

Space News Roundup

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No. 34

First Magellan images reveal violent Venus

By Kelly Humphries

Flight controllers at NASA's Jet Propulsion Laboratory lost and regained communication with Magellan a second time this week as scientists revealed startling photos from its first radar test pass.

Contact with the spacecraft orbiting Venus was lost at 9:03 p.m. CDT Tuesday, but at 6:33 p.m. Wednesday the spacecraft radar mapping probe confirmed it had responded to a computer command and established constant contact with Earth.

In its current configuration, Magellan will keep its medium-gain antenna aimed at Earth and engineers will continue to receive engineering data.

Two other commands were sent to the spacecraft to prevent its further entry into coning—a mode in which the spacecraft rotates its antenna in a circular motion to search for Earth—by disabling two paths it has taken to enter fault protection, or safing modes.

John Slonski, a Magellan systems engineer, said the cause of the spacecraft's problems may be a transient event caused by high-energy particles or cosmic rays. The event may have affected the spacecraft's electronics, starting a domino effect that led Magellan to point its antennas away from Earth.

"This kind of event has happened several times on other spacecraft and was not totally unexpected on ours," he said.

Magellan first lost communications with Earth last Friday, but contact was restored briefly before the spacecraft. Please see **VENUS**, Page 4



NASA Photo

Mission Specialist Bob Parker stands before Columbia at Pad 39A during earlier training exercises for STS-35. Parker and the rest of the STS-35 crew completed the last planned joint integrated simulation for this mission Monday.

Columbia crew ready to lift off next weekend

By Kyle Herring

Columbia's processing at launch pad 39A is proceeding on schedule for a 12:17 a.m. CDT liftoff Sept. 1 on the 10-day Astro-1 mission.

The one-day flight readiness review held earlier this week identified no problems standing in the way of the 36th space shuttle mission and 10th for Columbia.

With all new 17-inch disconnect hardware on the orbiter and external tank, the program believes the leak issue is resolved and is proceeding toward the launch with tanking of liquid hydrogen and oxygen to begin about 4 p.m. next Friday for the night launch.



"We're comfortable with the hardware we have on the pad," William Lenoir, associate administrator for Space Flight, told reporters in a monthly informal get together Wednesday.

The investigation into the hardware removed from Columbia in June has identified several contributing factors to the cause of the leak that postponed the mission in May.

Lenoir said the ongoing investigation has identified some contaminants that contributed to the leak seen on Columbia in May.

"The external tank shaft seals do leak," he said. "When we disassembled (the ET disconnect) we found 100 to 200 small glass beads one to three millimeters in diameter."

Those, combined with some chips of Teflon and stainless steel, are considered the major reason for the leak seen during the STS-35 tanking.

"There's not much question in our minds that that's implicated in why the external tank disconnect shaft seals leak," Lenoir said.

"In a way that's good news, because that says, hey, there's some external contamination that got in there that led to the leak and we just need to make sure we don't have that" in the future, he added.

This week Columbia underwent the main engine frequency response test. Engine two required retest when an engine check valve was found to be defective. Also completed this week were the helium signature leak checks of the main propulsion system, servicing of the orbiter's hypergolic propellants and installation of the two extravehicular mobility units used for contingency spacewalks.

The countdown for STS-35 launch begins at midnight Tuesday.

Notices going out, but furlough not yet in effect

JSC will send out notices next week informing all civil service employees that they could be subject to a furlough no sooner than Oct. 1, but current information indicates only a one-day furlough might be necessary.

Any furlough would be part of NASA's response to program and personnel cuts under the Gramm-Rudman-Hollings law, which begins to sequester funds throughout the government if Congress does not meet certain deficit-reduction targets.

Unless Congress passes a deficit-reduction program, a sequester order will go into effect Oct. 1. Further sequestrations and furloughs would

be possible if Congress failed to pass a deficit-reduction program by Oct. 15.

In his instructions to field center directors, NASA Administrator Richard H. Truly said he is committed to doing everything possible to minimize the sequestration effects felt by employees.

"Although in the past this has rarely happened, a regulation requires agencies to provide 30-day advance notice to employees when there is a possibility of furlough," Truly said. "Any number of actions may occur between now and Oct. 1 which would affect the federal

budget situation and eliminate the need for furloughs."

Based on the funds available for the initial sequestration period of Oct. 1-15, Truly said it may be necessary to place all civil service employees on a nonduty, nonpay status furlough for eight hours. Along with that, all activities that are not absolutely essential to missions will be rescheduled to minimize expenditures during the sequestration period.

JSC Director of Human Resources Jack Lister said any furlough at JSC will be equitable, affecting supervisors and other employees alike. The only exception would be a small

number of workers critical to facility operations.

He said individual directors and program managers would determine when and how their employees were furloughed as long as the eight hours fall in the Oct. 1-15 period.

Furloughs will be implemented in such a way that JSC support of the STS-41 Ulysses mission will not be affected.

JSC Director of Procurement Gene Easley met with representatives from all local JSC contractors Thursday to discuss how the sequestration would affect them.

Truly said that while NASA does

not control on-site contractors' work hours, except when entire centers are closed, it is expected that necessary reduced contract funding will result in a similar reduction in effort.

Reductions associated with the initial 15-day period shouldn't seriously affect NASA programs and missions, Truly said, but deeper cuts could mean trouble.

"The advent of a more extensive sequestration will necessitate substantial adjustments in the progress planned in our major program areas, and will necessitate throttling back on many major project and support activity levels," he said.

Lunar Prospector team using Apollo instrument

A consortium involving about 50 Clear Lake-area volunteers is making steady progress in its drive to launch the first private lunar probe and has secured from NASA the use of an unused Apollo gamma-ray spectrometer.

The Lunar Prospector consortium, a joining of Lunar Exploration Inc., a non-profit corporation formed by the local scientists and engineers, and the Space Studies Institute of Princeton, N.J., is designing and plans to build and launch the \$10 million probe in 1992.

The group also has obtained a letter of interest from the Soviet Union that could lead to an "inexpensive" launch aboard either a

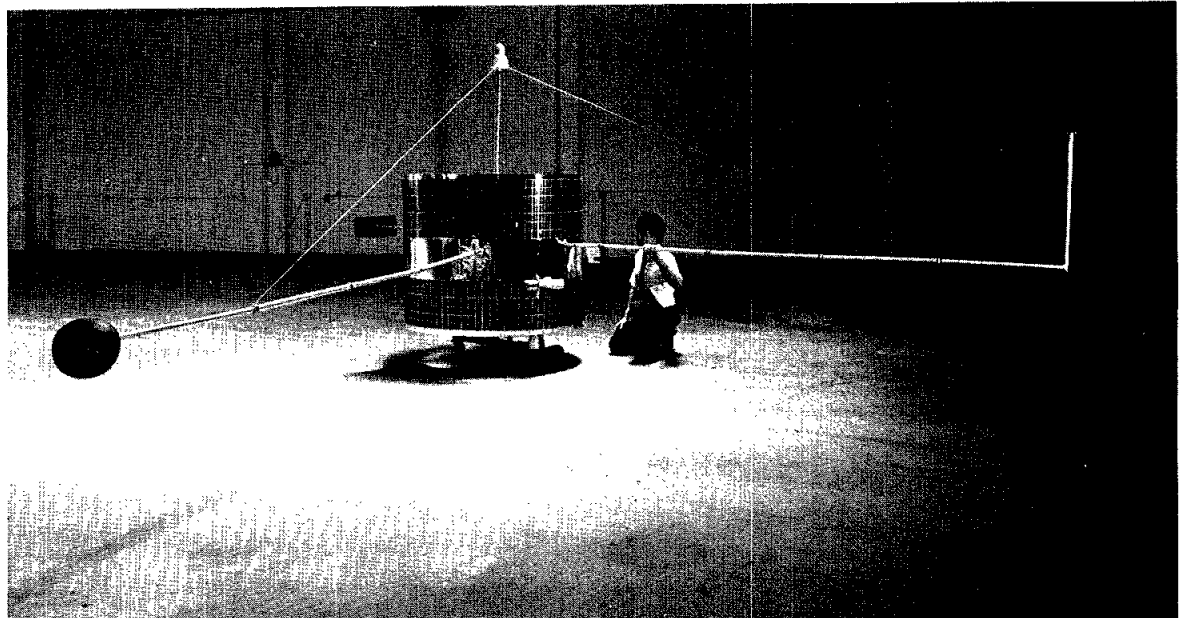
Soyuz or Proton rocket.

"I really believe that two years from now, we'll be in orbit," said Project Manager/Scientist Alan Binder, a Lockheed Engineering and Science Co. employee. Binder became involved in the project as a volunteer, but now is working full-time on the project for Lockheed.

Binder said NASA recently signed an agreement with SSI for the loan of a gamma-ray spectrometer originally planned for launch on Apollo 17.

The spectrometer is one of five instruments on Lunar Prospector, which is being designed to achieve a one-year polar orbit around the Moon. The spectrometer would be

Please see **LUNAR**, Page 4



Mike Chobotov, Lunar Prospector project manager for OMNI Systems Inc., inspects a mockup of the spacecraft. OMNI is building Lunar Prospector for a consortium attempting to launch the first private lunar probe.

JSC

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; children (age 3-11) \$14.75, (two-day \$18.95).

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

JSC

Gilruth Center News

Sign up policy—All classes and athletic activities are first come, first served. To enroll, you must sign up in person at the Gilruth Recreation Center. Everyone will be required to show a badge or EAA membership card. Payment must be made in full at the time of registration. Classes tend to fill up four weeks in advance.

EAA badges—Dependents and spouses may apply for a photo I.D. 6:30-9 p.m. Monday-Friday.

Defensive driving—Course is offered from 8 a.m.-5 p.m., Sept. 15 and Oct. 13; cost is \$15.

Weight safety—Required for use of the Rec Center weight room. The next classes will be Sept. 5 and Sept. 20, from 8-9:30 p.m. Cost is \$4.

Aerobics and exercise—Both classes are ongoing.

Country and western dance—Lessons begin Sept. 10 and will be held every Monday for six weeks; cost is \$20 per couple.

Ballroom dance—Professional instruction in beginning, intermediate and advanced ballroom dancing. Classes begin Oct. 4 and meet every Thursday for eight weeks. Beginning and advanced classes meet 7-8:15 p.m. Intermediate class meets 8:15-9:30 p.m. Cost is \$60/couple.

JSC

Technical Library News

The following selections are now available in JSC's Technical Library, Bldg. 45, Rm. 100.

Designing and Delivering Cost-Effective Training, 1989.

Ideas and Information: Managing in a High-Tech World, Arno A. Penzias, 1989.

Smaller Solar System Bodies and Orbits, Pergamon Press, 1989.

Creation of the Universe, Li-chih Fang, 1989.

Engineering Materials: Properties and Selection, Kenneth G. Budinski, 1990.

Intelligent Robotics, Mark H. Lee, 1989.

Superconductivity: New Alchemy, John Langone, 1989.

High Temperature Surface Interactions: Papers Presented at the 68th Meeting of the Structures and Material Panel of AGARD, AGARD, 1989.

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Dates & Data

Today

Heritage day—Asian Pacific American Heritage Day will be observed from 8:30 a.m. to 4:30 p.m. Aug. 24. The theme is "Reaching for the Stars in the 1990s." Contact Freda Marks for more information at x30606.

Cafeteria menu—Special: barbecue link. Entrees: deviled crabs, broiled codfish, liver and onions. Soup: seafood gumbo. Vegetables: buttered corn, green beans, new potatoes.

Monday

Cafeteria menu—Special: chili and macaroni. Entrees: barbecue sliced beef, parmesan steak, spare rib with kraut. Soup: French onion. Vegetables: ranch beans, English peas, mustard greens.

Tuesday

BAPCO meeting—The Bay Area PC Organization will meet at 7:30 p.m. Aug. 28 at the League City Bank and Trust. For more information call Earl Rubenstein, x34807, or Tom Kelly, 996-5019.

Cafeteria menu—Special: corned beef hash. Entrees: meatballs and spaghetti, liver and onions, baked ham with sauce. Soup: split pea. Vegetables: buttered cabbage, cream style corn, whipped potatoes.

Wednesday

JSC Astronomy Seminar—The JSC Astronomy Seminar will feature a Rice University videotape of Dr. P. Olson discussing "Geodynamical Consequences of Core-Mantle Interaction" from noon-1 p.m. Aug. 29 in Bldg. 31, Rm. 129. For more information, contact Al Jackson, x33709.

Cafeteria menu—Special: barbecue link. Entrees: cheese enchiladas, roast pork and dressing. Soup:

seafood gumbo. Vegetables: pinto beans, Spanish rice, turnip greens.

Thursday

Cafeteria menu—Special: chicken fried steak. Entrees: roast beef with dressing, fried perch, chopped sirloin. Soup: beef and barley. Vegetables: whipped potatoes, peas and carrots, buttered squash.

Aug. 31

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.

Sept. 5

AIAA/NASA Conference—The American Institute of Aeronautics and Astronautics and NASA will sponsor a conference of Innovative Technologies for the Exploration of Space Sept. 5-6, at the Ramada Renaissance Techworld in Washington, D.C. For more information, call Leslie Tavenner at (202) 646-7453.

Sept. 12

Integration Expo—The Information Systems Directorate is sponsoring a Macintosh-DOS Integration Expo from 9 a.m.-4 p.m. Sept. 12-13 in Bldg. 12, Rm. 112. For more information call Pat Doerr, x37589.

Oct. 20

Wings Over Houston—The 1990 Wings Over Houston Airshow will be Oct. 20-21 at Ellington Field. The U.S. Marine Corps' vertical take off and landing jet, the Harrier, will participate. The Confederate Air Force also will celebrate the 50th Anniversary of the Battle of Britain with its WWII airpower

demonstration. Contact Col. Ray Jones, 850-7545, or Lu Lewis, 784-5200, for more information.

Oct. 28

Bicycle ride—The Texas Coastal Century bicycle ride, a comprehensive tour of the greater Bay Area, will be held from 8 a.m.-5 p.m. on Oct. 28 at the University of Houston-Clear Lake. Proceeds will benefit the Houston Food Bank and University of Houston-Clear Lake recreation and sports. Early registration by Oct. 1 is \$10; registration after Oct. 1 is \$15. For applications and more information, visit the Gilruth Recreation Center. Call Mike Prendergast at 335-2505 for details.

Oct. 30

Space conference—The fourth annual "Space: Technology, Commerce and Communications" Southwest conference will be held Oct. 30-Nov. 1 at the Nassau Bay Hilton. The aerospace and space commerce conference is sponsored by the Space Foundation. For more information, call John McLeish, 480-7445.

Space conference—Space Exploration '90, a conference and aerospace industry exposition sponsored by the NASA Alumni League, will be held Oct. 30-Nov. 1 at the South Shore Harbour Resort and Conference Center. Contact Carol Ramey, exposition manager, 800-765-7615, for more information.

Nov. 6

Ada users' symposium—The third annual NASA Ada Users' Symposium will be Nov. 6 and is hosted by JSC and the MITRE Corp. For more information contact John Cobarruvias, x39357, or Sheila, 333-0910.

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. 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

Sale: Friendswood lot, 120x160, util. avail. Rick, 283-1988 or 996-8961.

Lease: Dickinson, 2-2-2, fence, FPL, CA/H, 1 yr. req., ref., \$600 plus dep., avail. 10/1/90. 534-3056 or 333-4150.

Sale/Lease: 3-2-2 in Friendswood Wedgewood Village, 1,600 sq. ft., formal DR, new paint/carpet, \$64,900 or \$750/mo. Gretchen, 282-6650 or 482-6744.

Sale: Big Bend, 160 acres, \$110/acre, CFD 10% down, 10% for 10 yrs. 337-4051.

Sale: 3-2-2, Pasadena, ins. util. rm., fans, storm wndws., cov. patio, \$53,000, assum. loan at 10%. Glenn, x38825 or 487-8018.

Sale: Westwood Shores lot on Lake Livingston, \$9,375, 480-9805.

Sale: Dickinson, brick 4-2-2D, 2,800 sq. ft., open concept, FPL, trees, x31466 or 534-3932.

Sale/Lease: Univ. Trace condo, 2-2, refig., W/D hookup, fans, \$46,500 or \$525/mo., avail. Oct. 488-5092.

Sale: Meadowbend, 3-2-2, blinds, fans, microwave, gar. door opener, 10 yr. warr., 8.5% FHA assum. 538-1071.

Lease: 3-2-2, Middlebrook II, avail. Oct. 1,940 sq. ft., FPL, gar. door opener, ex. cond., \$825/mo. plus dep., no pets. 480-3260.

Sale: Pearland, Dixie Hollow lot, \$9,500, all util. x39530 or 482-5003.

Sale: Hilltop Lakes Resort lot, 80x120, golf membership incl. in ownership, \$3,500, 477-8821, x529 or 470-2160.

Rent: Lake Travis cabin, priv. dock, CA & heat, fully equipped, accomm. 8, w/ky./dly., \$325/\$80, 326-5652.

Rent: Galv. condo, Seawall & 61st, sleeps 6, furn., wknd./wkly. rates, cable, x33479 or 486-0788.

Sale/Lease: Owner fin., 1,000 sq. ft., new appli., carpet, fans, blinds, 20 min. from Lake Livingston, 992-1853.

Sale: 2 water view lots near NASA, \$38,500/ea. Don, x38039 or 333-1751.

Sale: Shoreacres, 4K sq. ft., contemp., 5-4 study plus mother-in-law suite on wooded acre, \$114,900. x38039 or 333-1751.

Cars & Trucks

'83 Buick LeSabre Limited, AC, AM/FM, ex. cond., \$4K, x39156 or 482-8017.

'83 Olds Toronado, good cond., \$2,700, x39826 or 697-5458.

'87 Volvo 245 GL, ex. cond., loaded, \$12,300, OBOJ. Scott, 283-5611 or 482-1809.

'71 LeSabre, reb. eng./trans., 350 V8, 15K mi., good cond., 102K mi., AC, \$500. Terry, x33491 or 480-7340.

'35' Mallard motor home, loaded, low mi., \$33,000, OBO, 337-4051.

'71 Volvo 144, 4-spd., air, good cond., \$800, OBO. 326-2180 or 474-6977.

'80 Toyota Corolla, 5-spd., AC, AM/FM radio, good cond., \$1,850, 280-8130.

'85 S-10 Blazer, auto., loaded, run boards, \$5,200 or cash talks. 554-7521.

'85 Calica GTS, 5-spd., new tires, ex. cond., 60K mi., \$5,995 nego. 482-4331.

'90 Eagle Talon TSI Turbo, loaded, 6,500 mi., 7/70 trans. warr., \$14,900. Rick, 282-3242 or 532-1245.

'84 RX-7, ex. cond., 95K mi. (interstate), AM/FM cass., \$4,500. Rick, 283-1988 or 996-8961.

'87 Pontiac TA, loaded, T-tops, sec. sys., ext. warr., 37K mi., \$9,200. Brian, 532-3507.

'82 Chev. Malibu Classic wagon, AC, 106K mi., good cond., \$2,200, OBO, 532-2128.

'88 Merc. Cougar, low mi., loaded, \$12K. John, x39357 or Lanell, 282-5517 or 486-5203.

'87 Chev. Cavalier, 4-dr., auto., 45K mi., loaded, ex.

cond., \$4,100, OBO, x39579 or 482-6187.

'83 Honda Prelude, 5-spd., sunroof, ex. cond., 83K mi., \$4,500. B. Craig, x23338 or 420-2936.

'80 GMC Van Rally STX, 8 pass., loaded, x33656 or 486-8276.

'86 Olds Calais, 2-dr., 60K mi., loaded, V6, ex. cond., \$5,300. Todd, x34063 or 474-7903.

'84 Honda Civic DX, 3-dr., 5-spd., no AC, 67K mi., \$2,800. John, 486-6133.

'79 Toyota Corona, deluxe model, 4-dr. liftback, auto., good cond., low mi., \$1,950. 333-7480.

'86 Olds Cutlass Supreme Brougham, V6, 2-dr., loaded, very good cond., \$6K, OBO, 283-0237 or 484-9583.

'73 VW Campmobile w/pop-up roof, new carb/clutch, ex. cond., \$1,500, OBO, 280-9119.

'78 Dodge 8 pass. wndw. van, 85K mi., AC, trlr. pkg., ex. mech. but rusty, \$1,995. x35012 or 474-7880.

'88 Chevy Cheyenne, 3/4 ton, 350 V8, 5-spd., bedliner, Carla, x33683 or 481-8718.

'81 Chevy Citation, 4-dr. hatchbk, good work car. 280-9870.

'85 Chrysler LeBaron, 52K mi., 4-dr., pwr. wndws., \$3,900. Phil, 283-1157.

'22' travel trlr., ex. cond., refurb. ins., self contained, \$3,500. Sharon, x36534 or 480-0622.

'84 Toyota 4x4 PU, short bed w/rear cap, 4-cyl., 2.4 liter, 5-spd, ex. cond., 78K mi., \$4,100. Eric, 280-9049.

'80 Buick Regal, 2-dr., V6, auto., 83K mi., AC, ex. cond., \$3,150, OBO, 286-7305.

'80 Buick Century, 4-dr., good cond., AC, pwr., tilt, \$1,500, OBO, 484-4024.

'83 Porsche 911 Targa, 36K mi., 2 bras. cover, alarm, warr., \$22,500. David, 554-2992 or 282-3212.

Boats & Planes

'59 15' Duracraft, galv. trlr., 40hp Johnson, \$700. Sean, 480-8190 or 996-7693.

12' fiberglass boat w/trlr., \$250. Bob, x30825 or 921-1715.

17' trihull boat, 135hp Johnson, SS prop, tow bar, good cond., x39220 or 488-0745.

'79 Master Craft ski boat, new eng./trlr., ex. cond., \$6,500, 474-3608.

'9 Bass Hunter boat, trolling motor, \$295. Jim, 358-9598.

V-20 Wellcraft center console, 140 Mercruiser, 58 gal. fuel, Hummingbird VCR (1975), good cond w/'89 McClain tandem galv. trlr., \$4,995. x38456 or (409) 935-4198.

16' Starcraft, '83 V-hull cen. console, 55hp Johnson w/TNT, galv. trlr., reb. this yr., \$3,500. 488-7314.

Snark sailboat, \$125, sails/life jackets, good cond., no trlr. 333-6558.

'79 Renegade 16' ski boat, 115hp Evinr., SST prop, new paint/carpet, ex. cond., \$2,750, OBO, 333-6868 or 486-7846.

10' alum. Jon boat, \$150. 333-3409.

14' alum. Jon boat, oars, floatation cushions, depth finder, anchor, 5.5hp motor, trlr., \$500. 488-7728.

Hobie 12' Mono-Cat sailboat, trlr., fiberglass hull, 18' mast, 90 sq. ft. of sail, good cond., 2 sails, \$400, 280-2523 or 333-1762.

Audiovisual & Computers

Macintosh 512, 2 MEG elec. RAM, case, SW, \$395. 523-7200.

IBM-XT w/2 floppy drives, color monitor, 640K mem., \$650; 2 compact amber monitors, \$50/ea. Kyle or Dolph, 481-2195.

Kaypro II-83 (CPM-80), 2 SSDD FD's w/Basic, C, 2 assemblers, \$350; Panasonic 1080, 9-pin dot matrix printer, \$110. Jesse, 280-2770 or 554-2924.

Magnavox camcorder, ex. cond., \$650; PC-XT w/ color, 20m HD, 640K, \$900. James, 554-2929.

Wordstar 4.0, \$125; Wordstar 2000, \$75; Foxbase Plus, \$95; GEM Draw/desktop, \$50; open plan project manager, \$700; misc.l. programs; mem. chips for PC, 18 chips, 256K, upgrade 640K to 1 MEG, \$36. 396, x37905.

Commodore 64, C1541 disk drive, color monitor, 630 modem, 2 joy sticks, game SW, SAT prep. prog., \$240.

Jack Kinsey, x32271 or 486-0421.

Apple Ile, monochrome Apple monitor, 2 disk drives, 1 MEG RAM, joystick, Serial Card, Printface Card, Time Master H.O., Apple Works, DOS, PRO DOS, manuals/ docum., \$800. nego. 332-0165.

Laptop computer, Tandy 1400 LT, 2 disk drives, modem, \$900, OBO. Tony, x34415 or 480-2206.

Musical Instruments

Trombone, ex. cond., \$175. Steve, 480-2350.

Armstrong flute, 1 yr. old, \$250. 332-4780.

Travis 3/4 class. guitar w/case, \$50. 332-1725.

King trombone, \$85; also want to buy upgrade trombone, \$400. Gary, x33786 or 499-5786.

Artley clarinet, ex. cond., \$250, OBO. x31593 or 480-6292.

Selmer Signet 100 clarinet, good cond., \$195. 333-2444.

Elec. organ, Kimball Swinger 400, Entertainer II accompaniment features, dual kybd, \$450. Marilyn, 280-4692 or 486-4270.

F Roland MT-30 multi-timbral sound module, full midi on 8 chan., \$400; C Piccolo, Gmiendhart w/case, \$150, OBO. Bob, x34468 or 486-7687.

Piano, Gulbransen upright, just tuned, good cond., \$650, 280-9119.

Good used flute, \$50. 486-8130.

Lost & Found

Lost at Gilruth Field 1, Wilson A2000 baseball glove, 2 batting gloves, elbow brace. Mark, x35032.

Pets & Livestock

Rabbits, New Zealands and mini-lops. 554-6200.

Exotic finches, doves, guinea pigs, \$5/ea. Jim, 282-3750 or 482-6744.

Exotic reg. Vietnamese min. pot-bellied pigs, breeders & pets avail., \$500-\$3,500/ea. James, 282-3750 or 482-6744.

AKC min. Schnauzer pups, born 7/20/90, salt & pepper, silver, blk, & silver, wormed, tails docked, dep. will hold, \$250, (409) 925-2799.

Free, 6 1.2 mo. old full blood male Chow, cream. Veronica, 991-7002.

AKC Chihuahua pups, approx. 4 mos. old, shots, wormed, dipped, \$100-\$150 cash. 534-3893.

Sealpoint Siamese male cat, neutered, declawed, free. Carolyn, 482-7693.

Household

Girls French Prov. canopy BR suite, \$175, OBO; Simmons queen sz. sleeper sofa, ex. cond., \$200; 2 3x3 glass top coffee tables, \$50/ea.; 2-dwr. walnut stained file cab., \$40. Susan, 283-5704.

Queen sz. box spring/matt., \$100, OBO. x39819 or 482-9447.

6' oval wooden DR table, protective cov., 6 chairs w/rust cushions, matching bureau, \$700, OBO, 427-7983.

Lg. sofa, good sleeper, \$75, OBO. x38825 or 487-8018.

Sofa/loveseat, beige tones w/oak trim, good cond., \$200. Barb, x38896 or 482-9447.

White wicker cheval (standing) mirr., ex. cond., \$125. 282-3788 or 480-2188.

Contemp. bev. glass top DR table w/taux marble trustle base in beige, ex. cond., \$275. Katie, x33185.

Single bed w/matt, box spring, sheets, cover, \$70. Dan, 480-6913.

Queen sz. semi-waveless wtrbd., 4 post w/6 drwr. pedestal, linens, \$75, OBO. Scott, 480-8835 or 280-9032.

7' couch, good cond., lgt. tan w/dk. brn. braid, \$30, OBO, Bentwood rocker, rattan seat, \$30. Michelle, x31165.

Photographic

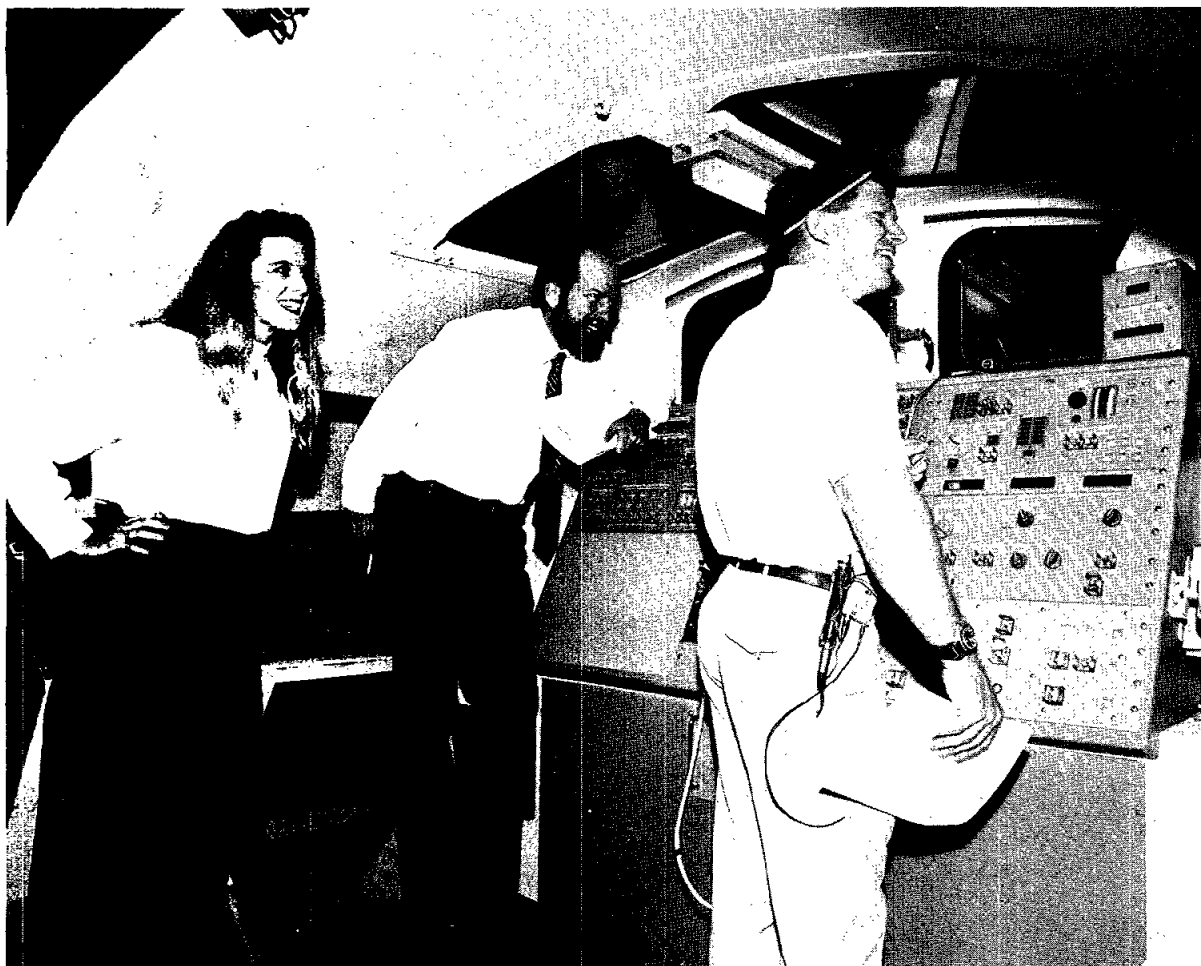
Minolta cam. lens, 50mm/f1.7, new, \$35, OBO. 464-8694.

Wanted

Want violin in good cond. for 10-yr.-old. 486-8659.

Want person/persons to carpool from Southpark to NASA. Charlotte, x36648 or 991-1261.

Want good var. band to play at evening wedding recep. Becky, x31420 or 488-0556.



Voice Activated Odyssey

Voice Command System will give astronauts no-hands camera control

By Susan Alsup

An experiment scheduled to fly on board *Discovery* during STS-41 is reminiscent of one of the great space movies, "2001, a Space Odyssey." Two mission specialists will use a computer called the Voice Command System that responds to the human voice and controls the television cameras on the orbiter.

"It's really a neat system," said STS-41 Mission Specialist Bruce Melnick after his final training session Aug. 15. "It's like HAL in the movie 2001."

Melnick and Bill Shepherd will be using the VCS to command the cameras in the payload bay, flight deck and middeck using simple commands such as up, down, zoom in, zoom out, stop, left and right.

"The words selected are pretty much relevant to the task," said Payload Manager George Salazar.

"Since it was a task that they're so familiar with, it didn't take any extra effort to remember the commands," said Project Engineer Chres Gerhards. "These are commands they would use anyway."

Gerhards, Salazar and Project Engineer Marc Sommers have been working on the project for the past two years. The astronauts started training on the system last spring and completed the final session with Gerhards and Trainer Tico Foley last week.

The training session was the first time in three months the astronauts had tried their hand at verbally activating the cameras. Both the astronauts and the trainers were surprised the session flowed so smoothly.

"It went just fabulous," Gerhards said. "We expected after three months of not using them that it could take a while for them (the astronauts) to... remember how it was they said the words. But since they were so good about using their natural speech... there was not one problem, not one misrecognition."

"I think it just goes to show that voice is not

as sensitive as everyone is afraid it is."

The first step for Shepherd and Melnick to begin training on the system was to make personalized "templates" in the computer in May. The templates are computer chips that recognize the human voice and make "imprints" of a word or words, which it stores as a command.

"When the user wants to use the system, he repeats the same words and it (the computer) does some type of comparison to try to find out what word he said," Sommers said. "When it makes a match, our controlling hardware gets that information, determines what word it is, and then through our other hardware with the orbiter, we send that command out to the orbiter TV system."

But before the astronauts started to use the system, they had to work out a few bugs in building their templates.

"Because we have voices that are different for lots of reasons," Shepherd said, "apparently it's hard to make the programming and hardware recognize that it's the same command so that had to be resolved. Things that we would consider to be different, to the computer sound like the same word."

Melnick experienced that problem first hand when the computer couldn't distinguish between the way he said stop and up.

"I had to change my vocabulary to say tilt up," Melnick said. "So when I want the camera to tilt up, I say tilt up. Shep just says up. I can still say stop to stop the camera."

Why the difference? Shepherd puts emphasis on the "s" in stop. Melnick doesn't.

"That's why there's a little bit of difference in our vocabularies," Melnick said. "Based on your own personal vocabulary, you can get away with

some words that other people can't."

When the astronauts are ready to use the system, they simply turn it on, the only manual step, and state their name. The computer responds via a box next to the TV monitor near the aft flight deck with a written, "Hello, Mel" or "Hello, Shep." This lets astronauts know the computer recognizes their voice and prompts them to their next move.

But there's a chance the computer won't respond in space.

"We're trying to get some baseline data on how well the system performs first on the ground with the crew in comparison with the effects

microgravity has on the voice and the recognition for the crew up there," Sommers said.

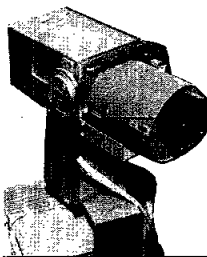
"Some people might think, gee, why would the system not work in space if it works on the ground,"

Melnick said. "There's a good chance in weightlessness where your diaphragm is totally unloaded gravity-wise... our voices may be different enough to where it won't work with the templates we have."

In orbit, the lack of gravity causes the body to stretch. Because of this, the astronauts even have an extra inch added on to their spacesuits so they will fit correctly in weightlessness.

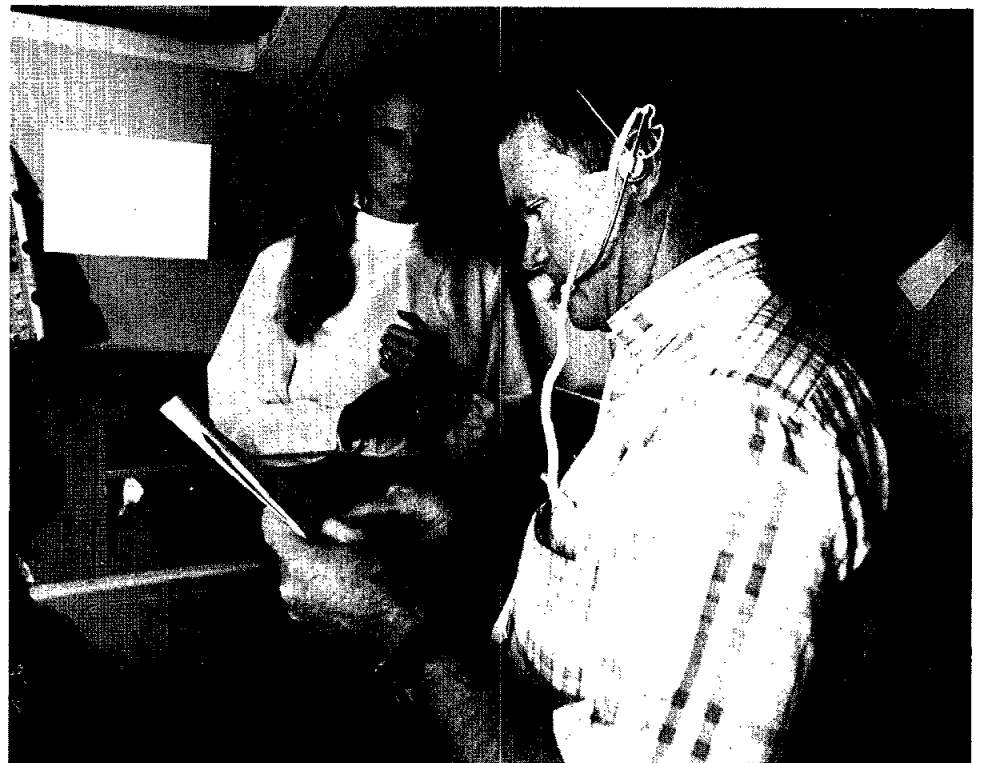
The project manager and engineers anticipated this problem and equipped the system with a retraining mode. The astronauts practiced retraining the system last week during their last training session with Gerhards and Foley.

The retraining mode allows the astronauts to redo their templates in a matter of minutes if the computer doesn't recognize the astronauts' voices.



Who knows what applications it has in the future? The sky's the limit.

—Astronaut Bruce Melnick



JSC Photos

Top: STS-41 Mission Specialist Bill Shepherd, lead on the Voice Command System experiment, practices using the system. Looking on are Chres Gerhards, left, a project engineer, and project trainer Tico Foley, center. Left: Payload Operations Project Engineer Frances Wassick, left, Foley and Gerhards take notes as the astronauts train. Above: Mission Specialist Bruce Melnick works with the VCS trainer, built at JSC by Hector De Leon, while Gerhards and Foley monitor his progress.

NASA 2 flight engineer goes to Headquarters

Alan Higgs, the NASA 2 flight engineer for the past 11 years, has left his Gulfstream 1 to accept a new position in the Aircraft Management Office at NASA Headquarters.

Higgs joined NASA in July 1978 as a T-38 aircraft quality assurance inspector before becoming a flight engineer in April 1979.

Since that flight from Ellington to Patrick Air Force Base, Florida, Higgs has logged 4,725 hours in the air and has flown with every JSC director since Christopher Kraft.

"I wish to convey all my thanks and best wishes to all the JSC management and my colleagues that I had the pleasure of working with on the Gulfstream," Higgs said.

"I'll miss all the launches and landings. The Gulfstream 1 Northrop

Worldwide Aircraft Services Inc., maintenance technicians' support has been superb and without their superb support, I would not be headed where I am today. I'll always have fond memories of JSC."

JSC

People

JSC's Nebrig to join UHCL advisory panel

JSC Associate Director Dan Nebrig has been selected as an ex-officio member of the University of Houston-Clear Lake Development and Advisory Panel.

As UHCL's top external advisory group, the panel's mission is to strengthen and advance the school and its programs and to provide counsel for its strategic direction.

Nebrig joins nine new representatives and one other ex-officio member who are new to the 47-member advisory panel.

Bolden chosen to lead awards review group

Astronaut Charlie Bolden has been appointed by NASA Administrator Richard Truly to lead an agencywide review of the policies and process for honor awards.

The 11-person group will investigate how to make the awards system better

so NASA can ensure it will meet the needs of a growing agency.

As chairman, Bolden will report directly to Truly. The group's final report is due in September.

JSC's representative on the committee is Michael Kincaid of the Human Resources Office. Other panel members are John O'Brien, Headquarters, Office of the Administrator; Kenneth Ahmie, Kennedy Space Center, Mechanical Engineering Directorate; Carson Eoyang, Headquarters, Office of Management; Peter Haro, Ames Research Center, Office of the Director of Engineering and Technical Servi-



Higgs

Nebrig

Bolden

ces; A. Louise Hunt, Lewis Research Center, Office of the Director; William Kahle, Stennis Space Center, Advanced Solid Rocket Motor Project Office; Patricia Lightfoot, Goddard Space Flight Center, Mission Operations and Data Systems Directorate; Sidney Pauls, Langley Research Center, Office of the Director; and Susan Smith, Marshall Space Flight Center, Chief Counsel.

Tech Library offers fall workshops

JSC's Technical Library will offer two workshops this fall to assist users in locating sources of scientific and technical information and in developing information retrieval systems.

"Keywording and Information Retrieval Workshop," offered Sept. 4, will focus on development of keyword vocabularies, use of the NASA thesaurus and consistency of data descriptors for later retrieval.

The four-hour seminar is directed at database users who must develop subject terms and other retrieval parameters for locally used and developed databases. The session will be from 12:30-4:30 p.m. in Bldg. 45, Rm. 304.

"Scientific and Technical Information Sources Workshop" will aid researchers, scientists and engineers in locating pertinent sources of information in their discipline or field of study.

Topics for the Sept. 6 workshop include NASA/JSC information sources, on-line information retrieval systems, retrieval of data on government research, patent information and tracking emerging technologies.

The class will be from 1-4 p.m. in Bldg. 45, Rm. 304.

To register, contact Sheryl Gates of the Human Resources Office at x33074. For more information, call Donna McAllister of the Technical Library at x36144.

The Technical Library, located in Bldg. 45, houses a variety of sources of technical, scientific and management information for all JSC employees.

Guide to remote sensing available

A study by the Space Business Research Center at the University of Houston-Clear Lake is now available to introduce businesses to the technology and opportunity of remote sensing.

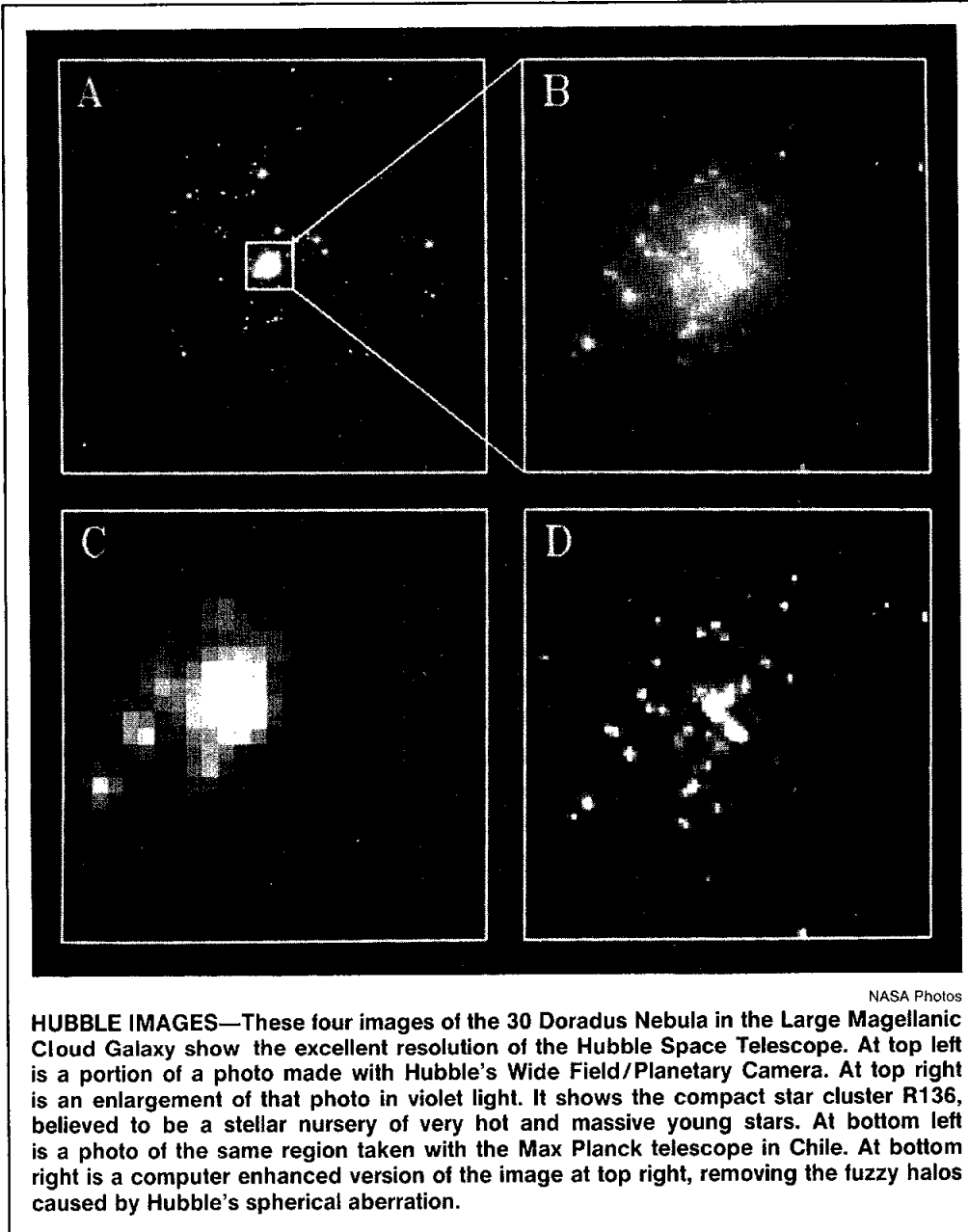
"Earth View: A Business Guide to Orbital Remote Sensing" is a compendium of facts and figures about the observations of Earth from space.

The 120-page book is the culmination of a three-year cooperative project between SBRC and NASA's Office of Commercial Programs and contains numerous charts, tables and graphs on remote sensing systems and organizations.

Ellington phones switch

Ellington Field telephone users will see a slight change in operations this weekend when new 244-prefixed numbers become active.

JSC's and Ellington Field's growing population has used up all 483-prefixed numbers, so 5,000 new numbers ranging from 244-5000 to 244-9999 will be added. Ellington will undergo a block prefix change. Local JSC or Ellington callers will dial 4 plus the last four digits, while the FTS access code will be 521 plus the last four digits.



HUBBLE IMAGES—These four images of the 30 Doradus Nebula in the Large Magellanic Cloud Galaxy show the excellent resolution of the Hubble Space Telescope. At top left is a portion of a photo made with Hubble's Wide Field/Planetary Camera. At top right is an enlargement of that photo in violet light. It shows the compact star cluster R136, believed to be a stellar nursery of very hot and massive young stars. At bottom left is a photo of the same region taken with the Max Planck telescope in Chile. At bottom right is a computer enhanced version of the image at top right, removing the fuzzy halos caused by Hubble's spherical aberration.

Personnel reassignments

Move streamlines shuttle integration, operations office

By Kyle Herring

Shuttle program officials announced today that the Space Shuttle Integration and Operations Office has been reorganized in an effort to streamline the office.

The move, announced by Leonard Nicholson, deputy director of the Space Shuttle Program, reflects organizational changes and personnel reassignments made throughout the office.

Under the new organization, the Flight Production Management Office is renamed Integration Management Office, Mail Code TB. The Operations Planning and Support Office is renamed Flight Production Office, TM3.

"The primary purpose of the reorganization is two-fold," said Hal Lambert, manager of the Integration and Operations Office.

One reason, he said, is to "consolidate all of the support functions into the Integration Management Office" under Paul Jaschke, formerly manager of the Payload Integration Office. This includes databases, cost services and all major reviews.

The other is to "try to eliminate overlap in alignment in order to streamline and concentrate activities in the same area" in the Mission Integration Office managed by Ed Hoskins.

Mail code TC12, the Customer Service Center, has been abolished under the new organization alignment, but the function of the office is transferred to the Integration Management Office.

Lambert said that customers are being handled the same as in the past. "Customers still go to the same people to get documentation as under the old organization," he said. They will still interact with the flight integration manager's office for any needed documents.

Responses to Outreach Program pouring in

NASA announced Wednesday that response has been strong to its request for ideas on how to return to the Moon permanently and begin human exploration of Mars.

The ideas were solicited under NASA's Space Exploration Initiative (SEI) Outreach Program announced by NASA Administrator Richard H. Truly on May 31.

The Outreach Program consists of three primary channels for ideas, which will be provided directly to a Synthesis Group, chaired by retired Lt. General Thomas P. Stafford, USAF. The Synthesis Group is

responsible for synthesizing the inputs from all sources into several architectures for SEI and for identifying early milestones and promising technologies, as well.

The RAND Corporation is analyzing ideas from industry, universities, associations and the public; the American Institute of Aeronautics and Astronautics solicited ideas from its members; and federal agencies were invited to provide direct input to the Synthesis Group.

The AIAA has received more than 400 ideas from its members. The ideas will be the focus of a confer-

ence on "Innovative Technologies for the Exploration of Space," co-sponsored by NASA and the AIAA on Sept. 5-6 in Washington, D.C.

As of Aug. 17, the RAND Corporation had received more than 10,000 requests for response packets under the SEI Outreach Program and notices of intent to submit 3,302 ideas.

Of the intended responses, 68.7 percent are from individuals, 16.3 percent are from aerospace companies and other for-profit enterprises, and 8.1 percent are from educational institutions.

Lunar Prospector digging in

(Continued from Page 1)

used for global mapping of the lunar surface layer composition and searching for ice in permanently shadowed areas. A magnetometer/electron reflectometer would map magnetic fields, an alpha particle spectrometer would map the distribution of radon gas release sites, and a Doppler gravity experiment would map the lunar gravity field.

OMNI Systems Inc., Los Angeles, is building the spacecraft, with construction expected to begin next month and be complete by the summer of 1991. For simplicity and economy, Lunar Prospector will be

a spin-stabilized, drum-shaped spacecraft 1.4 meters tall and 1.4 meters in diameter. It will have a dry mass of about 130 kilograms. The science instruments will be mounted on three booms.

Binder recently met with JSC Director Aaron Cohen and New Initiatives Chief Bill Huffstetler, who were supportive of the effort. However, NASA is not a sponsor nor a participant.

"Their objectives are excellent and collection of data on the lunar poles is something we need," Huffstetler said. "The premise of the project is very good."

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.

Editor Kelly Humphries
Associate Editors . . . Pam Alloway
Kari Fluegel

Venus 'violent'

(Continued from Page 1)

went behind Venus. When it emerged, the signal was heard again but briefly. Steady contact was reestablished about 13 hours later.

Before the first communications loss occurred, scientists received their first look at Venus through Magellan's eyes. A test pass with the spacecraft's synthetic aperture radar revealed an unexpectedly "violent" surface with ridges, valleys, lava flows, volcanic craters and fracturing.

"Right now, I think that's just kind of a crack in the door," said Steve Saunders, Magellan project scientist. "I'm looking through a little slit down at Venus and we're seeing some things we've never seen before."

NASA-JSC