Columbia now in the VAB, pad moved set for Sept. 21

KENNEDY SPACE CENTER, FL — Under preparation for its first operational mission, the Shuttle Orbiter Columbia was moved today to Vehicle Assembly Building here Sept. 9 where the process of erecting the STS-5 stack is now underway.

Columbia is scheduled to blast off on Sept. 15 on a mission to place two commercial communications satellites inside its payload bay, and with Columbia’s planned 10-day mission, it will become the first Shuttle-era extravehicular activity (EVA).

The crew for the five-day mission will be Commander Vance Brand, Pilot Robert Overmyer and Mission Specialists Joe Allen and William Leorio.

Columbia spent about eight weeks in the hangar-like Orbiter Processing Facility prior to its move to the VAB. The most significant changes made during that time were due to the vehicle coming from a developmental vehicle into an operational space shuttle.

Columbia spent about five days at the VAB completing systems checks, and the turnaround was due to changes needed to outfit the spacecraft for operational use.

The number of post-flight mobile pick-up trucks dropped from 59 during the STS-3/STS-4 turnaround to 47 in preparation for its fifth flight. These latest changes, however, were of a much higher magnitude than those preceding the fourth mission. Major changes included those needed to accommodate a four-man crew for STS-5.

Preparation for STS-3, when 94 changes were made to the vehicle, required Columbia to remain in the OIF for a total of 69 calendar days, or 94 days.

Among the items removed in the latest turnaround which will not fly on STS-5 were the Remote Manipulator Arm and the Induced Plume Energetic Particle Contamination Monitor. The result is a weight savings of more than 1,700 pounds.

Other hardware replaced in the OIF included one upward firing thruster in the forward Reaction Control System module, all six of the No. 3 Intercalibration Unit and the No. 2 Tactical Navigation (TACAN) unit.

Technicians also removed the waste management system for inspection and repairs. It is scheduled to be reinstalled on the Columbia after the vehicle is on the launch pad.

A new item installed in Columbia specifically for STS-5 was the Inertial Measurement Unit called "Piper.""A"" was installed in the forward right-hand side of the Orbiter’s cargo bay, the small portable work station holds the control module. Lenor and Allen will try out what the crewmen conduct an EVA during the mission.

Parallel with all of the other work being done on the space shuttle, a team of technicians was removing, repairing and bonding tiles on the Columbia. Workers removed less than 300 tiles while those added were spaced out to the more than 1,000 tiles taken off after the third mission. Some 200 tiles were pulled off because they were either damaged or in the path of the landing gear that jetted the Orbiter the night before the STS-4 launch, or were damaged in flight or during the turnaround process. Another 21 tiles were removed for engineering evaluation. Repairs made to the hail-damaged tiles, most of which sustained minor damage or "dimpling," totaled about 10,000 and were made under strict control of the Orbiter when it was moved to the Vehicle Assembly Building.

Now in the VAB, Columbia has been hoisted into the vertical position and is preparing for mating with the external tank and twin solid rocket boosters. The assembled vehicle will undergo about six days of integrated tests, which include a mission runup (Continued on page 3)

One September day

Three ventures run gamut of experience in the space trade

The short flight of Ariane was the conclusion of a wholly remarkable day in the space age. Just a few weeks short of the 23rd anniversary of the opening of the era, crews working on three widely disparate space projects encountered three of the basic experiences of the space business on the same day: jubilation as a vehicle soars flawlessly into the sky; anticipation as another important milestone is reached; and disappointment at a failure, mixed with the resolve to go back and try again.

For the people involved with Space Services, this September was sweet indeed, but even in the first and second stages of the 210-ton rocket performed well. But about 14 minutes into the launch the orbiter crashed into the Atlantic Ocean. It was a disappointment setting back for Europe's first commercial rocket, but the Ariane program still has commitments worth several hundred million dollars to the world and to its customers in Europe, which are scheduled to fly by the 1988s, the next three years, and the Europeans will be back.

Perspective

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U.S. suggests global study at Unispace '82 in Vienna

Delegates from more than 90 nations met last month end of September in Vienna for the second United Nations Conference on the Exploration and Peaceful Uses of Outer Space (Unispace '82), at which the country that hosts the Vienna-based NASA Administrator James M. Beggs, called for new comprehensiveness in the sphere of the space industry. Indeed, the Earth is "on the verge of becoming a space-faring civilization." Beggs suggested that the issue of global responsibility is one of the most important which the world must face in the future with new space technologies. He would like to determine whether a more effective, cooperative long-term effort is feasible on a global basis," he said.

"My government believes such a cooperative undertaking could benefit all countries of the world, developed and developing," he added. The habitability study the U.S. space agency, which was an long-term investigation of the planet's atmosphere therefore has a new idea," Beggs said at a news conference. "This has been kicking around for a long time, the idea of a world-wide study in which a number of different countries could both contribute and participate in a better understanding of what's happening to the globe — what we are doing to it with man-made changes, with things like the carbon dioxide problem and ozone depletion."

U.S. said there are still ununderstandings to be gained of the way Earth’s atmosphere changes when volcanos erupt and how the solar constant affects Earth’s climateology.

"We hope to attract a lot of international cooperation and move out with a program which will be coordinated around the world. We would be happy to have the other nations join us in this," Beggs said.

Beggs also proposed that the United Nations Outer Space Division sponsor a working group on outer space assistance communications to examine the possibilities for a global emergency space communications system for use in natural disasters. As envisioned by the U.S., the system would make use of space technology, and early warning capabilities provided by satellites. The U.S. Agency for International Development will sponsor a conference in the spring (Continued on page 2)

CFC campaign begins this month

Sometimes it’s not easy being human. Medical libraries are filled with diagnoses of the body and mind. And as much as we wish it weren’t true, if we humans did not exist, human kind would not be able to deal with the problems of being human, an organization dedicated to human health and science, has responsibility to help the United Way successful, it’s a gift we give to each other for being human.

One of the organizations working on the United Way Campaign (CFC), an annual fund raising drive for federal agencies, will begin with a kick-off program Oct. 5 at the Franklin Club. The United Way, the National Health Agencies, the National Service Agencies and international service agencies. The CFC eliminated the old system of payroll deductions for federal employees, which made it easier for government approved payroll deduction plans which spread the deductions out small installments.

JSC people have traditionally given wholeheartedly to the CFC drive. Contributions to this year’s campaign will only not help the community, it will help a neighbor, a friend, or a loved one — when they need it most. Thanks to you, it works for all of us.

At 10:17 a.m. Central Daytime Time on Sept. 9, from a flat barrier island off the Gulf Texas coast, space history was made when a privately financed rocket made its initial trip into space. It is thought to be the first time a liquid rocket did not carry a payload, Conestoga I, worked as its creators had intended. It was a little over a month after the vehicle was rolled from a 210-ton rocket performed well. The conclusion of a perfectly functioning rocket was, for war and the first time, workers at the Kennedy Space Center were preparing to launch two such vehicles for flight.

Yet a few hours later on this same September day, less than 43 days after Columbia was rolled from the OIF, a Shuttle vehicle went into orbit. The vehicle was the Space Shuttle Columbia, shot up through the clouds by a two commercial communications satellites. It was a major milestone leading up to the first stage apparently failed, and the annihilation of the SSI had its launch site, died on another vehicle solars (CUNS) unit. The nozzle of the engine burned through and into a cavernous area.

But about 14 minutes into the remarkable and remarkable day in the space age. Just a few weeks short of the 25th anniversary of the opening of the era, crews working on three widely disparate space projects encountered three of the basic experiences of the space business on the same day: jubilation as a vehicle soars flawlessly into the sky; anticipation as another important milestone is reached; and disappointment at a failure, mixed with the resolve to go back and try again.

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International Comet Halley watch formed

An international network of scientists and amateur astronomers is being organized to observe perhaps our most famous celestial visitor — Comet Halley — when it passes Earth in 1986. The International Halley Watch, led by Ray Newburn, a cometary science team leader at the Jet Propulsion Laboratory, and Jung-Moon Byun, director of the Remers Observatory in the Federal Republic of Germany, was announced in late August at a meeting of the International Astronomical Union in Patras, Greece. Information will be collected worldwide along with those of airborne and Earth-orbital instruments, will form the Halley Archive, the largest space astronomy database in existence. A single peak in the comet's orbit, close to that of Earth, the Soviet Union and the European Space Agency are each sending spacecraft to encounter the comet and plan to supply their scientific results to Halley Watch. The Halley Watch Dissemination Study will be conducted in large-scale phenomena, near-nucleus studies, spectroscopy and spectropolarimetry, infrared spectroscopy and radiometry, radio science and astronomy. Contributions of amateur astronomers are welcome, Halley Watch official say, and should be directed to the office at JPL.

‘Antiquated’ engine used as solar device

When the Rev. Robert Stirling, a Scottish minister, developed a simple closed steam engine in 1812, his invention used the heat of the sun in an unusual way. Stirling's engine, which has been totally unable to imagine it being used 166 years later as a solar optical restraint, is the first step in the design of a system that has been called the ‘Stirling Engine’. It may look like Orbiters are getting amphibious, but this is actually the first time a rocket-powered boat appeared in a decorated boat contest in Bournemouth — Christchurch England. The 20-forty, decorated by Peter Petter of Bournemouth, is shown here after being awarded the prize. Peter's rocket attends the University of Manchester with Richard Metcalfe, son of William R. Metcalfe, chief of the Mechanical Branch, Facilities Design Division, who shared this photo with us.

Beckman, Pacek and Schmitt named Employees of the Year

The Federal Business Association (FBA) has named JSC employees Charles Bendix, Janet Pacek, and Joe Schmitt as “Employees of the Year.”

The FBA annually selects the five awardees from agency nominations in eight categories. Bendix will receive his award in the administrative category while Pacek was chosen in the technical category and Schmitt is to be honored for leadership.

JSC earns EEO award

NASA’s Equal Opportunity Council has selected the Lyndon B. Johnson Space Center as the recipient of the agency’s fiscal year 1981 Equal Employment Opportunity (EEO) award.

The award is presented annually to the NASA center which has “implemented the most effective management programs which have achieved the most positive affirmative action results” in the employment of minorities, women and handicapped persons.

People

NASA’s highest award, the Distinguished Service Medal, will be presented to E. Charlesworth, an astronaut who will assume the leadership of the Johnson Space Center in May 1982, and to Dr. R. Charlesworth, who began his career at JSC 25 years ago. Charlesworth is a new NASA center which has “implemented the most effective management programs which have achieved the most positive affirmative action results” in the employment of minorities, women and handicapped persons.

Rec Center group offers listing

The Gilchrist Recreation Center is available for group luncheons, dinners, receptions and picnics, according to Manager Ted MacDonald. A minimum $50 deposit is required by NASA and NASA contractor groups, as well as a few days' notice. The Center is open from 9 to 5, Monday through Friday.

JSC Aero Club continues membership drive

The JSC Aero Club is still accept new membership applications for the 1982-83 season. Members are traveling across the wide open spaces of the Texas coast on a three-day, two-night trip from Sept. 3 to 8. German sausage from Sept. 12 to 20 and from Sept. 21 to Oct. 1. All meals include salad, vegetables, dessert and a cold drink. For more information on the special, call the Rec Center at x4921.

Space News Roundup

September day

A formal presentation was held last week at the Center. Individuals who made significant contributions to the Center’s 1981 fiscal year activities were recognized at the ceremony.


The traveling trophy last year went to the Goodspeed Space Flight Center in Greenbelt, MD, the first time it was presented.

Banner Welch

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An OFT breakdown
A summation of the Space Shuttle's Orbital Flight Test program

<table>
<thead>
<tr>
<th>Flight</th>
<th>Crew</th>
<th>Duration</th>
<th>Launch/Landing</th>
<th>Payloads</th>
<th>Comments</th>
<th>Cumulative space man/hour U.S.</th>
</tr>
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<tbody>
<tr>
<td>STS-1</td>
<td>John Young, Robert Crippen</td>
<td>2 days, 6 hrs, 20 min, 53 sec</td>
<td>April 12, 1981, 6 a.m. CST</td>
<td>Flight instrumentation</td>
<td>First NASA manned flight with non-space tested vehicle</td>
<td>110 hrs, 41 min, 46 sec</td>
</tr>
<tr>
<td>STS-2</td>
<td>James Morgan, Robert Crippen</td>
<td>2 days, 6 hrs, 13 min, 12 sec</td>
<td>November 12, 1981, 9:10 a.m. CST</td>
<td>GTA-1</td>
<td>First operation of RMS, mission cut to two days due to fuel cell failure</td>
<td>110 hrs, 26 min, 24 sec</td>
</tr>
<tr>
<td>STS-3</td>
<td>Jack Lousma, Gordon Fullerton</td>
<td>3 days, 4 hrs, 49 sec</td>
<td>March 22, 1982, 10 a.m. CST</td>
<td>EET</td>
<td>Bad weather at Cape Canaveral caused one-day landing delay</td>
<td>384 hrs, 5 min, 38 sec</td>
</tr>
<tr>
<td>STS-4</td>
<td>T. K. Matthew, Henry Hartsfield</td>
<td>3 days, 1 hr, 11 min, 11 sec</td>
<td>June 27, 1982, 9:59:59 a.m. CST</td>
<td>DOD-2-1-1</td>
<td>First landing on concrete runway Edwards No. 22</td>
<td>336 hrs, 19 min, 2 sec</td>
</tr>
</tbody>
</table>

Test successful on 099 main engine at NSTL

The first of three Space Shuttle main engines for Orbiter vehicle 099, the Challenger was successfully ignited last week in the first of a series of acceptance tests. The 1.5-second ignition test on engine number 2012 was designed to verify the start sequence. Each of the engines will undergo such a test, as well as a 100-second calibration and a 300-second endurance test approximating the performance necessary to help loft Orbiters into low Earth orbit.

During the calibration and endurance tests at the National Space Technology Laboratory in Mississippi, the engines were throttled up to a power level nine percent higher than the thrust capability of the engines now in use on Columbia. This additional thrust capability, which will allow Columbia to carry heavier payloads into space, is the result of development work done since Columbia's engines were accepted in 1979.

Each engine must complete a series of tests, including mechanical and electrical checkout before being certified for flight by the Marshall Space Flight Center. After acceptance, they will be shipped to the Kennedy Space Station for installation aboard Challenger, now scheduled for her maiden voyage in January 1983. Engine number 2012 is expected to be shipped later this month. The remaining two engines, numbers 2013 and 2011, are scheduled for shipment in October.

The Space Shuttle main engines are manufactured and tested by the Rocketdyne Division of Rockwell International under contract to Marshall.

JSC well represented at Unispace '82

(Continued from page 1) of 1984 in Washington, D.C. to examine the idea in more detail, Beggs said.

The NASA Administrator also noted that the U.S. has entered into over 1,000 agreements with over 100 countries "to share the benefits and adventure of outer space." He said the U.S. will shortly begin field testing a combined low-cost satellite ground station and photovoltaic power system for developing countries as part of this overall effort to share space technology.

On Tuesday, Aug. 10, JSC was well represented at Unispace during an evening entertainment sponsored by the U.S. delegation in the Volkshotel in Vienna. Master of ceremonies for the event was author James Michener, who spoke on "The Impact of Space on Mankind." Astronaut Henry Hartsfield, pilot for STS-4, narrated a film of that mission, and Astronauts Drs. Anna and Graham Forgan delivered a joint presentation on "The Challenge of the Future to Work in Space." Security Branch Chief Everett Shoter provided astronaut security, and Public Services Branch Chief Charles A. Biggs handled the NASA exhibit, which was viewed by about 190,000 people. Jack Heberlig and Jim Merrill represented IBM at the exhibit.

The U.S. exhibit was a cooperative venture between NASA and several private companies and universities. The companies participating were Ford Aerospace, General Dynamics, Grumman, Boeing, contractor NASA, IBM Federal Systems Division, International Imaging Systems, Lockheed, Martin Marietta, McDonnell Douglas, RCA Government Systems Division, Rockwell International, Townsend Associates and the American Institute for Aeronautics and Astronautics.

The first Unispace Conference was held in Vienna in 1968. Preparatory work for this second meeting of nations began in 1979. The three broad goals of the conference were to assess the present and future state of space science and technology, consider the applications of space technology to economic and social development and to evaluate potential international cooperation in space, especially that which could benefit developing nations.

The Committee on the Peaceful Uses of Outer Space, a 53-nation body chartered in 1959 as the focal point of UN space-related activities, prepared the report which laid the groundwork for Unispace '82. About 150 countries now use space communications.

Secretary General for Unispace, Prof. Yash Pal of the Space Applications Centre in Ahmedabad, India, said, "It is not my intention to suggest that every country embark on a space program. I am only suggesting that among the tools available for combating poverty, for spreading education and strengthening indigenous cultures, space technology could be an important one."

Thousands of years from now, if the human race still survives on this planet, the last quarter of this century would perhaps be considered as a new beginning for humanity."

—Reported by Carolyn Conley in Vienna.
Gurllt Center News

Cookin’ in the Cafeteria

Property & Rental

For lease: 12 to 14 months from Nov. 1, Heritage Park 3-2-2, furnished, includes all utilities, Jan. 1 move-in. Call John, x450-3644. 1971 Pinto wagon, good condition, $1,100. Call 488-9005 or Kam 7938 a r supply, see to ap- propriation, $7,500. Call 332-8188 after trans. Ham radio -- Kenwood SSB 480-2439 after 5 p.m.

For rent: Galveston By-The-Sea condominium, 2nd floor, two bedrooms, two baths, 1,060 sq. ft., private balcony, 3 miles from downtown, $250 plus deposit. Call 524-6200.

For rent: Galveston apartment, 3 bedroom 2 bath, fridge, washer/dryer, all utilities included, $1,700. Call 486-4110.

For sale: Galveston Jamestown Beach, 3 BR, central AC, boat mooring, $115,000. Call 337-8804.

For sale: Home near League City, 2 BR, 2 bath, 3rd level, $125,000. Call 486-4110.

For sale: Lease home in League City, Glen Cove 3-2-2, VA assum- paty 2, 1977, $1100. Vz 480-2436.

For sale: Leased home in League City, Men's Ranch 3-2-2, furnish, $100,000. Call 486-2500.

For sale: 2-year-old redneck, nice neighborhood, no going to market 25 plus deposit. Call 554-6200.


For sale: Lease University Green new pads, 1 BR, new windows, 2 car garage, furniture, fenced many acres, no pets, 2 pets OK, $595 total. Call Barbara, x445 or 490-1907. 1973 Eldorado, $2,500 or trade. Call 332-2362.

For sale: 1 3/4 acre lot in Friendswood, Creekview, by owner 5-5 10% cash. Call Barbara, x445 or 490-1907. 1973 Eldorado, $2,500 or trade. Call 332-2362.

For sale: 2 BR townhouse, 1 1/2 baths, W/D, central AC, in Kemah, $325. Call Cornett, x544 or 1-420-2936.

Housekeeper, 30 plus, wood veneer table, 4 chairs, green frame, green/gray walls, fiberglass windows, 1975. Call Gary, x156 or 480-7250.

For sale: 3 BR, 2 bath, 25 acres in League City 3-1-2, fenced, like new, $255/mo or 50% down. Call 480-4146.

For sale: 3 BR, 1 1/2 bath, downtown Galveston, $350,000. Call Cornett, x544 or 1-420-2936.

Household: 4 BR, wood veneer table, 4 chairs, green frame, green/gray walls, fiberglass windows, 1975. Call Gary, x156 or 480-7250.

Single mattress, box spring and frame, excellent condition, $30. Call 332-2362 after 5 p.m.

For sale: 1 3/4 acre lot in Friendswood, Creekview, by owner 5-5 10% cash. Call Barbara, x445 or 490-1907. 1973 Eldorado, $2,500 or trade. Call 332-2362.

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