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DENVER AEROSPACE

First Space Shuttle Launch



Cheers greet first Space Shuttle launch

There was mass participation in the countdown and cheers for the early key events as the Space Shuttle Columbia with astronauts John Young and Robert Crippen lifted perfectly from the Kennedy Space Center at 4 seconds past 7 am last Sunday.

First, the cheers were for the start of the three main engines fueled by the external tank and then for the solid rocket boosters; a second round went up from the viewers 2 minutes and 12 seconds into the flight when the solid rocket boosters separated; a third round of cheers and applause acknowledged the separation of the external tank, and shortly thereafter, the commitment to orbit.

Early reports were that the parachutes for the solid rocket boosters had successfully deployed and that the boosters were floating within 16 and 18 miles of the twin recovery vessels. The reusable parachutes and boosters were expected to be returned to the Kennedy Space Center by Monday, April 13, for inspection and refurbishment for reuse.

The external tank also performed perfectly during the tanking prior to Friday's planned launch, the subsequent detanking when the flight was postponed, and through the tanking, launch, and flight Sunday.

As planned, the tank was separated from the orbiter 8 minutes and 50 seconds after launch. After breaking up during reentry, tank parts landed in a remote area of the Indian Ocean, within 10 miles of the predicted impact area.

Sunday's countdown proceeded flawlessly for the 7 am launch. In fact, Friday's countdown had been nearly perfect, too, up to the 10-minute hold that is built in to the countdown at the 9-minutes-to-launch point.

The weather was perfect for the launch—about 55 minutes after a beautiful sunrise. The winds that could have postponed a launch earlier in the week had stilled completely, and the threatened cloud cover never developed. (The Columbia astronauts needed to have less than 50 percent cloud cover in the event a return to launch site abort had been necessary.)

On the cover

Space Shuttle Columbia lifts off from Kennedy Space Center with the external tank supplying fuel to the main engines. The spectacular launch was viewed by millions on national television.



Commander John Young and Pilot Robert Crippen, crew for the first Space Shuttle mission, took a break from training to pose for this photo on the flight deck of the orbiter Columbia. Shown are the TV-like displays, and duplicate sets of hand controllers, pedals, levers, and switches with which either astronaut can fly the craft alone. The astronauts are wearing ejection escape suits that will be worn only during the orbital flight test program and then only during the launch and landing phases of the mission.

Employee survey is basis for proposed improvements

Steps are being taken in many organizations to implement improvements suggested in the employee survey.

While analysis of the data is continuing, some improvement steps already have been taken:

Weekly staff meetings are being held in organizations that had not been holding them.

Discussions are being held on ways to improve opportunities for professional

growth and on ways to increase employee contributions to mission success.

Weekly staff meeting notes are being more widely distributed.

Task forces are being formed to improve the way new employees are made a part of the organizations.

Task forces are being formed to improve the implementation of the PARS program.

Since February, the human resources department has been reviewing survey results with management of the Denver Aerospace divisions. The managers are analyzing the results and have begun developing ways to solve the problems reported by employees.

A special task force has been formed to explore solutions to problems that are not unique to a single organization but have a bearing on all organizations.

It is anticipated that planning for all action to be taken will be completed by July.

A summary of all actions planned will be published for employees.

Carpools available for long-distance commuters

Carpool matching is now available for long-distance commuters—those driving 70 to 100 miles daily—through the Denver Regional Council of Government's computer service or through the Denver Aerospace share-the-ride office, according to Lori Sharp, coordinator of the carpool program.

Employees interested in the share-the-ride program, for either long or short distance carpools, should submit a complete share-the-ride form to mail number 1321.

Employees honored for Shuttle work

When the first Space Shuttle lifted off from the Kennedy Space Center, the world's attention was on the Shuttle and its two astronauts—John Young and Robert Crippen. Their journey would not have been possible without the efforts of thousands of engineers, managers, and production workers who have spent the past decade preparing for the launch.

The Launch Honoree program was instituted by NASA to honor the people whose extra efforts contributed to the program's success.

Eleven Denver Aerospace employees were selected to be at the first launch to represent their fellow workers. Those named by NASA for the honor were:

William R. Woodis, Denver, for outstanding achievement in the design, test, and management of the solid rocket booster deceleration system.

Walter Barcellona, Michoud, for his outstanding contributions to the Zero Latent Defects program.

Raymond L. Coleman, Michoud, for developing resources for many critical components of external tank.

Paul R. Donohue, Michoud, for his management of several hundred production workers involved in the external tank assembly.

Joseph A. Giordano, Michoud, for his performance as an inspector, ensuring that critical components of the external tank were delivered error-free.

Willie R. Lavigne, Michoud, for his performance as a tool fabricator in helping to build the many complex tools required to assemble the external tank.

Fred J. Lewis, Michoud, for superior management of the training program.

Nemours Rome, Michoud, for performance as a tool fabricator helping to build the complex tools required to assemble external tank.

Myron Vrona, Michoud, for outstanding efforts in scheduling engineering activities during the design, test, and assembly of external tank.

David E. Boshart, Kennedy Space Center external tank operations, for his dependability and excellent performance as a lead technician.

David Brown, Kennedy Space Center external tank operations, for his superior performance as a quality inspector and his ability to work with others.

Three MMU employees are guests at launch

Three manned maneuvering unit program employees were guests of NASA at the launch of the first Space Shuttle as a reward for their performance on the program.

Those honored:

F. Lawrence Byers for leading the mechanical design team for the MMU and its flight support station.

Donald Olsen for his personal efforts in spearheading the procurement of MMU parts and in coaxing the maximum out of vendors and subcontractors.

Arthur P. Young for the conduct of manufacturing planning and for the many hours of overtime he dedicated to the program.



Demonstrating the curvature of his free-floating heliostat mirror assembly invention is Kenneth A. Karki, strategic systems division. The removable mirror is attached to a steel-faced honeycomb assembly by magnets.

12 employees earn invention awards

Twelve employees have been selected to receive cash awards for their inventions. Those named by the product development review board are:

James C. Beblavi, technical operations, and *Stanley E. Podlaseck*, Vandenberg operations: a self-healing oxidation protective coating for graphite.

E. Terrell Campbell, technical operations: fiber reinforced composite tube end fitting using elastomeric tooling.

Jerry J. Finch, technical operations: optoelectronic data ring coupling.

Lyle E. Johnson, strategic systems division, for work while at Michoud division: reducing water contact for wet tape testing epoxy primer.

Kenneth A. Karki, strategic systems division: free-floating heliostat mirror assembly.

Fidel Orona, technical operations: 8¼ percent force model pitch, yaw, roll displacement unions.

Dr. Robert B. Rice Jr., technical operations: video processor to track color dots.

Ward Rummel and *Thomas L. Tedrow*, technical operations: circular step wedge.

Dr. Wayne E. Simon, technical operations: a simple control law for retrieval of the tethered satellite.

Richard H. Sterrett, solar energy systems: high temperature solar chemical central receiver system.



Martin Marietta Aerospace headquarters operation intern James Morrison, center, is shown talking with Lt. Gen. Richard C. Henry, left, of the U.S. Air Force Systems Command Space Division, and, at right, Lt. Gen. Donald R. Keith, deputy chief of staff research, development, and acquisition for the U.S. Army. Morrison is the 1980-81 intern. Applications for candidates for selection for the one 1981-82 intern position will be accepted here until Friday, May 8.

CCMS equipment active in Space Shuttle program

The checkout, control, and monitor subsystem (CCMS) built here by the ground electronics production systems organization, is active in the Space Shuttle program at Kennedy Space Center (KSC) and will be used when operations begin at Vandenberg Air Force Base.

The CCMS is used to check the orbiter, initiate test programs for it, and to monitor its performance. The equipment controls ground support equipment and monitors its performance. The CCMS operates up to and during launch.

Work on equipment began in August 1975 when a \$22 million contract was awarded to design, build, and install the equipment and to develop diagnostic software.

"Today's contract value is \$100 million," said E. F. Haeger, director of ground electronics production systems. "With options and through upcoming negotia-

tions, the value could reach \$150 million through 1985."

Since the first contract was awarded, employees have built 1479 equivalent racks of electronics for 13 different and unique set configurations. (A set, for example, would be all the equipment necessary to equip a single firing room at KSC.)

Equipment has been installed in 22 facilities at KSC, Vandenberg, and Houston.

During the assembly and installation, 248 computers have been integrated into the systems.

Still to be built and installed under anticipated options and future contracts are 600 racks of electronics for six unique set configurations at five facilities on the east and west coast.

To date, eight and one-half million com-

ponents and parts have been purchased for use in CCMS. Of the \$28 million spent in purchases, \$10 million has gone to local suppliers.

Equipment performance has been high. Much of it has been in place more than two years—and much of it has operated 24 hours a day, seven days a week.

"We have had no significant problems," said Haeger. "In fact, our people built such fine equipment that we have received ten consecutive award fees for performance. Three of the ratings have been excellent, and seven were outstanding—the highest possible.

"That performance—and our growth—is the result of the dedication and high quality effort of all those working on the program," he said.

Ground electronics production systems also produces MARTRON and the Navy plotter.



Credit union president John J. Smith reports on the organization's activity at the annual meeting held March 26. Smith was re-elected president for 1981.

Credit union elects officers

Officers for the Red Rocks Federal Credit Union for 1981 were elected by the board of directors following the organization's annual meeting, March 26.

Elected were John J. Smith, president; Thomas W. Cooper, vice president; Dorothea E. Gibson, secretary; and Kenneth M. Byers, treasurer.

At the annual meeting, vacancies were filled on the board of directors and on the credit committee. Thomas W. Cooper was re-elected to a three-year board term. Others elected to the board were Thomas E. Bailey and William L. Miller, three-year terms; and Robert B. Hoffman, one-year term. Ronald E. Pittman was re-elected to the credit committee for three years; Cheryl E. Crump was elected to a two-year term and William C. Gunnison for one year.

'The Name Game' extended to all locations

The expanded "Name Game" referral program announced in March for the Denver area has been extended to cover all Denver Aerospace locations.

Employees at Michoud, Vandenberg, Cape Canaveral, Kennedy Space Center, El Segundo, and other offsite locations now can receive the same rewards for referring qualified and successful job candidates.

For each qualified referral—one called in for interview—an employee receives a "The Name Game" coffee mug, whether the person recommended is hired or not.

The referral also qualifies the employee for a drawing for a weekend-for-two in Las Vegas. Drawings will be held May 11, July 6, September 8, and November 9, with two trips awarded in each drawing.

The cash award part of the program has been greatly improved. When a person referred is hired, the employee earns a cash award. For those hired in salary grade 43 and above, the referring employee earns \$2000. For salary grade 41, for critical non-exempt salary and hourly skills, and for new college graduates, the reward is \$300.

In addition to the cash award, the successful referral makes the recommending employee eligible for a drawing for an Acapulco trip. Drawings will be held June 8, August 10, and October 5, with one winner in each drawing.

Employees who successfully recommend three candidates for openings before December 7 will be eligible for a grand prize drawing of a Tahiti vacation for two. For every successful recommendation over three, the employee re-

ceives an additional entry in the grand prize drawing.

Referral applications should be sent to personnel staffing for processing.

Employee referrals earn \$885,000

Employees have earned \$885,412 since January 1980 in the referral award program.

"The Name Game" coffee mugs have been earned by 166 employees, who also qualify for the Las Vegas trip drawing.

For recommending candidates who were hired, 83 employees have qualified for the Acapulco vacation drawing.

College, university counselors here April 22

Counselors from many of the Denver metropolitan area colleges and universities will be here Wednesday, April 22, to advise prospective employee students on eligibility, admissions requirements, curricula, and policies for undergraduate and graduate study at the institutions.

Represented will be the University of Colorado (Boulder and Denver campuses), Community College of Denver, Metropolitan State College, Arapahoe Community College, Regis College, Colorado State University, Colorado School of Mines, and the State of Colorado Professional Engineers board.

Counseling sessions will be held in the second floor cafeteria in the engineering building from 2 to 4 pm.

Relocation plans being implemented

Moves are continuing for organizations involved in the Denver Aerospace relocation plan. About 40 percent of the space launch systems division personnel have been moved to the Greenwood area, with moving dates for the remainder being scheduled.

Plans are also progressing for the relocation of strategic systems division personnel to the Denver Systems Center and West Point. Some employees of this division will remain in the SSB because of work requirements.

Finance and procurement employees will be moved from West Point to Cinderella City to permit the consolidation of the strategic systems division in the Academy Park area.

The UARS program will be moved to Greenwood.

The ITSS program and the Defense Contract Audit Agency will move to the main facility.

To accommodate the increase in personnel at Greenwood, an additional 350-car parking lot is being constructed there.

Parking is also being expanded at DSC. During construction of the second deck parking there, arrangements have been made to use parking areas east of DSC.

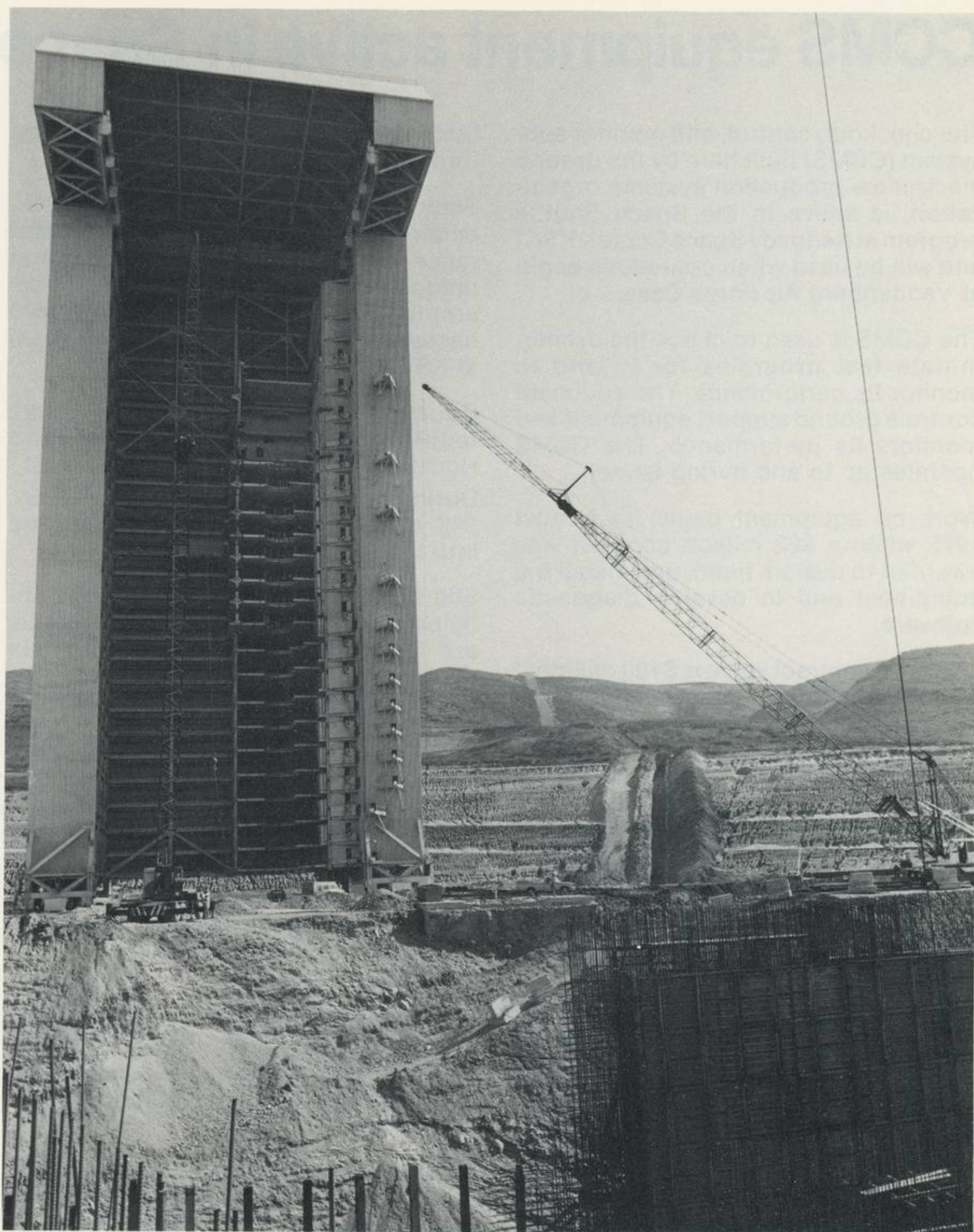
Brunswick Bowls offer anniversary bowling night

Brunswick recreation centers in cooperation with the recreation office are sponsoring a free bowling party for employees, spouses, and dependents to help celebrate the Denver Aerospace 25th anniversary.

The bowling parties will be held Tuesday, May 5, from 7 to 9 pm in the Denver metropolitan area, Boulder, Colorado Springs, and Pueblo.

Free bowling, free shoe rental, and free light refreshments will be provided by simply showing an employee badge.

Bowling centers participating in the anniversary event are Broadmoor Bowl, 1135 S. Wadsworth, Lakewood; Elitch Lanes, 3825 N. Tennyson, Denver; Heatheridge Lanes, 2200 S. Peoria, Aurora; Rocky Mountain Lanes, 5555 W. 91st, Westminster; Thunderbird Lanes, 555 Thunderbird Dr., Boulder; Circle Lanes, 999 N. Circle Dr., Colorado Springs; Belmont Lanes, 1011 Bonforte, Pueblo; and Hoffman Heights Lanes, 690 Peoria, Aurora.



Looking up from the flame duct excavation, the mobile service tower for the DOD space transportation system can be seen undergoing modification to accommodate the Space Shuttle vehicle. The internal access platforms will be changed and the tower itself will be shortened 40 feet.

Mobile service tower is being modified

Employee earns awards for patents

R. F. Wells, strategic systems division, has received award checks for patents issued on two of his inventions.

The patents were issued on a "double action, electrical connector coupling device," and for an "axial tube cutter for severing electrical connector coupling rings."

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The existing mobile service tower at space launch complex six at Vandenberg Air Force Base is undergoing modification to accommodate the Department of Defense space transportation system launch vehicle. Although the changes are not as extensive as those to the pad, they are significant.

Most of the access platforms have been removed to be replaced by platforms to fit the shape of the Space Shuttle vehicle. The platforms, like scaffolding, allow access to the vehicle during launch preparation. Because the Space Shuttle is shorter than the manned orbiting laboratory for which the tower was originally built, the tower will be shortened by some 40 feet.

The modification will be completed by February 1983.

PIC performance earns award fee

The overall performance on the payload integration contract for the fourth award fee period has been rated excellent. The rating resulted in an award of 94 percent of the available award fee funds.

Maj. Gen. Gerald K. Hendricks, vice commander of the U.S. Air Force Space Division, made the announcement of the award.

The payload integration contract program, under the direction of Alan L. Schaeffle, has been in existence more than three years and has continually received excellent ratings. The award for this period is the highest percentage received so far by the program.

In announcing the award, General Hendricks said, "This award fee period has been one of adjustment and change, both in the technical focus of your tasks as well as the amount of work performed. In response, your performance has indeed been very commendable. The management and personnel of the Payload Integration project team should be praised for their efforts."

Canaveral honors 38 for perfect attendance

Thirty-eight Canaveral Operations employees were recognized during recent ceremonies for achieving perfect attendance in 1980.

Walter W. Kollosch, engineering installation and facilities, recorded his eighth consecutive year of perfect attendance. Forbes S. Hayes and Charles C. Rinehart, test operations, each logged their sixth straight year of perfect attendance.

Others recognized for perfect attendance were:

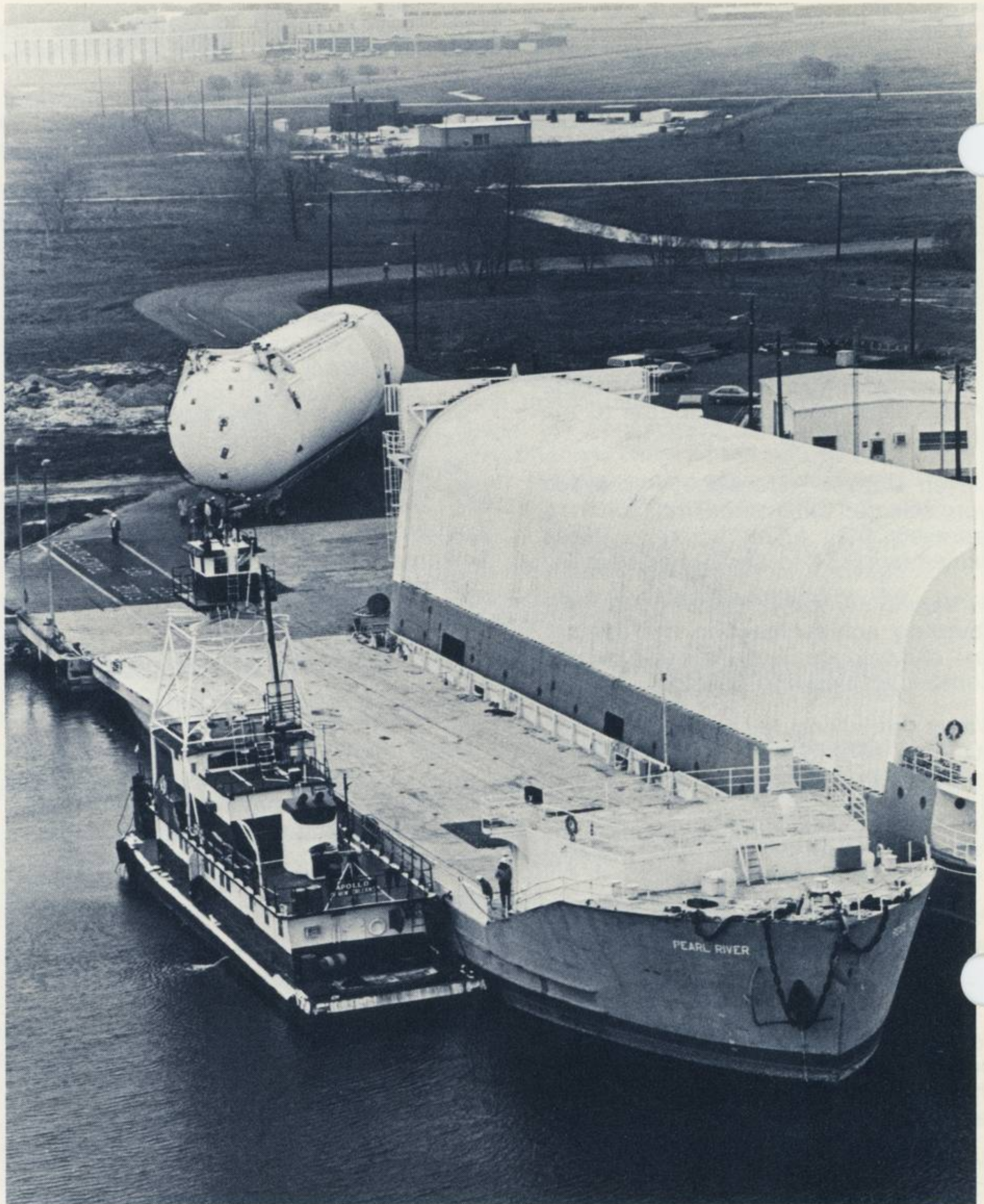
Five years: Frederick C. Marshall, David F. McNeill, and Daniel C. Schilling.

Three years: Joseph A. DiGristine and Debra A. Weaver.

Two years: Donna R. Dean, Otto E. Fenske, Charlotte A. Overbey, and Wilson O. Torence.

One year: Dorothy M. Boger, Francis L. Boxler, Austin R. Caldwell, Paul D. Daymude, Alfred E. Dorais, Howard J. Earles, Donald W. Fleming, Richard A. Freeman, Jack B. Gilbert, Douglas N. Gilman, Donald E. Haas, Ralph J. Harriman,

James A. Mathena, Robert T. Matschner, Robert E. McKinney, Thomas J. Melcher, Robert A. Moore, Thomas H. Munro, Sam Roberts, Felix J. Scheffler, William Shillingsburg, Harry M. Solana, Kenneth W. Villyard, Griffin D. Watkins, Olin N. Wolfe, and Morris S. Worland.



The external tank for the second Space Shuttle flight is moved toward a waiting barge at the Michoud division. The tank was shipped to the National Space Technology Laboratories in March. It began tests in early April.

Second external tank, others are readied for Shuttle flights

The first Space Shuttle external tank has fulfilled its mission. But, since the external tank is the only major Shuttle element that is not reusable, others must follow for succeeding missions.

Additional tanks are in various stages of completion at the Michoud division. In early March, the completed second tank was moved by barge to NASA's National Space Technology Laboratories and hoisted into a test stand. In early April, the tank was filled with cryogenic propellants to test its thermal protection system coating. The test was successful. The second tank is ready to be delivered to Kennedy Space Center in preparation for the second Shuttle launch.

Welding and mechanical assembly is

complete for the third, fourth, and fifth external tanks. The thermal protection system is being applied to each of the three.

The liquid oxygen tank for the sixth external tank has completed proof tests and is ready for x-ray examination. The liquid hydrogen tank awaits proof testing, cleaning and priming.

NASA has postponed assembly of the seventh tank. Its components will be stored at Michoud.

Welding for the aft hydrogen dome and the ogive sections of the eighth tank—the first lightweight tank—is complete. Other components are being welded and assembled for the eighth and ninth external tanks.