment or non-profit activity; has ments in vehicle design, system in outside professional and civic preparation and institutional support activities; has a reputation as a fair, of JSC's programs." Weitz received the Manager of the impartial and ethical manager; has Year Award while R. Wayne Young, demonstrated strong managerial to Young is the highest honor NMA deputy director of the Administration leadership by applying generally recognized management principles to achieve success; and practices the NMA Code of Ethics in dealings with peers, subordinates and associates.

> "Mr. Weitz is a major participant in the management of all of JSC's programs," wrote Norman Chaffee, 1989-90 NMA chapter president in

demonstrated community leadership training, system processing, crew

The Silver Knight award presented chapters can bestow on an outstanding executive. The recipient must be a civic, business or industrial executive who is well-known to the members of an organization and whose example has stimulated and inspired them; who has demonstrated the highest qualities of leadership in business, community and industrial his nomination letter. "His insight as relationships; and who is well-known

JSC Deputy Director Paul J. Weitz American enterprise system; is a top a former crew member has enabled for his/her efforts in the preservation of the competitive enterprise system.

Chisler's award was unusual in that four of the senior analysts that work with him submitted the nomination. The NMA Leadership Award is presented to a chapter members who has displayed outstanding leadership.

The local NMA chapter also recently selected 1990-91 officers. They are: Diane DeTroye, president; Grady McCright, vice president; Patsy Mitchell, secretary; and Monica Kruest, treasurer. Board members are Norm Chaffee, Wayne Draper, Marie McCright and Shayla

Atlantis testing continues

(Continued from Page 1) second liquid hydrogen tanking test conducted last Friday.

A leak was found at the external tank flange that mates to its 17-inch disconnect. Managers want to determine if any leakage between baggies occurred during the test are refurbished units. and if repairs can be made at the

Earlier this week photographs of the aft compartment were taken and thorough inspections were made. Calibrations of the hazardous gas detection system are continuing and the flow rates of purges in the baggies

are being measured.

Preparations to remove auxiliary power unit number 3 aboard Atlantis were underway this week. Since Atlantis has been at the pad, the vendor has identified a time-life issue with this unit. The other two APUs

Meanwhile Discovery's processing activities in the Orbiter Processing Facility for the Ulysses mission continue to go smoothly. A brake anti-skid test was conducted Thursday and technicians are continuing installation of heat shields around the three main engines.

Space News Roundup

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EditorKelly Humphries Associate Editors Pam Alloway Kari Fluegel

ASTP crews hold reunion

(Continued from Page 1)

The Apollo-Soyuz Test Project mission resulted from a 1972 agreement between the United States and the Soviet Union to design a common docking system for future spacecraft.

Both the Sovuz and Apollo spacecraft were launched on July 15, 1975. The successful rendezvous and docking was completed on July 17, 1975, when the Apollo spacecraft docked with the orbiting Soyuz. The Soyuz landed on July 21, and Apollo landed NASA-JSC July 24.