

Space News Roundup

Vol. 20 No. 16

August 14, 1981

National Aeronautics and Space Administration

Shuttle Update

On Monday of this week the Columbia was moved out of the Orbiter Processing Facility (OPF) at 4 AM and towed to the Vehicle Assembly Building (VAB) where it was mated to the External tank and twin solid rocket boosters. Later, the 99-ton orbiter was picked up six inches off the ground so that the landing gear could be retracted. It was then hoisted 190 feet and lowered for mating to the external tank.

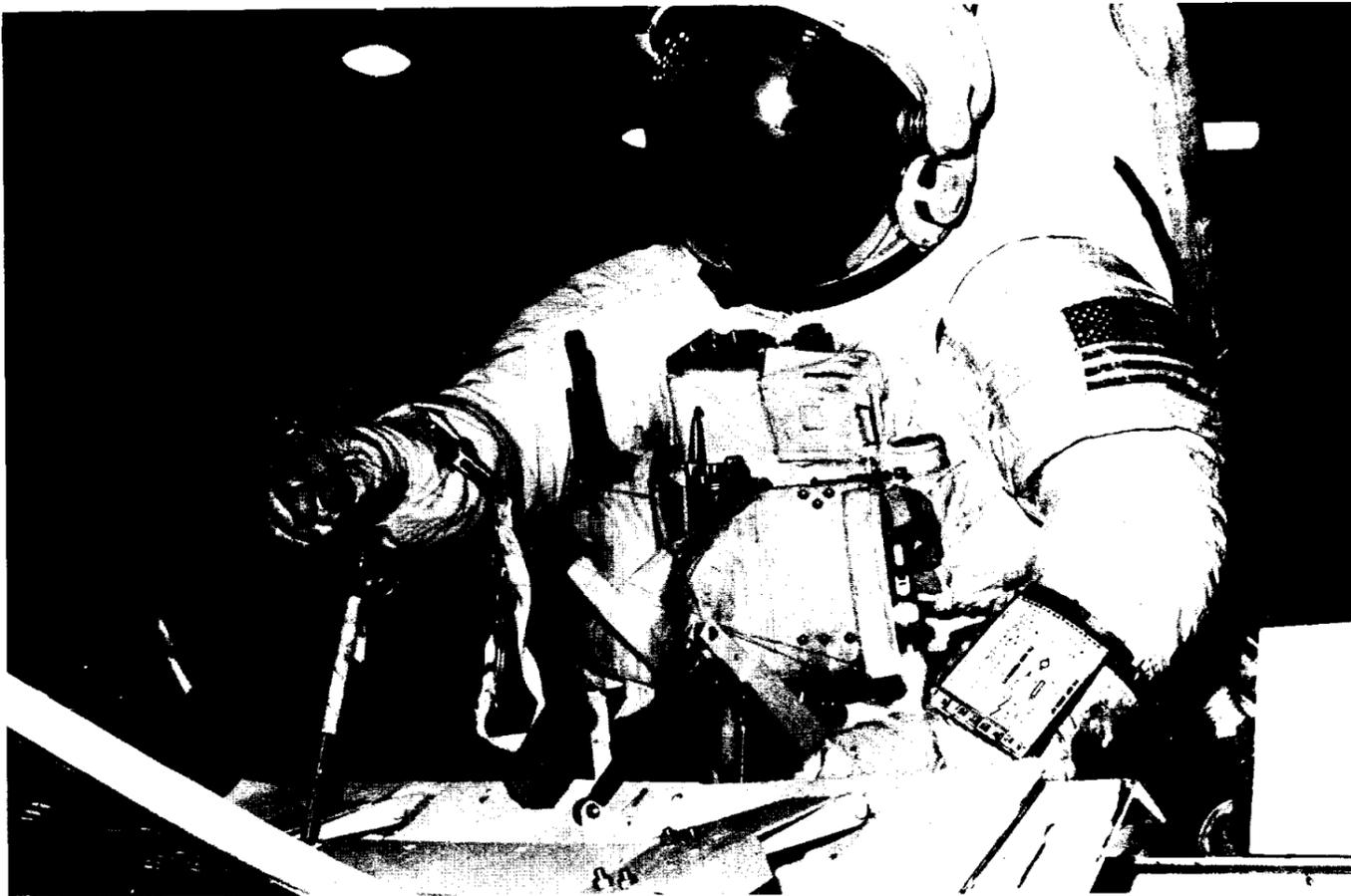
As of Wednesday 60 tiles still were to be bonded. All the waterproofing was done with the exception of the body flap which still needed some gap fillers and left in-board elevon.

Three weeks of processing and checkout in the VAB is now planned. The major test will be the Shuttle Interface Test which will involve prime crew astronauts Engle and Truly in simulated countdowns and ascent/descent profiles.

The UTC Liberty and Freedom left Monday for three days of sea training including practicing frustum recovery and parachute retrieval. Recovery crews are paying special attention to developing procedures for retrieving sinking parachutes in case of a repeat of STS-1 when two of the main SRB chutes were lost.

Last week the Induced Environment Contamination Monitor (ICEM) and the Office of Space and Terrestrial Applications (OSTA-1) pallet were closed out for flight. Also last week welding of the brackets that will support the new water pipes for the SRB overpressure modification was started in the right hand exhaust hole. The racing stripe for the external tank was cancelled.

The retesting of the thruster on the right OMS pod was also done last week. It was fired about 13 times for a total of nearly six seconds.



Seeing what it's like

Eugene Kranz, Deputy Director of Flight Operations, is shown here tankside at the Weightless Environment Training Facility (WETF) performing a suited EVA contingency operations training exercise in 1-G. This exercise involved the operations and tools used during an actual EVA. With this experience, Kranz will be more familiar with the activities and equipment that flight crews will experience during future EVAs.

Engle and Truly are ready for Sept. 30

In a pre-flight press conference, Monday, August 3rd, STS-2 astronauts Joe H. Engle and Richard H. Truly discussed the plans and status of the second orbiter flight test on September 30.

Engle opened the conference with a short synopsis of the five day six hour mission and its goals.

The Canadian developed remote manipulator system (RMS), a 50 foot arm designed to deploy and retrieve payloads, is a major test item. STS-2 will only test the arm's mobility and grappling capabilities. It will not actually deploy a payload.

Also on the top of the priority list for the second flight is the OSTA-1 payload. It is a package of seven instruments covering a broad range of scientific investigations. Some are pioneering equipment which will find its way into future remote sensing Earth resources satellites to perform such work as identifying rock types and creating geological maps, monitoring pollution and seeking the best offshore fishing grounds. Others will investigate lightning phenomena and micro-gravity plant growth.

"In the entry phase we will be gathering some engineering flight

test data to help us better determine what the margins of the vehicle are, and what the capabilities that we have on the bird," said Engle.

"We're still in the very front end of a very complicated test program," said Truly.

Crew training is on schedule, "We have changes all the time and of course those changes mean additional training all the way up to launch, but we're in good shape — We're going to be ready when the bird's ready," said Engle.

STS-2 is set up so that the most important test objectives will be taken care of early in the mission, "We have a long list of objectives and if the vehicle performs like it did the first flight, we'll stay all five days and get it all done; if our mission rules cause us to come home early, then we'll do that and I'd still call it a successful flight, even if we had to come home early," said Truly.

As far as that readiness of the vehicle, "The few things that did malfunction have been fixed rather than worked around," said Engle.

Truly reminded reporters that the most important thing was to get the program going, "There are several years of paying customers wanting us to get out of the OFT program and become operational."

Other topics discussed included the toilet failure in STS-1 and the new wireless headset.

"It may not seem like much to you, but it (the wireless headset) is going to be a vast improvement in the plumbing," said Truly.

When asked what advice STS-1 astronauts Young and Crippen had offered, Engle said Young told him, "Don't do nothin' dumb."

The backup crew for STS-2 is Hank Hartsfield and Ken Mattingly.



STS-2 Astronauts Richard Truly and Joe Engle

Simmons looks forward to additional responsibility

Long duty hours, a huge volume of correspondence and extensive travel of personnel in the Orbiter Project Manager's office require a secretary with unusual dedication. Margaret L. Simmons does not hesitate to take on this unusual and difficult task — and she handles it smoothly. That is why Simmons is the secretary for the month of July.

Simmons not only works well with her superiors, but with her peers as well. She is organized and therefore does not generate unnecessary paperwork or require extensive tasks to be done by others. Simmons' soft spoken manner contributes to a friendly and pleasant atmosphere of the Orbiter Project office.

Additional responsibility is a challenge that Simmons looks forward to. Independent decisions, within her range of independent action, saves time and helps the office work more efficiently.



Margaret L. Simmons

With the date of STS-2 drawing near, the pressures of last minute tests, checkout procedures, and coordination between contractors and government personnel increases. Her knowledge of the Orbiter Project office is proving to be invaluable during these hectic times.

Bulletin Board

We need your blood

The next JSC Blood Drive will be held at the Gilruth Rec. Center on Thursday 8/27/81. Call Helon Crawford, x3159 or Rachael Windham, x6493 to make an appointment. The medical community blood bank is in short supply, so please donate and encourage others to help out.

Nasa Mixed Bowling League

An organizational meeting of the NASA Mixed League will be held on August 18th in Room 204 at 5:00 PM in the Gilruth Rec. Center. All team captains and team representatives from the 1980/81 season should attend to reserve a 1981/82 franchise. All other interested bowlers should also attend. The league will begin Tuesday August 25 at 5:45 PM at the Fair Lanes Bowling Center in Clear Lake City. Contact O.J. Coel for additional information, 483-4441 or 486-5691.

Star Party

The JSC Astronomical society will hold a star party in back of the Lunar and Planetary Institute on the evening of Fri-

day, August 21. Telescope setup will start at 8:30, cloud permitting. Otherwise it will be postponed to Friday, August 28. Attendance is open to current members and those interested in joining. For any additional questions, contact Mike Martin at 333-6400.

Alley Theatre ticket discount

The Nina Vance Alley Theatre Corporate Subscription Program is again being offered to NASA employees and contractors. Season tickets are available for next year's series of six performances for \$36. Brochure order forms explaining the program are available at Bldg. 11 and from your EAA representative. Enclose a check payable to the Alley Theatre or indicate a charge plan and send to Dorris Wood, SN1 (x4464); the deadline is September 3.

JSC Men's Bowling League

An organizational meeting for the Men's League will be held Thursday, August 20th at the Gilruth Rec. Center in Room 204 at 5:00 PM. Team captains, team members, and interested

persons are encouraged to attend. The league will begin on Thursday, August 27 at 5:45 PM at the Fair Lanes Bowling Center in Clear Lake City. Contact O.J. Cole for additional information at 483-4111 or 486-5691.

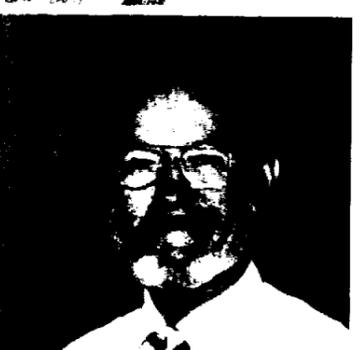
NASA/ASEE luncheon

There will be a luncheon at the Gilruth Recreation Center on Friday, August 21, for the 28 participants in the 1981 NASA/ASEE Summer Faculty Fellowship Program. Dr. Max Faget, Director of Engineering and Development will be the keynote speaker. The American Society for Engineering Education's members staff 27 different universities across the nation. The \$5.00 lunch is open to the public and reservations can be made with Judi at x3196.

UH/CLC Orchestra Auditions

Auditions will be held Sept. 1, 1981 at the UH/CLC Bayou Bldg. Auditorium for those interested in joining the UH/CLC Community Orchestra. For more information call W.F. Meek, x4851 or 334-3092.

JSC awards service pins



40 YEARS: Dock J. Hudson, William J. Nunnery

25 YEARS: Ralph E. Payne, Lyndal D. Malone, Rita M. Rapp, Richard D. Stewart, Jack T. Atkins, Kenneth R. Haugen, William M. Anderson, Wade M. Vance, Edward C. Bullock, Elden G. Clayton, Robert L. Martin. Not pictured here William E. Drummond, Henry L. Williams, Ramon McKinney — 25 years and Earnest Boyd — 35 years.

An unusual story . . .

"I've been following NASA since the days of Alan Shepherd; it has been a big part of my life," said Jim Yost, a sheet metal engineering technician who received a \$204 Superior Performance Award.

There is nothing unusual about JSC employees receiving Superior Performance Awards, but there is something unusual about giving them back. "I read that for every dollar that NASA puts into the space program that \$10 more is generated in private industry; that makes \$2040," said Yost.

Yost has already sent his award money to the Director of Finance Management in Washington D.C. hoping to put at least a dent in what he calls

"public apathy." Yost added, "It's a shame, the government doesn't hesitate to spend money on defense, they just keep pouring the money right in; I was not at all influenced in my decision, I just wanted to show my support for the space program."



Cookin' in the cafeteria

Week of August 17 - 21, 1981

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

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

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

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

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

Week of August 24 - 28, 1981

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

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

WEDNESDAY: Seafood Gumbo; Boiled Fish; Tamales w/Chili; Spanish Macaroni (Special); Ranch Beans, Beets, Parsley Potatoes.

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

FRIDAY: Seafood Gumbo; Broiled Halibut; Fried Shrimp; Baked Ham; Tuna & Noodle Casserole (Special); Corn; Turnip Greens, Stewed Tomatoes.

At Gilruth Rec Center

Predict Your Own Time Race - It's not too early to start warming up for a race which is won by the person who can predict to the nearest second the amount of time it will take them to run 5 KM. Cost for the race is \$5.00 per person, which includes a T-Shirt. Call x3944 for entry.

Adult Beginning Tennis - Sharpen up your game. Beginners class meets on Tuesdays from 5:15-6:45 PM beginning Sept. 2. An intermediate class meets at 5:15-6:45 PM on Thursdays beginning Sept. 24. Cost is \$24.00 for each class.

NAUL Advanced Diving Course - This is a 6 week course which will begin Sept. 15, with the last 2 weekends dedicated to open water work. Course cost is \$75.00 and students will provide their own equipment. Register at the Rec Center.

Aerobic Dance - Part dance, part exercise, all fun, this course is designed to get you in shape and keep you that way. Daytime classes meet from 9:00-10:00 on Mondays and Wednesdays beginning on Sept. 14. Afternoon classes from 4:15-5:15 PM on Tuesdays and Thursdays will be held. These sessions will last 12 weeks and cost \$54.00.

Basic Automotive Mechanics - Learn to perform your own preventative maintenance and beat inflation. Class meets on Thursdays beginning Sept. 17. Savings in labor alone pays for the cost of this course.

Defensive Driving - Learn to drive safely and qualify for a 10 percent reduction in your auto insurance for the next 3 years. Class meets on Saturday, Sept. 19 from 8:00 AM to 5:00 PM. Cost is \$15.00 per person.

Children's Dinner Theatre - Children's Dinner Theatre is back with a production of "Pinocchio". Performance will be

held on Saturday, August 22 at noon. Play will be preceded by a lunch and dessert. Cost is \$2.00 per person. Buy your tickets at Bldg. 11 Exchange Store.

Mixed Softball Tourney - Sign your team up early for this double elimination tournament on August 21-23. Cost is \$65.00 per team. Limited to the first 24 teams. Trophies will be awarded.

Country-Western Dance - Learn the popular country and western dance steps. This class begins Sept. 14, every Monday beginning from 7:15-8:45 PM. Another Session will go from 8:45-10:15 PM. Cost will be \$20.00.

Ballroom Dance - Learn the fine art of ballroom dance steps, class begins Sept. 16 for a 12 week period, on Wednesdays. There will be two classes offered. Introduction classes and high intermediate start at 7:15 PM while intermediate and advanced classes start at 8:45. Cost will be \$60.00 per couple with the deadline for registration on Sept. 9.



People Helping People
The United Way

NASA "borrows back" fans from Smithsonian and saves \$500,000

For years now, NASA has been providing retired space hardware to museums for public display. Recently, however, the Smithsonian Institution in Washington, D.C., returned the favor by providing several relics of an earlier space era for use on future shuttle missions—A move that could eventually save NASA more than a half million dollars.

The relics are special fans, the type used during the late 1960s and 1970s to provide ventilation inside the Apollo command module after splashdown, and to circulate air aboard Skylab.

Marshall center employees removed most of the fans from the back-up Skylab on display at the Smithsonian Institution's Air and Space Museum, and returned them to Huntsville, for recertification testing. Of the 35 fans tested, 25 will be available for up to 10 flights each aboard the orbiter. Some of the fans will also be used in Spacelab.

Of the available fans, one is scheduled to be used to circulate air in the shuttle transfer tunnel, the passage that links the orbiter's mid-deck with the

Spacelab habitable module mounted in the cargo bay. Another will serve as a flight spare. Two other fans will be incorporated in a cosmic ray experiment scheduled to be flown on the second Spacelab mission. In all, 13 of the fans have already been programmed for use.

These are no ordinary household fans, they use a special designed high-efficiency DC motor made without brushes to prevent sparking. They were all manufactured from special materials under very stringent controls. The cost purchase these fans today has been estimated at more than 22,000 each.

JSC EXCHANGE STORE - Bldg. 11

(Store Hours 10 AM to 2 PM)
Plitt Theatre Tickets \$2.40 each
General Cinema Tickets \$2.40 each
Astroworld/Six Flags Tickets \$9.50 each
Postage Stamps/18 cents
Books \$3.60 each
Second Notice: Refunds are now available for the June 30th Astros Baseball Game that was cancelled.

Roundup deadline is the first Wednesday after publication.



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Editor Eddy Wittry

Roundup Swap Shop

Ads must be under 20 words total per person, double spaced, and typed or printed. Deadline for submitting or cancelling ads is 5 p.m. the first Wednesday after publication. Send ads to AP3 Roundup, or deliver them to the Newsroom, Building 2 annex. No phone-in ads will be taken. Swap Shop is open to JSC federal and on-site contractor employees for non-commercial personal ads.

Cycles

1980 Honda 750 F 4000 miles, excellent condition, luggage rack, faring, adult owner, just pay off note plus \$150. 460-0236 after 6 Must buy car.
For Sale: 74 Honda XL 125 runs good \$200 480-3356 after 5 p.m.

Musical

Schreiber Bassoon, quality instrument, excellent condition, reasonably priced. Jim x4571 488-8143.
Gemeinhart Flute, open hole. Excellent condition, new pads. Reasonably priced. Jim x4571 488-8143.
"Bundy" Trumpet case excellent cond. \$100. Vic Booth x5231/334-4734 after 5.
Drum and Bell kits for school band. Premier snare drum kit \$145 Musser Bell Kit \$145 or \$275 for both 488-3620.
Musser complete drum kit for school band. Excellent condition. \$125.00 Patti x4441/554-2474.
Alto Saxophone, Buescher, excellent condition with case and stand, \$300, 482-1927.

Stereos & Cameras

For Sale: Curtis Mathis ent. center AM/FM radio, reel to reel tape recorder, wood cabinet, stereo, tape deck. Sell whole or for parts 471-8556 \$85.
Juliette stand-alone turntable excellent condition, just add speakers. Paid \$90 Call offer to 334-2902.

Carpools

Carpool from north end of Deer Park to JSC 8-4:30 call Susan x6247.

Property & Rentals

For rent: Galveston By-The-Sea Condominium. Two bedroom furnished apartment for rent by day, week, or month. Clements 474-2622.
Wanted: Waterfront Bay Land-prefer San Leon area-reasonable price (Bonnie, 339-2604 home x5844 work) one acre or more.
For Sale: 30 acres near Lake Livingston, w/two bedroom house, deep well, shed, spring fed creek, fenced, asking \$105k. 488-4915.
For Rent: 3-2-1 house in South Houston, no pets, \$420 month plus deposit. Mary x6251/334-4175.
For Rent: 2 bedroom apt. at 707 El Dorado Blvd. Through lease transfer. x2254/480-1739.
Seabrook: 3 br. bay home beautiful water view exc. cond 8 1/2 percent VA non-escalating loan \$64,900 \$420 mo. 474-4892.

For Lease: Middlebrook 4-2-2 contemp., fenced, sunken living w/fpl, dining w/atrium, w/bar, island kitchen, g/d opener, \$625/mo plus dep. 488-1532 aft. 8/16.

For Sale: Frame house, 6 rooms, suitable for camp or bay house, must move off of property-property sold. \$1000. Angel x7204, after 5. 944-8028.

Lease (1 yr.): Baywind II condo, 1 br, fpl, washer/dryer, refrig w/ice maker, tennis pools. \$325 mo. plus last mo. dep. no pets. Avail Aug. 29, 488-8694.

Sale: 3-3-2 brick on 1/2 acre 10 minutes from NASA, pool, storage barn, amenities, owner finance, \$82,900. 333-5883 aft. 4:30 p.m.

Cars & Trucks

For Sale: 1960 Chevy Bel-Air, 283, auto, air, 4 dr., low miles, runs good, restorable, call 484-3396/483-3551.

1972 V.W. Superbeetle, 76,000 miles. Asking \$1300 call 480-4585.

1975 Pinto, ac, auto, AM/FM stereo, 4 new BR-78-13, new alignment, new brakes, book value \$1550, sell \$1195. 334-2179/483-3561.

78 Ford Monarck 6-cy. 250 engine 4-door, excellent condition, 25-mi/ga., Lady owner, a/c, radio, 483-2693, eve. 923-2375, \$2850.

1979 Oldsmobile Cutlas Supreme, excellent condition, Full power, A/C, small v-8 (good gas milage), many extras call 486-1674.

Original equipment bucket seats from '7 Ford van, blue vinyl like new. Includes bases \$50/pair.

Auto a/c compressor, off of 1970 Chev., good condition, \$50, x4468, A.F. Smith.

'79 Mustang GHIA, power steering, AC, AM/FM stereo, cruise, V8 automatic trans. very clean. \$5500. Raymond x2004.

1974 Pinto Runabout, very good condition, 4 cyl, A/C, Automatic, Stereo Cassette, \$1200, Jorge Arndt 333-1468 (home), 486-2150 (work).

Boats & Planes

McKee Craft 14 ft. with 70 h.p. Johnson, McClain galvanized big wheel trailer, holiday seats, many extras. \$3200. John Bain 534-3228.

Catamaran: Prindle 16 good condition. 2 jibs, extras, \$2200 or best offer. Call 482-7869.

Windsurfer, Curtis Hawk, one year old with 66 sq. ft. racing sail W. Ockels 333-4052 or x4513.

16' Ski King boat, trihull, outboard, canopy, no engine, \$1000. Mary x6251/334-4175.

Gas tanks for boats or Recreational Vehicles, 5 to 18 gallons sizes, cheap, Waite x4241, 333-2442.

NASA child's water skis, \$30. Patti x4441/554-2472.

Wanted

Baby crib with mattress. Reasonable price. Good condition call after 5 at 487-1883.

Compact refrigerator, reasonably priced for college student - call Melissa, 332-8713 after 5.

1 pr. AR-3 or AR-3A loudspeakers. Good cond. Call after Aug. 10. 488-3966.

Good body for 69-75 Ford truck/car without engine & trans. 332-5065 after 5.

Wanted: Long white dress, good cond. junior 5 or 7, 472-6980.

Household

Brass globes from India, \$10 ea. Solid pine 32" x 78" hand carved spanish door, can be used for a headboard, \$75. Twin headboard, 58" high spanish style hand carved, \$50. John x4393/488-0559.

Ethan Allen sofa, print-3 cushion, and swivel rocker, solid green. Excellent condition. 481-1469.

Dishwasher, Sears Kenmore built-in, good working order, white, \$25. 334-1437.

Long, firm, contemporary couch in a blue pattern. Pretty good shape. \$75 Bob Allgeier 488-0397 after 5:30.

GE gas dryer, good condition, \$75. x4714/534-2117.

18.5 cu. ft. "Frost Free" refrigerator with ice maker, almond color, like new \$490. 488-1326 after 5 p.m.

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Cartoon by Russ Byther

"Love seats" (two), green-gold fabric, foam cushions, fruitwood arms and trim, like new, \$200 call 482-8781.

Fruitwood dining rm. table (60x40) plus leaf and 4 chairs. Italian Provincial, \$250, 482-2527.

Miscellaneous

Sears Model 36303 Miter Box w/26x4" back saw and 2 level release like new, \$50 946-4013 Moody.

Make your own mulch 6 h.p. Sears yard and garden shredder, like new, used about 5 times. J. Dornbach \$225, 334-3459.

New Thermo-Fax-\$385, Keppler x2766/944-4583.

For Sale: Two T-Bird spoked hub caps (1977-1979). \$50 ea. K. Elton x5056.

Imported baby carriage very good condition. \$100, 488-6521.

Collectors — "Playboy"; Jan '68 through Dec. '74 inclusive. Send name, telephone No. with yearly or total bid to Box 65, Seabrook, TX. 77586.

Trailer hitch for 1974-1979 Cougar. Heavy duty-3500 lb. load. Cost \$80 new for \$35, 471-2447.

INSPECTOR GENERAL HOTLINE

REGISTRATION & CONFIDENTIAL

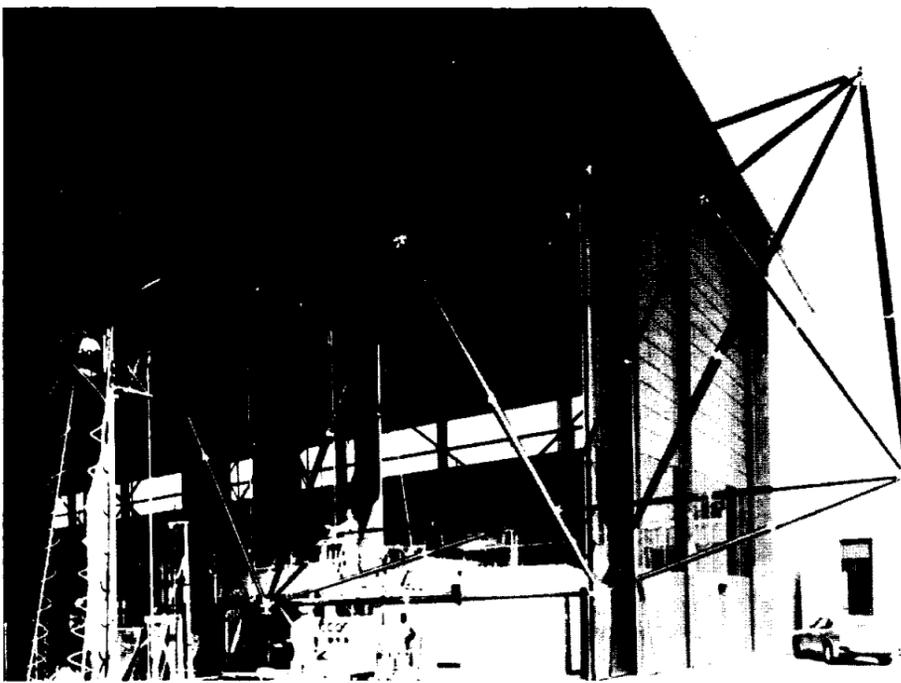
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Space builders

Researchers at Langley Research Center use a mobile work station to construct a beam from graphite-epoxy conical tubes. The concept, designed for possible installation aboard future orbiters, would allow a pair of pressure-suited astronauts to assemble large structures in space.

NASA researchers study assembly of large space structures

An assembly line in space is being studied at NASA's Langley Research Center that would allow astronauts to construct large platforms or antennas in Earth orbit from the Space Shuttle.

The concept uses a mobile work station to position a pair of pressure-studied astronauts so they can move horizontally and vertically within a prescribed area to build space systems that are too large or com-

plex to fold up and transport aboard the Shuttle.

The mobile work station is designed to be located inside the Shuttle Orbiter's payload bay or to be a free flyer, operating near the Orbiter.

A large-scale experimental model of the mobile work station is being tested at Langley. The ground test model will enable researchers to un-

cover difficulties that might be encountered in space and identify assembly aids to improve astronaut productivity.

Two astronauts would be attached to the station by foot restraints, freeing their hands for assembly tasks, and enabling them to move around and build large platforms.

The astronaut work platforms, one on each side of the mobile station, would be electrically operated, either from the platform or from within the Orbiter's flight deck.

The horizontal and vertical freedom of movement would allow the astronaut team to assemble elements of a structure with relative ease. When a section of a structure is completed, it would be moved along the assembly line and the astronauts would extend its size by adding more elements or equipment.

The concept will be tested under normal Earth gravity conditions at Langley during August and under simulated space weightlessness conditions in the Neutral Buoyancy Facility at NASA's Marshall Space Flight Center in Huntsville, Ala., in September. Tests will be conducted to gain basic information about the feasibility of constructing large space systems.

The experimental work station will be used to construct large truss segments from lightweight, graphite-epoxy conical tubes that can be stacked compactly, like plastic cups, inside the Orbiter for transport into space. A pair of conical tubes are joined at their large ends to form a strut about 5.4 meters (18 feet) long.

Truss structures are assembled from these struts by joining their ends without tools, using quick-attachment cluster joints developed at Langley. The truss structures may be formed as antennas, beams, or platforms for large solar power or communication systems.

NASA and Air Force begin study of program

NASA's office of the Inspector General has begun a review of the production phase of the shuttle program.

The production phase calls for delivery of two additional orbiters and modification of the two existing orbiters.

June G. Brown, Inspector General for NASA, said the review will focus on financial and project management. The review will also include contract changes. The Air Force will assist her office in evaluating certain logistical management functions including the computation of requirements for spare parts, their cost, and alternate sources of supply.

Brown said the Inspector General of the Air Force will provide a seven-member team with expertise in logistics planning, procurement, finance and engineering to assist in the audit.

Brown cites the agreement as an example of the effective sharing of talent and resources already available within the Federal Government. "The arrangement will provide a multidisciplinary staff for the review, thus ensuring that appropriate controls and safeguards are in place prior to the expenditure of several billions of dollars over the span of the shuttle program. The joint undertaking is in keeping with the objectives of the recently created President's Council on Integrity and Efficiency, which encourages such cooperative efforts," said Brown.

The review is expected to be completed by March 1982.

Scientists learn about Earth's weather from study of Venus

Venus' predominant weather pattern is a high-speed circulation of the middle and upper atmosphere around and around the planet, from east to west, at velocities up to 362 kilometers per hour (225 miles per hour). This and other new information has emerged from a complete analysis of Pioneer Venus spacecraft data.

the polar regions. Because Venus' rotation is so slow (243 days for one axial rotation), rotation forces do not break up these huge, hemisphere-spanning circulation loops as they do to similar ones on faster spinning Earth.

These two kinds of circulation, around the planet, and equator to poles, cause the atmosphere to thoroughly mix. This means it is about the same temperature and pressure at the equatorial and polar regions, and on the day and night sides.

The four Pioneer Venus probe craft measured the planet's atmosphere from top to bottom in four locations on day and night sides of the planet on Dec. 9, 1978. The Orbiter has been making pictures and other observations of the planet for the past two years and will continue to do so through 1985. All six Pioneer Venus craft (including the probe-carrying bus) arrived at the planet in December 1978.

While Venus' atmosphere behaves differently than Earth's, understanding of Venus' weather is helping with understanding such Earth weather phenomena as heat trapped by the "greenhouse effect", transport of heat to the polar regions, and interactions between the lower atmosphere and the stratosphere.

Venus' massive, planet-circling winds blow from east to west, the same direction as the very slow retrograde (backward) planet rotation. (Earth winds blow mainly west to east, the same direction that our planet rotates.)

Between altitudes of 20 kilometers (12 miles) and 65 km (40 mi), speeds of these winds range from 50 mph (80 km/hr) at 20 km (12 mi) altitude up to 225 mph (362 km/hr) at 65 km (40 mi) above the planet.

These winds represent 25 times as much atmospheric mass as the total Earth's atmosphere, but are only a

quarter of Venus' enormously massive atmosphere — 100 times as massive as Earth's. At their highest speed, these winds circle the planet once every four days.

In a general way, the high-speed winds can be explained by the concept that when Venus' "air" moves upward due to solar heating, it carries some momentum of the solid planet

upward and, on successive passes, as the atmosphere circulates globally, the momentum accumulates at the upper levels to produce the high-speed winds. The details of this process remain something of a mystery, according to Dr. Gerald Schubert, UCLA, a Pioneer Venus scientist. Further analysis may clarify this.

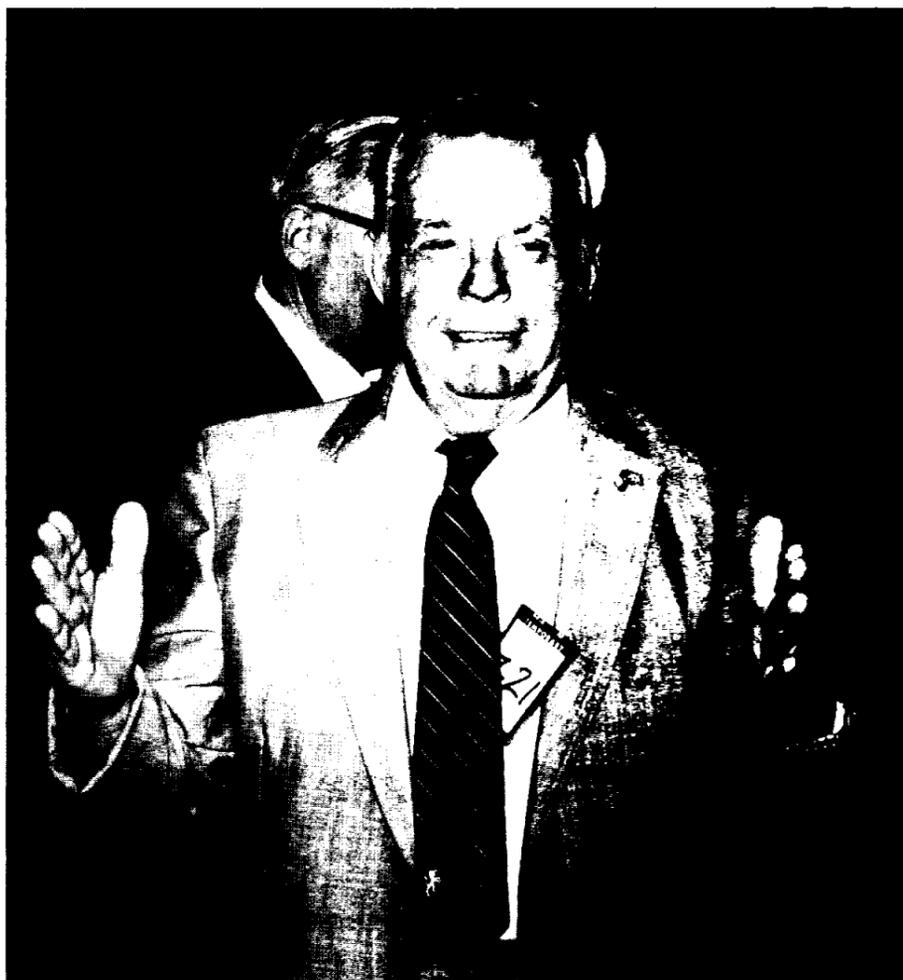


Venus

Superimposed on these high-velocity, planet-circling winds are lower-speed winds blowing north and southward from the equator to the poles. Wind and temperature measurements taken from the four Pioneer probes which were widely scattered over the planet indicated that these north and south winds make up a series of equator-to-pole circulation cells, stacked one on top of the other with each of the upper cells counter-rotating as gears do.

All of the winds in these equator-to-pole circulation loops are driven by the solar energy absorbed primarily in Venus' dense, high-cloud layer.

The whole complex of stacked circulation cells carries Venus' solar heat, absorbed near the equator, to



Adair tells his story

Red Adair was the guest speaker at the JSC Safety Representatives meeting on July 21. Adair spoke about fighting oil well fires. NASA and Adair have shared new developments in safe and efficient methods of fire prevention and control.