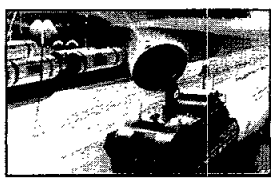
NASA
National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, Texas



On the Threshold

JSC's Synthesis Group member continues discussing Space Exploration Initiative report. Story on Page 3.

Lunar life

Simulation provides designers with first glance at life within a Moon base. Story on Page 4.

Space News Roundup

Vol. 30 July 19, 1991 No. 28

Atlantis stays on track for Tuesday lift-off

By James Hartsfield

Technicians at the Kennedy Space Center are ready to start the countdown clock Saturday as *Atlantis* remains on schedule for a 9:54 a.m. Tuesday launch of STS-43 to deploy NASA's fourth Tracking and Data Relay Satellite.

Technicians found a fault earlier this week in one of the 23 multiplexer-demultiplexers on board the spacecraft. The electronics box relays commands from the onboard flight computers to the explosives that separate the fuel tank and solid rockets as well as the hydraulics that swivel the main engine nozzles. However, analysis showed the problem was in the MDM built-in test equipment, circuitry that allows the MDM to run a self-check routine, and not in any of the circuitry used for the MDM's flight functions.

In addition, an electronics assembly for the firing circuit on the right solid rocket booster was replaced following a failed test.

But the added work did not delay the preparations at Launch Pad 39-A to put *Atlantis* in orbit. Wednesday, a simulated countdown for TDRS-E was under way and going well, a final test of the cargo. The payload bay doors are to be closed Saturday.

Atlantis' crew — Commander John Blaha, Pilot Mike Baker and mission specialists Shannon Lucid, G. David Low and Jim Adamson — will depart Houston for Kennedy Space Center

Saturday, with a planned arrival in Florida at noon CDT.

Also Saturday, the countdown clock for STS-43 will begin running at 3 p.m. CDT.

Elsewhere, *Discovery*, being readied for the September launch of STS-48, is planned to be on the move as well next week.

Workers are now making final preparations to roll *Discovery* to the Vehicle Assembly Building at KSC perhaps as early as Wednesday to be attached to its waiting solid rockets and fuel tank.

This week, *Discovery*'s cargo bay was cleaned, the engine compartment closed out and the spacecraft was weighed.

Columbia is being prepared for a piggyback trip to California for five months of modifications and structural inspections in August. Now in Bay 2 of KSC's processing hangar, the spacecraft's Ku-band antenna was removed this week, heat shields were removed from the main engines and the power reactant storage and distribution system was removed.

Endeavour, in high bay 2 of the VAB, went through a successful leak test of its freon system and installations of crew compartment panels, the payload bay door drive shaft, main propulsion system lines and insulation on the auxiliary power units.

Endeavour will be moved to the processing hangar as soon as bay 1 of that facility is vacated by *Discovery* next week.

Soviets tour JSC

A 15-member delegation of Soviet space officials, headed by Oleg N. Shishkin, Minister of General Machine Building, toured JSC Saturday to become familiar with themselves with NASA facilities and capabilities.

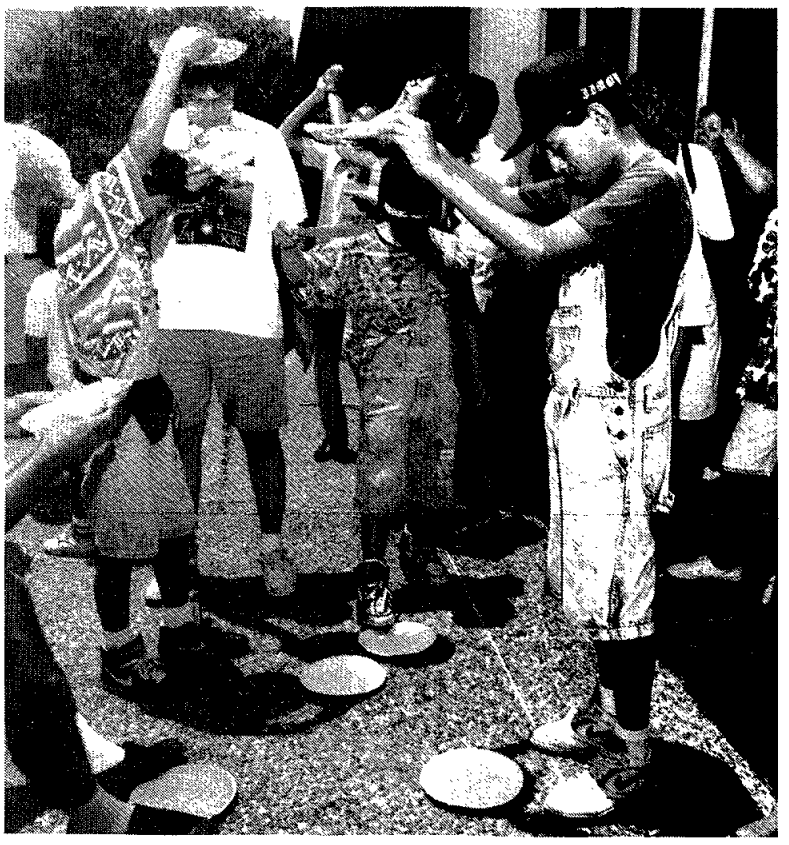
The delegation's visit was in response to an invitation from NASA Administrator Richard H. Truly, issued during Truly's visit to the Soviet Union last October.

"The United States and the Soviet Union have different and unique capabilities within their space programs," said JSC Director Aaron Cohen. "Reciprocal visits like this allow both countries to discuss common issues and concerns about living and working in space."

Individuals making up the delegation are all senior members of the soviet space program. As minister of General Machine Building, Shishkin is the USSR equivalent to Truly.

Other delegation members were Oleg S. Belykov, assistant to USSR President Mikhail Gorbachev; Yuriy V. Matsak, vice chairman of the State Military and Industrial Commission that establishes policy and plans for industrial groups; Alexander I. Dunaev, vice minister of General Machine Building and head of Glavcosmos which markets Soviet space capabilities outside the USSR; Anatoliy I. Zaytsev, director of administration of General Machine Building; Vladimir F. Utkin, director of the Central Research Institute of Machine Building, the equivalent of Mission Control; Yuriy P. Semenov, general director and general designer of the Energia Scientific and Industrial Association, the builders of Energia and Mir; Valeriy V. Riumin,

Please see **SOVIETS**, Page 4



JSC Photos by Kim Murray

SAFE VIEWING—Eyes from Hawaii to Mexico were raised upward July 11 when the Moon passed before the Sun in the longest total eclipse for the next 140 years. Eclipse watchers at JSC used a variety of methods to watch the solar display. Outside Bldg. 2, the JSC Astronomical Society provided telescopes as well as less sophisticated means of safely viewing the eclipse.

NASA probes Pinatubo's effects on atmosphere

The massive outpouring of volcanic material from Mount Pinatubo in the Philippines — believed to be double that of any eruption in the last century — has drawn a quick-response from NASA atmospheric scientists.

A research team has gone to the West Indian island of Barbados to gather information that should help evaluate the global atmospheric effects of the event.

Headed by Dr. M. Patrick McCormick of NASA's Langley Research Center, the special research team consists of scientists from Langley, Ames Research Center, the National Center for Atmospheric Research and the Canadian Atmospheric Environment Service. Researchers also will receive near real-time data from satellites and computer predictions of the volcano aerosol cloud locations.

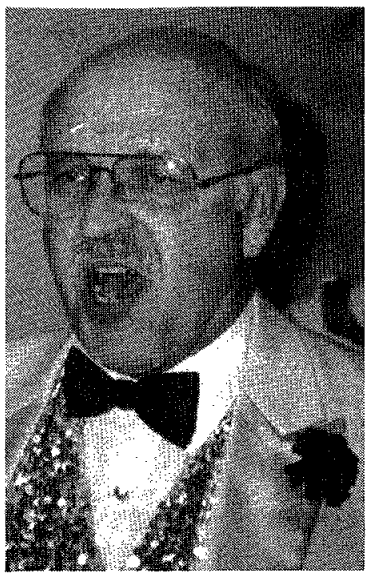
"Volcanic aerosols are climate 'forcers' so it is urgent we get an early characterization of the stratospheric plume," McCormick said. "This effort will influence a number of future activities, including measurement scenarios for ground- and satellite-based sensors and development of chemical models of ozone depletion."

Flying in the NASA Lockheed Electra sampling platform, the group will take advantage of winds that are pushing giant pillars of smoke and gas toward the Caribbean.

The team arrived in Barbados last week. Its primary focus is to capture enough data about the composition, density and distribution of the volcanic clouds to form the basis for detailed analysis of potential global effects. Data from the cloud also will be incorporated into studies conducted this fall by NASA and other groups during the second Arctic Airborne Stratospheric Experiment, which will study the processes of ozone depletion in the Northern Hemisphere.

NASA scientists will stage their operations out of Grantley Adams Airport, where a number of flights will probe the clouds with remote sensors aboard the Electra.

Instruments aboard the plane will measure plume base, thickness, particle shape, spatial distribution, total direct-diffuse radiation, optical depth and vertical columns of chemicals like sulfur dioxide and hydrogen chloride.



Al Branscomb

Vaudeville harmony keeps employees tuned

By James Hartsfield

There's a loose connection, a faulty sensor, balky avionics and the countdown clock is ticking. It's a tough day at the office for Al Branscomb, the JSC vehicle manager who oversees preparing for space flight, and he needs to let it all out.

Branscomb leaves work, calmly drives awhile, then steps out, takes a deep breath and pushes his voice to the limit — not in the proverbial scream but in four-part harmony that's an American original made famous during the days of vaudeville.

Branscomb and fellow JSC employee Lloyd Erickson, manager of the JSC Management Information System on PROFS, are among about 125 self-proclaimed caretakers of barbershop quartet singing in Houston by both a grand 85-member chorus and traditional quartets.

The Houston Tidelanders perform throughout the year around the city, most recently at the Cynthia Woods Mitchell Pavilion with the American Pops Orchestra and at the Houston Freedom Festival July 4th. Their next performance will be "I Love a Parade" at the Miller Outdoor Theater Aug. 24.

"It's kind of nice after a hard day in the space business to go down to this place with these people whose sole goal is to harmonize together," Branscomb said. "We're not concerned with who we are or what we do, we're only concerned with our common craft."

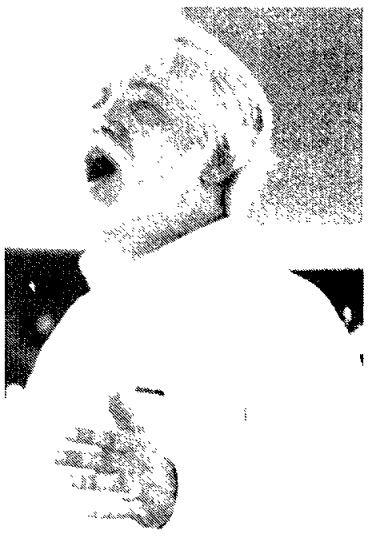
"You go there and you forget about everything that happened during the day," Erickson agreed.

Erickson's been a member of the Tidelanders for 30 years, Branscomb for 18. It's an addicting hobby, they said.

"The style of harmony is arranged in such a way that it makes a very complete musical sound with just four voices, and it gives you a thrill when the sound of the whole is so much bigger than the individual voice," Erickson said. "First-time listeners are always amazed at the fullness of the sound, a sound that seems like so much more than you'd expect to hear from just four people."

Barbershop style focuses on separating music into individual parts for

Please see **SING**, Page 4



Lloyd Erickson

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.

General Cinema (valid for one year): $4.

AMC Theater (valid until May 1992): $3.75.

Loews Theater (valid for one year): $4.

Astroworld (valid 1991 season): season, $44.94; child less than 4-feet, $10.12; one day, $15.85; WaterWorld, $8.15.

SeaWorld of Texas (valid 1991 season): child (3-11), $12.25; adults, $17.25.

Six Flags (valid until Nov. 17): one-day, 15.95; child less than 4-feet, 14.95; two-day, 20.95.

Astros vs. Dodgers (1:35 p.m., Aug. 4 limited number of field level seats. Last day to buy is July 22): $7.

NASA Ski Week (Big Sky Montana Resort during Jan. 4-11, 1992; includes airfare, shuttle transfers, 6-day lift pass, 7 nights lodging, and more; $100 deposit due by Aug. 15): 2/Rm.-$744/person; 3/Rm.-$685/person; 4/Rm.-$656/person.

Ringling Bros. and Barnum and Baily Circus (Noon Aug. 3 at the Summit): $8.50.

JSC

Gilruth Center News

Defensive driving—Course is offered from 8 a.m.-5 p.m., Aug. 10, Sept. 21, Oct. 12 or Nov. 6. Cost is $15.

Aerobic dance—High/low-impact classes meet from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is $24.

Exercise class—Low-impact class meets from 5:15-6:15 p.m. Monday and Wednesday nights. Cost is $24.

Weight safety—Required course for employees wishing to use the Gilruth weight room. The next class will be from 8-9:30 p.m. July 25 and Aug. 7. Cost is $5.

Aikido—Martial arts class meets Tuesdays for six weeks beginning Aug. 6. Cost is $30 per person.

Summer basketball league sign-up—7 a.m. July 15 and 16; non-badged teams 4:30 p.m. July 19.

Summer volleyball league sign-up—7 a.m. July 17 and 18; non-badged teams 4:30 p.m. July 19.

Summer softball league sign-up—Week of July 23.

Please call x30304 or x35789, for specific dates of individual divisions within the leagues.

JSC

Technical Library News

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

Mental Fitness: A Guide to Emotional Health. Merrill Raber; 1987. HD31.C73 M32 1987.

Managing a Successful Team: How to use Teamwork to Boost Your Employee's Performance and Your Department's Productivity. Roger Fritz, 1988. HF5549. F741 1988.

JSC

Dates & Data

Today

Cafeteria menu—Special: tuna and noodle casserole. Entrees: liver and onions, deviled crabs, roast beef with dressing. Soup: seafood gumbo. Vegetables: whipped potatoes, peas, cauliflower.

Saturday

The Loral Lunar Rendezvous Run—The Lunar Rendezvous Run will be held at 8 a.m. July 20 at the Gilruth Center. Entry fee is $15. Entry forms are available at the Gilruth Center gym office. Volunteers will be needed. Those interested should contact Len Topolski at 333-5576, or Brenda Clary at 480-0257. Second Street from the Gilruth Center to Ave. B and portions of Ave B and 5th Street will be closed from approximately 7:15 a.m. to 9 a.m. In addition Ave B from 2nd Street to just past the Thermochemical Test area will be affected by the race (not closed).

Space Fest '91—The Houston Junior Chamber of Commerce will host "Space Fest '91" at 10 a.m. July 20 at the Rice Memorial Center. Admission is free. For more information, contact Terry Jones, 529-2337.

Monday

Spaceweek Banquet—Spaceweek will host a national banquet at 6:30 p.m. July 22, at the South Shore Harbour Resort and Conference Center, League City. The keynote speaker will be NASA Deputy Administrator J. R. Thompson with introductory remarks by JSC Director Aaron Cohen. Black Tie. Tickets are $55. For sponsored table or to order tickets contact Spaceweek National Headquarters, 333-3627.

Cafeteria menu—Special: breaded cutlet. Entrees: beef chop suey, Polish sausage with potato salad. Soup: French onion. Vegetables: okra and tomatoes, green peas.

Tuesday

BAPCO meeting—The Bay Area PC Organization (BAPCO) will meet at 7:30 p.m., July 23, at the League City Bank and Trust, 303 E. Main, League City. The group is open to all persons with an interest in microcomputers. Contact Earl Rubenstein, x34807, or Tom Kelly, 996-5019, for information.

Cafeteria menu—Special: fried chicken. Entrees: Salisbury steak, shrimp Creole. Soup: split pea. Vegetables: mixed vegetables, beets, whipped potatoes.

Wednesday

BANN meeting—The Bay Area NAFE (National Association of Female Executives) Network will have its annual luncheon meeting at 11:30 a.m. July 24 at the South Shore Harbour Country Club. Speaker will be Dan Parsons, vice president of Operations for the Houston Better Business Bureau, who will speak about consumer and business fraud. Dinner buffet/program-$10 members, $12 non-members; program only-$7 members, $5 non-members. To make reservations or for more information, contact Sharon Westerman 486-8972 by July 19.

Cafeteria menu—Special: stuffed bell pepper. Entrees: fried catfish with hush puppies, braised beef rib, BBQ plate, wieners and beans, shrimp salad. Soup: seafood gumbo. Vegetables: corn O'Brian, rice, Italian green beans.

Thursday

Cafeteria menu—Special: BBQ smoked link. Entrees: beef stroganoff, turkey and dressing. Soup: chicken noodle. Vegetables: Lima beans, buttered squash, Spanish rice.

Friday

Cafeteria menu—Special: meat sauce and spaghetti. Entrees: baked scrod, liver and onions, fried shrimp. Soup: seafood gumbo. Vegetables: green beans, buttered broccoli, whipped potatoes.

Aug. 6-8

Space station symposium—The Space Station *Freedom* Program will host a discussion on Space Station Evolution "Beyond the Baseline," at 8 a.m. Aug. 6-8 at the South Shore Harbour Resort and Conference Center. For more information or registration, contact Carla Armstrong x39071.

Aug. 22

SCS meeting—Society for Computer Simulation Chapter meeting will be held at 11:45 a.m. Aug. 22 at the Lockheed Plaza 3 Bldg., first floor PIC Rm. JSC's Liz Bains will speak on the "Simulation System Branch." No reservations required. Lunch will be available. For more information, contact Wade Webster, 244-4306, or Robin Kirkham, 333-7345.

Aug. 28

BANN meeting—The Bay Area NAFE (National Association of Female Executives) Network will have its luncheon meeting at 11:30 a.m. Aug. 28 at the South Shore Harbour Country Club. Speaker will be Blanca Gutierrez, owner of Comedy Showcase, speaking on owning and operating a business. Cost is for the dinner buffet and program is $10 members and $12 for non-members; and for the program only, $7 for members and $5 for non-members. To make reservations or for more information, contact Sharon Westerman, 486-8972 by July 19.

Swap Shop

Property

Sale: Egret Bay condo, 2-2, cov parking, all appli, FPL, blinds, fan, patio, storage, pools, boat ramp, $42.9K. x30092 or 481-3637.

Lease: CLC townhouse, 2-2-1 CP, $550/mo + dep. x32010 or 554-6743.

Sale: Lake Placid on Guadalupe, near Seguin, rock lakehouse, 3-2-2, 90' waterfront lot, VA assum, $93K. 488-7387.

Sale: LC/Newport, 3-2-2 w/spa, possible assum, $49K. 333-4609.

Rent: Friendswood, enclosed RV storage stall, 40' deep, lights/power, reasonable. 482-9396.

Lease: Pipers Meadow, 3-2-2, lg den, FPL, fenced, formal DR, $925/mo + dep; CLC condo, 2-1, FPL, all appli, mini blinds, pools, W/D conn, $475/mo. x31275 or 486-0315.

Sale: LC, 3-2-2, no MUD taxes, assum, no approval, never flooded, $62K. 538-2299.

Lease: Webster/Ellington, 2-1-condo, $435/mo. Dave, x38156 or Herb, x38161.

Sale: Four Crystal Beach lots on Bolivar, 50'x100', sell 1 or more; Flynn, TX old farmhouse, on 21 acres wooded rolling hills, utilities, 700' hwy frontage, $31,250. Anthony, 921-7212 or Andre Schwab, (903) 536-2672.

Rent: Med. Center, 2 story condo, 2-1.5-CP, W/D, FPL, cable, lg kitchen w/breakfast, walk-in closets, $675/mo. Charlie, 333-7804 or 799-9101.

Sale: Hill country 10 acres on FM 783 between Kerrville and Harper, 400' frontage, utili avail, VA qual. 472-8927.

Sale: Bay Glen, 3-2.5-2, 2 story., formal LR/DR, $119K. Mr. Ho, x32941 or 488-8632.

Sale: Two water view lots near NASA, $38.5K ea; Bayfront lot on Toddville, can finance, $110K. Don, x38039.

Sale: El Dorado Trace condo, 1-1.5-CP, all appl, patio, balcony, FPL, fans, designer wallpaper and carpets, assum w/appl. Joyce, 988-1212 or 286-1177.

Sale: LC Meadow Bend, 3-2-2, brick, FPL, dishwasher, microwave, fan, $69K. 538-3458.

Sale: Nassau Bay/Queen's Court townhome, 3-2-2A, wet bar, FPL, priv patio, den, $86.5K. 333-5598 or 282-3497.

Lease: Webster/Green Acres, 3-2-1, fenced, on restricted 1/2 acre, lg LR, avail Aug 15, $800/mo + dep. Garlan, 333-3114.

Rent: Seabrook, furnished 1 BR apt, $400/mo. Rick, x37301 or 326-3860.

Sale or Rent: Santa Fe, 14'x20' building, can be relocated, $200/mo. Larry, x30428.

Sale or Lease: University Trace, 2-2 condo, refrig, fans, W/D conn, reserved parking, pools, wt room, saunas, no smoking, no pets, $45K or $525/mo. 488-5092.

Sale: Pearland/Woodcreek, lg rooms, no formals, covered patio in lg yard. Mike, 485-7607.

Lease: Scarsdale townhouse, 2-2.5-2CP, 1.5K sq ft, new carpet, tile, lg closets, no pets, $700/mo. x30981 or 481-1239.

Cars and Trucks

'84 Nissan 300ZX 2+2, auto, A/C, grey, stereo, $4,950 or '80 Pontiac Phoenix V6, auto, A/C, stereo, lifetime batt, $1,750, consider trade for MAC SE/30 or MACII PC. x30092 or 481-3637.

'81 Mercedes 250T, good cond, sunroof, AM/FM, A/C, yellow w/green int, $6.9K. 992-5677.

'77 Ford E150, window van, 351W eng, auto, A/C, good cond, $1.8K. Bauch, x31309 or 333-3382.

'78 Honda Accord, new clutch, A/C, loaded, $850. 990-9205.

'88 Mazda 929, loaded, sunroof, 5 spd, grey ext w/factory tinted windows, $9,895. 244-9843 or 532-2215.

'76 Cadillac, Coupe deVille, silver, leather int, 500cc, 63K mi, clear title, $2K OBO. (409) 938-4793.

'88 Honda Prelude Si, 4WS, 5 spd, 69K mi, $9K. Jim, 997-2069.

'85 GMC Van Rally STX, 3/4 ton, cruise, A/C, AM/FM stereo, 60K mi, ex cond, $7.5K. 334-5832.

'81 Toyota Corolla SW, 74K mi, good cond; '85 Sunbird, 2 dr, 5 spd, 114K mi, good cond, A/C, $1.7K. Mike, x34378 or 486-4983.

'83 Nissan Sentra, 5 spd, A/C, 110K mi, good cond, $1.3K. 334-3627.

'86 Chev Cavalier conv V6, std trans, loaded, cruise control, cloth int, ex cond, $4.6K. x33833 or 487-4562.

'82 Mazda RX7, 5 spd, 98K mi, new tires, brakes, shocks, $2.4K. x30962.

'77 Cadillac sedan deVille, metallic dark green, perfect vinyl roof, 200 watt Clarion stereo/cass, 99.8K mi, loaded, $1,680. 332-8639.

'82 Porsche 924 turbo, rebuilt eng and turbo, all records, loaded, $9.8K. Paul, 286-0136.

'72 VW Beetle, yellow, rebuilt eng, good cond, body and int good cond, half worn steel belted radials, $1K. Todd, 480-6006.

'89 Ford Probe turbo GT, ex cond, 100K mi extended warr, $10,750. Dan, 280-2780 or 457-2850.

'80 Mazda 626, ex cond, 4 cyl, gold, Pioneer stereo, $1.6K OBO. Larry, x30428.

'90 Olds 88 Royale, 4 dr, P/S, P/B, P/W, P/L, AM/FM stereo, ext warr, $13K OBO. x38092 or 482-5342.

'76 Toyota Corolla, new struts, shocks, alternator, radiator, brakes, good cond, $750 OBO. Dave. 333-6062 or 847-3146.

'71 Mustang, 6 cyl, new paint, tires, needs minor wrk, $3K OBO. Tiffiny, 283-5680 or George, (409) 938-8911.

Cycles

Girls 20" bicycle, $20. Mark, x30909 or 487-4249.

'73 Honda 125 MC; '74 Honda 250 MC, neither street legal nor regi, some spare parts, and manuals, $425. Garlan, 333-3114.

Schwinn twin, tandem bike, good cond, $200 OBO, P. J. 335-4204 or 286-1212.

'87 Kawasaki Ninja ZX-750 R, garaged, ex cond, black, 5.5K mi, leather jacket incl, $3K. Frank, 486-6418 or 334-2647.

'78 Honda 550K (4 carb), ex cond, 5.6K mi, no rust, no damage, $775 OBO. Dave, 333-6062 or 847-3146.

'80 Yamaha 1100, ex cond, garage kept, all records, $1.3K OBO. 339-1337.

'86 Honda VFR 700, new tires and header, 8K mi, white, $2.9K OBO; '81 Suzuki RM 125, ex cond, $550 OBO. Andy, 333-6671 or 332-9105.

Boats and Planes

'90 Carver 23 LOA-27' Volvo duo prop, stove, refrig, bathrm , stereo, camper pkg, sleeps 4, ex cond, $32K. 286-8609.

Aircraft propeller, Senenish 74DM6-0-58, overhauled, yellow tag, fits some Beech piper, PA-18, 22, 28 series aircraft, $900. 538-2299.

Sailboat, LIDO-14 w/sails and trlr, $995. R. Hoover, x31360 or 996-7716.

Prindle 16 catamaran w/galv trlr, beach tires, life jackets, trapeze, extra gear, good cond, $1.3K. x30620 or 488-6267.

'90 16' fiberglass flatbottom boat, with 25hp Mercury and galv trlr, $3K. x37195 or 487-3919.

'85 Invader SkiBoat, 18' I/O, 205hp Mercury, depth finder, AM/FM/cass, ski gear, Shorelander trlr, $7.5K. John, 488-2756.

Pilots new, hard back copy of "Flying VFR In Marginal Weather," 3rd Edition by Daryl E. Murphy, McGraw Hill, 1991, $25. Kyle, x38628.

20' sailboat, good cond, $2650. 485-7629.

18' Catamaran, jib, sails, swing seats, trlr, ex cond, $1150 OBO. 339-1337.

Audiovisual & Computers

Apple II+ w/monochrome mon, 2 HD, SW, $200. Brad, 282-3570.

Compaq Deskpro mon, Seikosha model # ST-1000I printer, Apple 5-1/4" DD 1&2, Apple Disk 2 interface card, Macintosh mon, mother board, kybd, mouse. Nydia x35760 or 333-5962.

Cassette changer dec, Pioneer CT-M6R holds 6 audio cass, does relay record/play for 9 hrs, random mode, remote control, 6 mos old, $250. Mike, x37060 or 474-9132.

Rockford Fosgate 5-1/4" midrange car speakers, pair, new, $85. Tony, x30690.

Heathkit integrated amplifiers, 2 50w/channel 35w/channel, BO. Frank, X33573 or 992-3515.

Amiga A1000 computer w/color mon, kybd, external 3.5" dr, 1.5 MB RAM, SW, $725. 280-1579 or 482-5536.

Commodore 64, kybd, DD, games, program, no moni, $50. 488-4915.

Musical Instruments

Magnitone elec guitar w/case, $35. 244-9843 or 532-2215.

Studio upright piano, good cond, action needs work, free. Dennis, x39145.

TASCAM 8 track recorder, 4 DBX's 150's, Tascam M30 mixer, $3,250; Fender bullet bass/case, new cond, $300; Hammond M3 organ, good cond, $595.

Handcrafted black walnut Appalachian Dulcimer by Warren May of Berea, Kentucky, signed, dated, numbered, and registered, whale shaped and book matched for $325. John, x38890 or 488-0559.

Gibson Les Paul custom guitar, blk, ex cond, $600 OBO. Jeff, 333-7745 or 286-9636.

Pets and Livestock

Bobwhite quail/proven flyers. Ken, 388-1504.

Free kittens 2 gray, 2 blk, all w/tan markings. Kim, 488-2283.

Free black Rottweiler/lab mix, 15 mos old, all shots. Julianne, 283-0392 or 488-8617.

Free female German shepard, born April 1990. 946-5198.

Bunnies and breeder rabbits, Holland, Dutch, and Dwarf. x30984 or 331-2289.

Free female longhaired shepard/collie mix, spayed. 326-5155.

Parrots, 1 pair bonded double yellow head, male 2 yrs old, S/S hen 1 yr old, $1.2K; 2 S/S yellow nape males, approximately 6-7 yrs old, $650; 1 baby doubleyellow head, handfed closed banded approx 5 wks old, $500. Wade, (512) 924-8708 or Billie (512) 923-0312.

Free Cheasapeake Bay retriever, 3 yr old female, AKC reg. x37798 or 482-2450.

Household

BR suite, full bookcase hdbd and frame, 6 drwr dresser, mirror, desk, and chair, antique white and blue, $200. Ellen, x38163 or 486-0830.

King sz Bassett four poster pine bed, 4 yr old boxspring, mattress, and comforter incl, $400 OBO. Vanessa or J. C. 282-4563 or 943-8443.

Heathkit 26" color TV, assembled, working complete set of manuals, no cover, $60. Brad, 282-3570.

Full sz bookcase hdbd and ftbd, $20. 480-3424.

Sleeper sofa, browns/tan/golds; two gold swivel rockers, ex cond; Sears best Kenmore portable dishwasher, ex cond, used 2 mos, $350. x30333 or 471-2885.

Twin sz boxsprings and mattress, 5 yrs old, good cond, $30. 992-5740.

Kenmore refrig w/auto icemaker, wht, $600; Kenmore W/D, heavy duty, lg capacity, $500 both or $300 ea.Greg, x35063 or 585-5108.

Set of 5 walnut dining chairs, $25 ea; antique short rocker, $40; antique Victrola case $50; drafting table, $20; end tables, $40 ea. Gay, 488-2756.

L-shaped sec, 3 tone brn velour w/2 ottomans; dining table w/4 chairs, 1 yr old from Wards, $200 ea. Bev, 283-9354.

Sofa, blue, ex cond, $250 OBO. Terry, x33814 or 486-9760.

French Provencial twin sz canopy bed frame, $20; queen sz sofa bed, grn, $75; swivel rocker, tan, $20; teakwood bar w/4 stools, $375; wicker chair, $5; infant dressing table, wht, loaded w/stuffed animals, $20; child's fire engine pedal car, $20; unused seabag, $10; various correse courses, $6 ea; 6 lb dumbbell wts, $10. Anna, 559-3133.

6 qt elec kitchen kettle w/crockery, new, multi-purpose and slow cooker, $20. Kyle, x38628.

Contemporary couch and love seat, $350. 996-0323.

Sofa, love seat, chair, $300; home entertainment ctr, $50; 3 end tables, $75; king sz bed. $300; chest of drwrs, night stand, $100; dinette set, $40. Boyd, 488-3556 or 333-7464.

Dinette table w/4 chairs, 42" rnd, 42"x60" w/leaf, $100. Bob, x33057 or 538-3431.

Sofa and chair, lt blue, floral pattern, ex cond, $260. Ignacio, 282-4818 or 486-1078.

Kenmore elec stove and Sears refrig, $325 for both, good cond. Denise, 282-6874 or (409)925-6078.

Kenmore washing machine, 2 yr old, lg cap, ex cond, $140. 482-2450.

Two chairs, gold, ex cond, $75 ea. P. J. 335-4204 or 286-1212.

3 woven window coverings 36" wide, brn/orange/wht, $25. Jeff, 333-7010 or 482-5393.

Lg round butcher block table w/4 chairs, $50. Jeanne, x37472.

Rattan dinette set, w/extra leaf, 4 chairs, ex cond, $200. 282-2805.

Lost and Found

Lost gray backpack w/piano music, 6/21/91, in parking lot between bldgs 28 and 35, reward. Dennis, x39145.

Wanted

Want Murphy bed, Alan, 480-6221.

Want '79 or '80 Olds Cutless Supreme V8, ex cond. Fred, 944-0493.

Want non-operating or used motorcycle or O/B motors, Marine equip. Bob, x35140.

Want drafting machine. Nina, x31612 or 488-0664.

Want Duplo/compatible building blocks, Lego/compatible building blocks, or Lincoln logs. Jeannie, 280-0330.

Want roommate for 2-2 home on Galveston Bay, $250/mo + 1/2 util, avail June 29th. Fran, 333-6277 or 339-3562.

Want roommate to share 2 BR furnished apt, W/D, non-smoker, avail Sept 1, $400/mo, bills paid. Susan, 283-5704.

Want good dual-cassette system w/4 speakers; two wing back chairs. 326-5155.

Want '65-'68 Mustang or Camero convertible w/good body in reasonable shape, prefer A/C, V-8, std, pay up to $7K. Scotty, x39570 or 470-1096.

Miscellaneous

Treadmill, manual non-elec spd, distance, timer, tension, $80. 333-7180 or 333-9581.

'82 Honda Moped, 50cc, 1742 mi, blk, $250; coffee table, glass top, dk wood frame, 22 x 52, $75; dishwasher, $25. 333-4101.

Window screens, stereo cabinet, ski boots. Alan, 480-6221.

Oceana 25 gal fish tank, w/wood cabinet, complete setup, ready to go, lifetime warr. $200. 283-9300 or 331-5047.

Fiberglass camper top, for long wheel base, S-10/15 pickup truck, good cond. x38019 or 488-1243.

Waterskiing magazines, Spray April '77 - March '79, Waterski Fall '80 - Nov/Dec '87, and Water Skier May '87 - May '89, 71 issues total BO. 335-2115 or 532-1175.

Jason 400 telescope $20; heavy wooden pallets free; swing set w/monkey bars, $30; full sz comforter w/shams and dust ruffle, $25; single sz comforter w/sham $15. 332-9124.

Lg desk, good cond, $100; pottery wheels 2, Venturi burners 7, kiln furniture, was $800, now $400. (409) 849-3791.

Elec typewriter, $20; TI programmer calculator, was $90, now $20; drafting kit, $10. Brad, 282-3570.

Aquarium, 20 gal, w/hood, light, and undergravel filter, $30. 480-3424.

Stanley desk, good cond, $45. Nina, x31612 or 488-0664.

'79 Topps Wayne Gretsky rookie card, ex cond, book value $550, now $425. x34049 or 428-7419.

Fitness stair climber, Spirit Flexstep mod 764, elec mon, upper body attach, ex cond, $350. 468-0287.

14" four lug Ford Mustang wheels, set of 4 $100. 244-9843 or 532-2215.

Barstools, dk oak, Windsor back, 6 mo old, 3 $70; kitchen table, w/matching desk, country style, bleached pine top w/wht legs, trim, $185 set; exercise bike, w/speedometer, $45; jogging trampoline, $10. 480-2444.

Four Ultrax GTS radial tires, raised wht letter, P225/70 SR15's, ex cond, $100. 554-2267.

RCA console stereo TV, BO over $450; Sears floor cleaner/polisher $125; Smith Corona home word processor BO over $300; stereo cabinet, $45; Sanders men's western boots, sz 10, $65. Diane, 283-5618.

Bell & Howell movie camera and projector, $30; National Semiconductor DTS 1500 data checker cash register w/time clock; 4 clerk position, foolproof security, duplicate stub receipts, full sale visibility, tax, void, and refund functions, $200. (409) 935-9435.

80 new alum windows asstd szs; wood mouldings, door and cabinet hardware, Xerox 3701 copier, $200 OBO. Don, x38039 or 333-1751.

Visit Disney World, Hawaii, or anywhere and stay in luxurious 2-2 condo for a week, will exchange my timeshare that sleeps 6-8 to match your choice of time and resort area for $650; women's 10 spd bike, microwave, stove, Queen waterbed/matt, Beta VCR player/recorder, quality component stereo. Tim, 996-9191.

Baby stroller w/parasol umbrella attached, good cond, $25; lightwt, stroller, $20; infant/toddler car seat; Century 5000 STE, never used, was $109, now $75. Kim, 244-9850.

Women's gold jewelry for sale. Timothy, 286-6860.

Engagement ring, 18kt yellow gold, round diamond solitaire .68ct w/6 round diamonds .18ct, was $1.5K, now $1.2K; 2 dr legal sz file cabinet, ex cond, was $200, now $100. x30874 or 333-1316.

Burley bicycle trlr, ex cond, flag, safety triangle, screen and rain cover, $300. 282-2872 or 996-8114.

President's & First Lady gold charter membership, all incl, $1.3K OBO. Allen, x30791 or 286-7620.

PortaCrib, $30; covered stroller, $15; Pansy Ellen clip-on table seat, $7; booster seat, $5; Jay Mar toy piano, $30; vinyl, baby life jacket, $1. Phyllis, x39393 or 946-4752.

Hibiscus plants, 1 gal, $3 ea. 482-5226.

Craftsman 3/8" cordless drill, $15; Black and Decker 3/8" drill, unused, $15. Frank, x39924 or 992-3515.

15" wheels, custom mags for Turbo GT, was $700, BO. Dan, 280-2780 or 457-2850.

'67-'69 Camero hood, good cond, $60; Mercruiser 330 TRS heads, big block Chevy oval port, ex cond, $250. Scotty, x39570 or 470-1096.

Quasar convectional microwave oven, ex cond, $325. Larry, x30428.

Octogym exerciser, $40; scuba equip, tank, regulator, mask, fins, snorkel, spear gun, $135. 488-5092.

Irons, 2-PW, Palm Springs premium model, new cord grips, 1 yr old, $225; professional sz golf bag, Miller Lite logo, $135; pull cart, ex cond, $30; Tommy Armour T-line putter, $25. Tim, x36324.

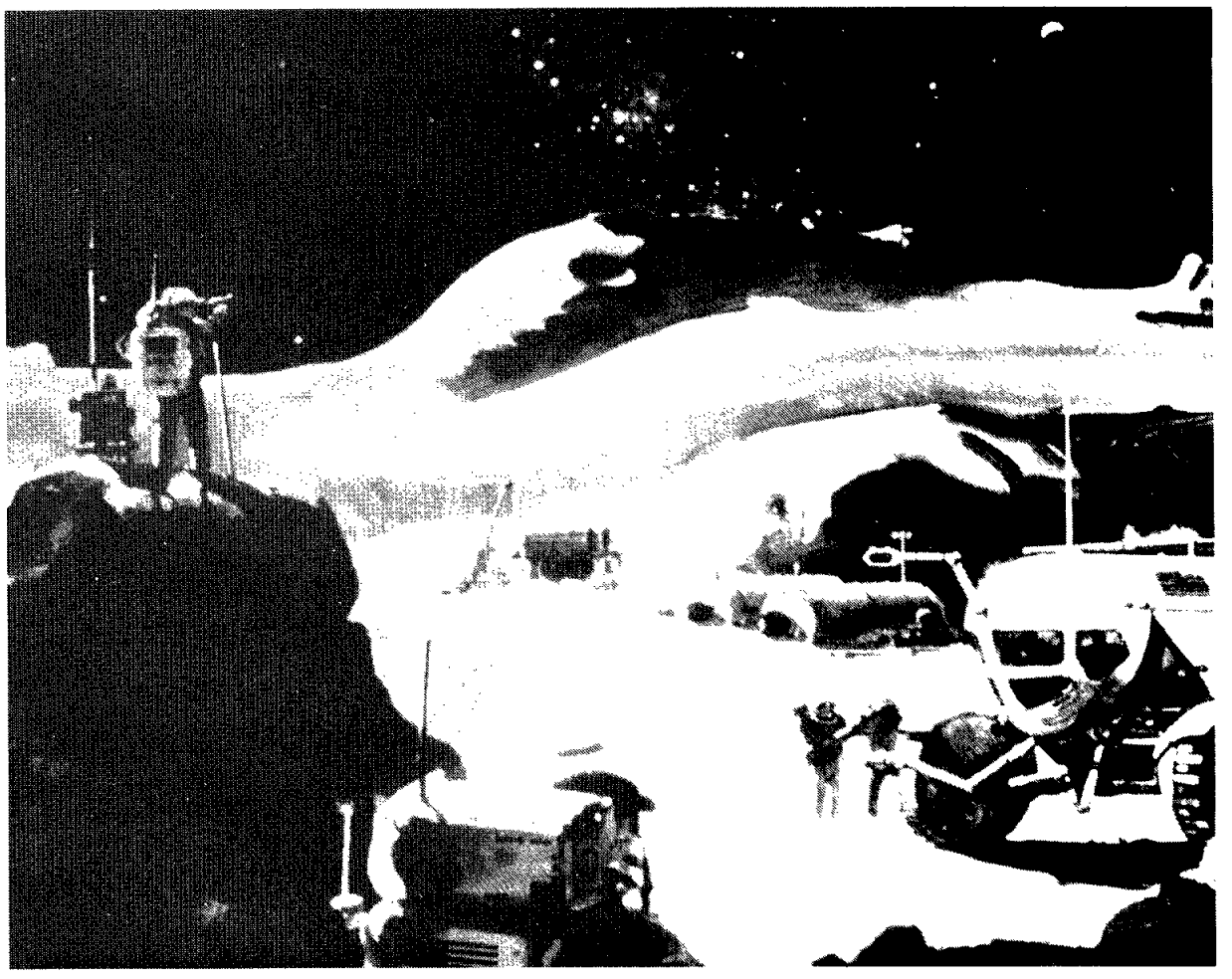
25' McGregor sailboat, AM/FM/cass, marine VHF, depth, head, 6hp Mariner, custom rigging, trlr, $6950; 29 gal saltwater aquarium w/stand, fish, shrimp, access, $250; Hanimax 35mm underwater camera, motor drive flash, close up lens, $200. Kevin Walters, 486-6411 or 532-2181.

Sealed '70 MPC kit of post-Apollo, NASA Space Station concept, features NERVA engine, detailed, limited quan, $30. Robert, x34397 or 333-1485.

8'x7' wood garage dr and frame, good cond, $50 OBO. 339-1337.

Space Exploration Initiative

Synthesis Group member discusses NASA's response to exploration report



[Editor's note: Doug Cooke, deputy manager of the Lunar and Mars Exploration Program Office, recently returned to JSC after a temporary assignment as a member of the Synthesis Group. That group's report, "America at the Threshold: America's Space Exploration Initiative" set forth four possible architectures, 14 technology initiatives and 10 policy recommendations that could shape space exploration and exploitation for the next century. This is the second part of the interview.]

By Kelly Humphries

Q: How will NASA formulate its response to the Synthesis Group report?

A: We're getting ready to kick off a study of the architectures with the other centers. We're going to spend quite a bit of time fleshing out the architectures to make sure we fully understand them, their impacts and implications. They're written at a fairly top level in the Synthesis report. We plan to accomplish this by getting our supporting centers and organizations to develop implementations for the architectures. They'll define what it will take in terms of vehicles, number of flights, planet surface systems and all other aspects of the missions. Along the way we will also be looking at possible options and alternatives that might be more efficient ways of accomplishing mission objectives. We will track those options and when we report back, we'll describe where we've done that and why. It may lead to some evolution of the architectures described in the report.

Then we'll compare architectures and their relative merits in terms of what they accomplish versus what they tend to imply in terms of number of flights and the scale of the program. We'll compare the architectures against each other, but we'll also evaluate potential options and their relative merits. Finally, we will be honing in on what we think our recommendations are.

That's how we plan to assess the architectures, but we'll also be looking at the technologies that are described in the report and comparing them with the NASA technology programs to make sure that we're going down all the right paths. Right off the bat, I have to say that for the most part we're pretty close to being on those paths. We have recognized within NASA the importance of the technologies that are described in the report.

We are addressing the recommendations, as well. Some of those, such as creating a national program office, naming an associate administrator and having an executive order that lays out this national program office are beyond our purview and will be addressed at the headquarters level.

Right now we have four architectures. At some point, we'll have basically one architecture with possible options. There will still be things that we don't fully understand, so, we'll have studies and technology and research programs that bring in data downstream where we can decide on specific options.

What we found was that when you try to define architectures that are different from each other, they tend to vary in about three parameters. One is the degree to which science and exploration are pursued. Another is human presence; crew size and accomplishments will set the scope and scale of the activity and the logistics. The third one is the degree to which you pursue energy development, either for use in space or in supplying it to Earth. Those three things tend to drive the program.

There was an adjunct area of variability and that was the degree to which activities were emphasized on the Moon as opposed to Mars. You can fully develop your activities on the Moon and just go to Mars in an expeditionary fashion. Or, you can do the minimum on the Moon and try to really focus in on Mars exploration.

Q: Looking at this will be a NASA-wide effort. Is the Lunar Mars Exploration Program Office going to be the "point man" for that?

A: We're leading all the architecture and technology studies. We have a Level I office at headquarters working closely with us in planning that work, making sure that we meet the milestones that they see and reporting back to Admiral Truly, Congress and the Space Council. We also have all the NASA centers involved in this. Our primary leads are what we call integration agents. One of them is here within the New Initiatives Office, the Planet Surface Systems Office headed up by Barney Roberts. We also have an integration agent at Marshall Space Flight Center that's responsible for space transportation. Langley is our lead for orbital nodes, where there are studies of how we make best use of space stations in these efforts or other possible nodes in orbit. Then we have JPL, which is our lead for robotic missions requirements.

Q: Will other agencies like the Department of Energy and Department of Defense be involved in the report follow-up work?

A: That's not settled yet. They offer a lot of experience in many technology areas. We have a memorandum of understanding signed with the DOE, and at headquarters they're working on one with DOD. Over the past two or three years there's been work done in conjunction with DOE and DOD on nuclear systems in particular.

Barney Roberts has worked with the Corps of Engineers in studying planet surface systems. But right now, before there are further policies established on collaboration with DOD and DOE, we're waiting until we see what comes out of the National Space Council response to the Synthesis recommendations.

Q: So, we have work ahead of us yet to go into more depth on this report. Can you sustain interest in the report's findings?

A: There's an important effort focusing on early achievements. First off, there are some missions laid out within NASA that will contribute to the knowledge needed in this program. We're also looking at other things we can do in the near term that will generate interest in this whole exploration activity. That involves space shuttle missions and space station development, as well as, possibly, Steve Bailey's New Initiatives proposal for a utility lander for use on the Moon that scientists can develop payloads for. You could develop a production line for them, and they could go up on relatively small expendable launch vehicles, but could carry a variety of payloads. He's looking at getting that developed in the near term so that it would be available soon for recording data. It's also something that's visible that captures people's interest.

Small projects like that can also help us find new ways of doing business. One thing we're trying to do is streamline the management process. You can use a small program like that as a pathfinder. The Space Exploration Initiative is really a big job, and it's going to be important to manage it efficiently. We have ongoing studies on the management process, as well. These things fit well with the recommendations of the Stafford report and the Augustine report.

One other important thing we're doing in parallel is laying out long-term plans and approaches toward accomplishing SEI, with decision points where technology, research and study results feed into the decisions. We're developing long-term timelines and engineering studies that are somewhat independent of architectures.

And we're going to get the benefit of the knowledge that's already out there. I was impressed with the willingness of retired space experts who have gone on to other things, to come in an talk with us. We want to bring them in — in groups and individually — to look at the work we're doing and give us the benefit of their experience. That way, we have both the benefit of new ideas as well as past experience so we don't try to reinvent the wheel. Many of us here grew up within the space program, but weren't involved in management early on. I came on after the Apollo program. I was involved in a lot of the early engineering work on the shuttle, but was not involved in the management there. Unless we make an effort to capture that knowledge, we won't know what lessons they learned, what paths they went down that were dead ends. We want to make sure we get the benefit of their wisdom. We still have a lot of experience in the agency, but there's an awful lot that's gone. And everyone's experiences are a little different.

Q: What do you think the chances are of this report gaining widespread acceptance?

A: I hope it will. It was put together by an independent group. It wasn't NASA generated. It was an independent group that came in and studied this, not being experts in this initiative, who became advocates. I think most of these people will go forward and campaign for it. They are in different agencies. They go back to different walks of life. It's hard to say exactly what will happen with something like this, but it seems to be getting good reviews in Washington.

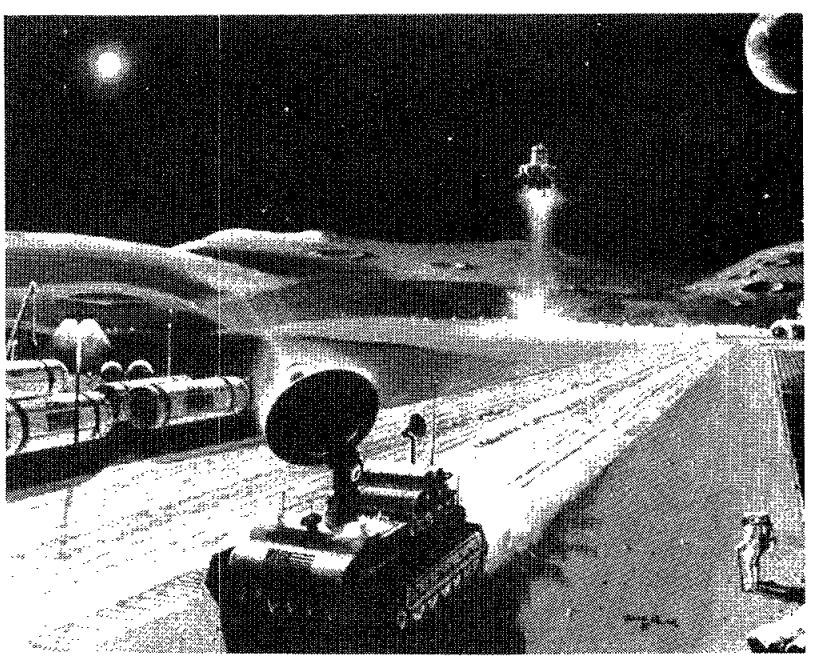
It doesn't take a lot of money right now. It's a long-term effort, but it's not one big program. It is an initiative with a lot of sub-elements that allow you to step through the program. You can start small with early elements and achievements.

Q: What do you say to people who insist that we need to solve today's problems before we embark upon such a long-term initiative?

A: It's important for the country to invest in its future at the same time it is solving today's problems. That's something that was felt strongly by the people working in the Synthesis Group. It's important that we lead in technology into the next century. This entire effort is aimed at technology and, because of the scope, encompasses a wide range of technologies.

With a good strategic plan and visible steps for the space program, it also has the potential to motivate children in school. There is a big focus on education in this report. There are widespread problems for motivation in general within schools, not just science and engineering. A successful and dynamic space program can motivate kids to try to accomplish great things within their lives.

As a country, we tend to get wrapped up in today's problems, and they're important. But if we don't invest in the future, today's problems are just going to get worse. Someday, today's problems may seem miniscule if we don't invest in our future. We may have a lot more homeless or unemployed if we're no longer the technological leaders or economic leaders in the world.



Right: This artist's concept of lunar resource mining depicts the Synthesis Group's Architecture III, "Moon to Stay and Mars Exploration." This plan emphasizes a permanent human presence on the Moon, combined with the exploration of Mars. A major objective is to build toward life-support self-sufficiency for breathing gases and food production on the Moon. Top: Architecture IV, "Space Resource Utilization," is depicted above with an artist's concept of lunar resource mining activities. The architecture focuses on maximum use of available resources to support exploration missions to the Moon and Mars directly and the development of a large class of of available resources for broader transportation, habitation, life sciences, energy production and construction activities.

Synthesis Group Illustrations
by Robert McCall

Safety focus of seminars

The safety of hydraulic systems, both at work and home, will be the focus of daily presentations observing Pressure Systems Week July 22-26.

One-hour presentations will be given at five different locations next week. The presentation will include the video "A Case for Safety" which includes actual news footage of pressure vessel explosions including the 1989 explosion at the Phillips plant in Pasadena.

The video is sponsored by the National Board of Boiler and Pressure Vessel Inspectors.

Presentations will be at 1 p.m. Monday in Bldg. 350, Room 130; 9 a.m. and 2 p.m. Tuesday in Bldg. 226 North; 2 p.m. Wednesday in the second floor conference room at Boeing, 16840 Buccaneer; 9 a.m. Thursday at Loral Aerospace, 1816 Space Park Drive, Room 206; and 2 p.m. Thursday in Bldg. 273 at Ellington Field.

Soviets inspect JSC facility

(Continued from Page 1)

a former cosmonaut and vice general designer of the Energia Scientific and Industrial Association; Arkadiy L. Martinovskiy, assistant to Semenov; Anatoliy I. Kiselev, director of Khrunichev Machine Building Plant, the developers of the Proton launch vehicle; Leonid I. Gusev, general director of Space Devices Scientific and Technical Association which builds remote sensing satellites; Andrey I. Gnevishev, general director of the equivalent of the Department of Commerce; Boris G. Mayorskiy, head of the Science and Technology Department in the equivalent of the State Department; and Aleksey B. Krasnov, third secretary of the USSR Embassy to the United States.

The group also visited NASA Headquarters, the Goddard Space Flight Center, the Kennedy Space Center, the Marshall Space Flight Center and the Stennis Space Center.

Singing gives two harmony

(Continued from Page 1)

baritone, bass, lead and tenor. Branscomb sings bass; Erickson can sing either baritone, lead or tenor.

It's a far-from-forgotten art. In fact, through the Society for the Preservation and Encouragement of Barber Shop Quartet Singing in America, Inc. or SPEBSQSA — an acronym worthy of federal status that is never to be pronounced as a word according to organization by-laws — it has spread in chapters throughout the world, of which the Tidelanders are one.

But it is not simple fun, it's hard work. The chorus, for which Branscomb sings, rehearses three hours a week and on average performs at least once a month. Erickson, who belongs to the chorus as well as an individual quartet called Deuces Wild, rehearses twice a week, once with each group, and spends more weekends of the year on stage than off. Erickson's previous quartet, called The Innsiders, was an international champion. The Tidelanders are among the top choruses in the world, placing in the top five in international competition eight times.

"When we're getting ready for competition, we may work hundreds of hours on just two songs," Branscomb explains. "We take it down to the level of fine-tuning each individual chord. But when you put it all together, it's a fantastic accomplishment.

"At the Cynthia Woods Mitchell performance, we had an audience of more than 9,000 people, and they gave us a standing ovation for each song. To me, that's exciting and that's the reward."

Though the rehearsals may sound somewhat grueling, such is the addiction of the harmony that these crooners can't get enough.

"When you get a bunch of barbershoppers together, all you want to do is sing. Sometimes, rehearsal just isn't enough. After it's over, you always want to stand around and sing tags (the finale endings of barbershop songs). That's the part where you get to really hang on to the notes and hit the chords," Branscomb said.

"Barbershop singing lends itself to impromptu performing," added Erickson. "After a performance, we don't leave — we'll stay around and sing until they run us out. And then we'll go to the nearest pizza parlor and continue to sing. As long as you've got the four parts, you want to sing."

Harmony is the Tidelanders' only common ground. And the group welcomes any guests interested in their craft at their rehearsals.

"One of the things I really enjoy is that it's such a diverse group of people. We have scientists, doctors, lawyers, judges, teachers, geologists, salesmen — but we don't have a single barber in the group," Branscomb said.

"When I tell people about my hobby, about half say it sounds like fun. And the other half look at me like I'm crazy, but I've never had anyone that went to see one of our performances come back and say they wouldn't like to hear us again."

The harmony habit appears to be a life-long one, they said.

"It's something you can do forever," Branscomb said. "Ages in the group range from the teens to the 70s. As long as you can get up there and stand and breathe, you can sing."

JSC Photo by Benny Benavides

The lunar base test team included meal preparation in the simulation. Team members, clockwise from the top, were Martha Evert, Nathan Moore, Laurie Weaver, Paul Campbell, Scott Simmons and David Gutierrez.

Test simulates life on Moon

By Billie Deason

Working in a lunar construction shack mockup, a team of architects and engineers last week ran through a typical work day simulation for the future crew that would build a permanent lunar base.

Members of the Man-Systems Division and other organizations working on lunar base designs documented general housekeeping and operations tasks for a six-person crew in a computer program specially designed for the simulation. Three computers inside the habitation module provided the day's timeline and communications capability between the mockup and team members in Bldg. 15.

"The lunar habitat module is divided by work functions into zones," said Nathan Moore, leader of the four-man team that designed the habitation module last summer.

"At one end, the crew quarters for six can be closed off by sliding doors so part of the crew could sleep while others worked on an around-the-clock shift schedule. The remaining living area has wardroom-galley, health care, exercise, hygiene, waste management and shower facilities. At the other end of the module is the working area with racks for communications equipment and telerobotics and maintenance work stations.

Though the mockup is fairly low in fidelity and does not have much working hardware, the team simulated several operational work tasks, said David Gutierrez, a Johnson Engineering architect/habitability engineer and member of the evaluation team.

"We did include some work assignments using computers to communicate with our office in Bldg. 15 to simulate both voice and data transmissions," Gutierrez said. "We reported status of various systems and responded to several inquiries for data from Bldg. 15 which acted as a command and control center."

An actual breakfast and lunch, prepared by the Man-Systems Food Lab staff, brought realism to the simulation.

"We baked bread during day, and by the time it was ready, we were really getting hungry," Gutierrez said.

"We wanted to get data and inputs from the participants about the work space design. Because of the early stage of the design, we limited our interest to basic architectural needs: user volume, crew circulation and reach envelope. We need to know how the module design satisfies the actual free volume required for six people to work comfortably and be able to reach and manipulate the equipment and tools they would use everyday."

The architects also will use the information from this study to establish a format for evaluating the mockup itself.

"We need to look at basic human factors such as crew accommodations needed within a module as early as possible in an architectural design so we can improve both our design and our evaluation process," Gutierrez said.

A second six-person evaluation team participated in the last hour of the simulation for a study of crew changeover.

The two evaluation teams conducted a condensed handover exercise and the relief crew spent a short time exercising and working in the galley-wardroom area so they could provide additional feedback about the simulation.

At day's end, each of the 12 team members was asked to complete a 40-question survey to complement comments gathered throughout the simulation.

"About half the responses are in and I expect the others in a few days," Gutierrez said. "Our final product will be an illustrated paper with an accompanying videotape relating our findings — good, bad or indifferent. The goal here is to learn from all comments we receive while the mockup is still at a low fidelity. Our plan is to upgrade some of the activity centers and outfit the wardroom a little better. This study gives us a guide about where to go from here."

JSC Photo by Benny Benavides

Three area high school graduates are currently serving as summer interns in the Space and Life Science Directorate. Here, talking with Dr. Carolyn Huntoon, are (from left to right) Phillip Scales, Tammy Morrish and Leo Jew.

Area graduates exposed to life sciences research

Three Houston high school graduates are getting some hands-on experience and exposure to NASA research this summer in the Space and Life Sciences Directorate.

Each year the directorate awards three summer internships to students demonstrating academic excellence and scientific originality as contestants in the annual Science Engineering Fair of Houston.

The goal of the internships is to expose the students to space research and spark an interest in continued work in the field after college.

This year the interns are Leo Jew of Clear Lake High School, Phillip Scales of McCollough High School and Tammy Morrish of Cy-Fair High School.

Jew is working in the directorate's Laboratory for Standard Interface reprogramming. He plans to attend Rice University in the fall, majoring in engineering.

Jew won first place in the physics division at the science fair for the project "Laser Speckel Photography II."

Scales is working with space debris researchers writing computer programs. He will be attending Texas A&M University at summer's end.

Scales placed second in the physics division for his project "Mass of K^0 and the Lambda."

Morrish is working in the Cell Biochemistry Laboratory in the Biomedical Division. She is studying the effects of hypergravity on cytoskeletal and jurkat cells. She be a biochemistry major at the University of Texas in the fall.

Her project on "DNA Sequencing" received first place in biochemistry and alternate grand award winner at the science fair.

Each internship lasts three weeks.

MCC, cafeteria set STS-43 hours

The Mission Control Center viewing room will be open to badged JSC and contractor employees and their families during specified times of STS-43.

Based on a Tuesday launch, the viewing room will be open Wednesday, 11:30 a.m. - 2 p.m. and 5-7 p.m.; Thursday, 11:30 a.m. - 2 p.m.; July 26, 11:30 a.m. - 2 p.m. and 5-7 p.m.; July 27-28, 1-5 p.m.; July 29, 11:30 a.m. - 2 p.m.; July 30, 11:30 a.m. - 2 p.m. and 5-7 p.m.; and July 31, 11:30 a.m. - 2 p.m.

Hours may be altered for mission operations. Check the Employee Information Service, x36765, for updated hours.

No children under the age of five will be admitted.

Also during STS-43, the Bldg. 3 and 11 cafeteria will have special hours.

Weekdays, except for launch day, the Bldg. 3 cafeteria will be open from 7 a.m. to 4:30 p.m. and Bldg. 11 from 6:30 a.m. to 2 p.m. Saturdays and Sundays, Bldg. 3 will operate from 11 a.m. to 4:30 p.m. and Bldg. 11 from 7 to 10 a.m.