

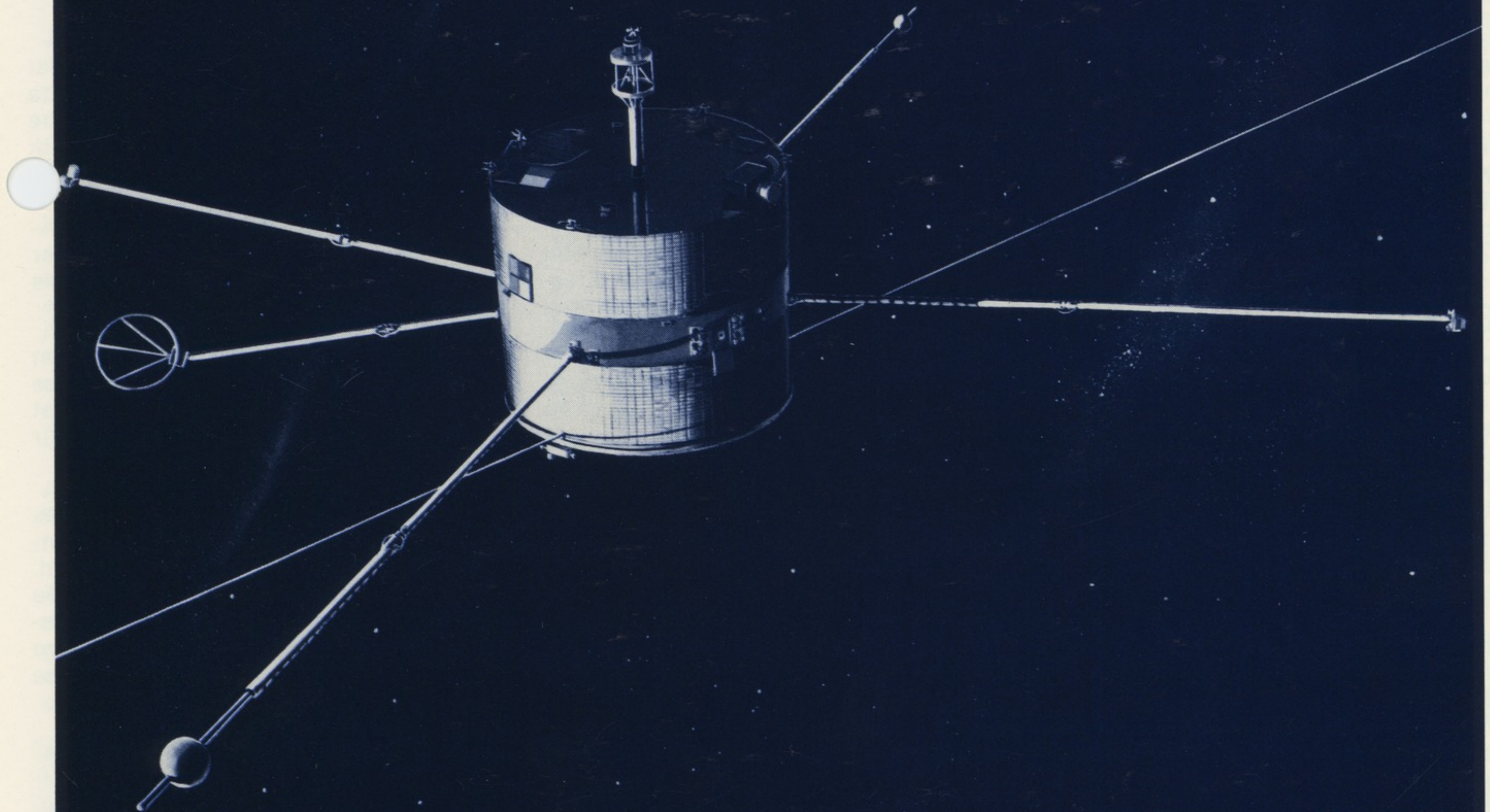
MARTIN MARIETTA

news

DENVER DIVISION

NUMBER 9/1977

SCATHA Spacecraft



The SCATHA (spacecraft charging at high altitudes) spacecraft is shown in this artist's concept in flight with sensors and antenna extended. The spacecraft will establish the design and test criteria for future operational spacecraft to preclude space charging related programs.

SCATHA moves toward 1979 launch date

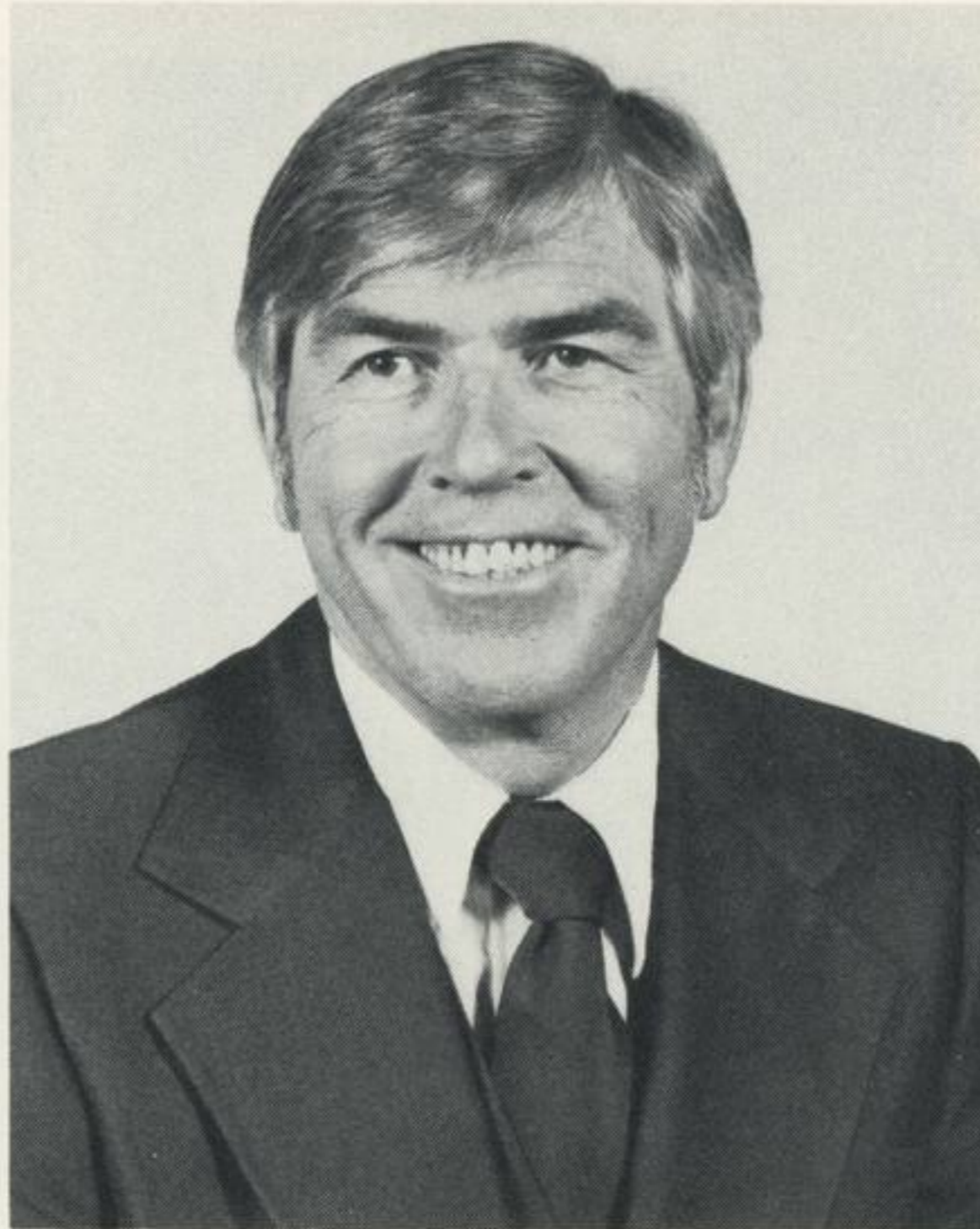
With the critical design review (CDR) "very successful," the electronic design "essentially complete," and structural design scheduled to begin in August, Donald E. Hobbs believes the SCATHA program is moving at a steady pace toward final assembly and launch.

Hobbs, who was named manager of the program June 1, is confident the program can be completed within schedule and reasonable cost.

"We have done some reprogramming, schedule changing including the in-house building of the black boxes about five weeks earlier and rearranging some spacecraft testing," Hobbs said. "And, we have made some significant progress on the total program."

One of the most important steps was the CDR completed in late May. "There were no major technical problems, no major issues that came up during the review," Hobbs said. "I believe we could say the CDR was very successful."

Final assembly will start on the spacecraft in January 1978, systems tests start in June, and the spacecraft will be complete in August. It will then be sent to NASA's Goddard center for magnetic tests before going to Cape Canaveral to be readied for launch January 11, 1979.



Donald E. Hobbs

Among key events that have taken place on the program:

- Efforts have cut spacecraft weight so it is now approximately 30 pounds below the maximum weight allowed.
- All major subcontracts have been negotiated on a fixed price basis.
- Ground equipment design has started.

ident and general manager, have met with John D. Simpson, executive director and general manager of RTD, and Richard Drake, assistant general manager for RTD transit operations. Also at the meeting was Craig Liske, district representative for U.S. Congressman Timothy E. Wirth.

The meeting was held to discuss ways to provide additional mass transportation for division employees.

Among topics discussed was a change in some starting and quitting times to avoid periods of peak bus use.

"We have reached no satisfactory an-

• Interfaces between the spacecraft and each of the experiments have been identified.

• Initial build up of position—one for structures fabrication has been started.

Hobbs moved to the SCATHA program from the Space Shuttle capillary devices product area.

He has been with Martin Marietta and the division since 1959 when he became an engineer in the propulsion design section of the Titan program. He was associated with various aspects of Titan and had assignments at both the Eastern and Western test ranges.

Following his Titan and Manned Orbital Laboratory (MOL) assignments, Hobbs, who holds a BS degree in mechanical engineering from Colorado State University, joined the Viking project.

On Viking he was manager of electronic parts, materials, and processes and later was director of mission success.

He has received the NASA special achievement award, the Martin Marietta Corporation's Jefferson Cup, and the NASA public service medal for his work on Viking. He was the division's engineer of the year in 1965.

swer for work hour changes," Weber said, "but we are still investigating this possibility."

Although RTD has new equipment on order, most of it will be used to replace buses that "are worn out and are kept running only by almost daily repair work."

"We are considering many alternatives with RTD and those offered by Congressman Wirth's office," Weber said. "We believe some solutions can be found. We don't intend to stop our discussions and studies until we have reached a solution that will benefit the greatest number of our employees."

Third bus added; talks continue for more service

Continuing discussions between Denver division executives and representatives of the Regional Transportation District (RTD) have resulted in a third bus being added to the one bus route now operating and also in efforts to provide more service to division employees.

The third bus was added to the Southmoor Park-Ride/Denver division route last week. The schedule was also changed. Buses, following the original route established for the service, now leave Southmoor at 5:15 am, 5:50 am, and 6:20 am, arriving at division facilities at 6:10, 6:45, and 7:15. Buses leave the division at 3:05 pm, 3:40 pm, and 4:10 pm.

"The primary holdup in adding more routes is the lack of RTD equipment," R. E. Weber, division director of professional and industrial relations, said. "Every bus available is being used at times when service is needed for our employees."

Weber and C.B. Hurtt, division vice pres-



Titan IIIE Centaur readied for Voyager launches

The sixth and seventh launches of the Titan IIIE Centaur will boost two Voyager spacecraft on their way to Jupiter and Saturn late this summer.

Titan IIIE Centaur was the launch vehicle that sent the highly successful Viking spacecraft to Mars for exploration of that planet.

The Mariner Jupiter Saturn space mission will conduct comparative studies of Jupiter and Saturn. Included will be investigations of the environment, atmosphere, surface, and body characteristics of both planets; studies of one or more satellites of each planet; and determination of the nature of the rings of Saturn.

Another objective of the mission is to study the interplanetary and interstellar media.

A mission option exists for one spacecraft to continue beyond Saturn for an encounter with the planet Uranus.

In addition to building the Titan IIIE portion of the launch vehicle, the division will integrate launch site activities and will be the test conductor.

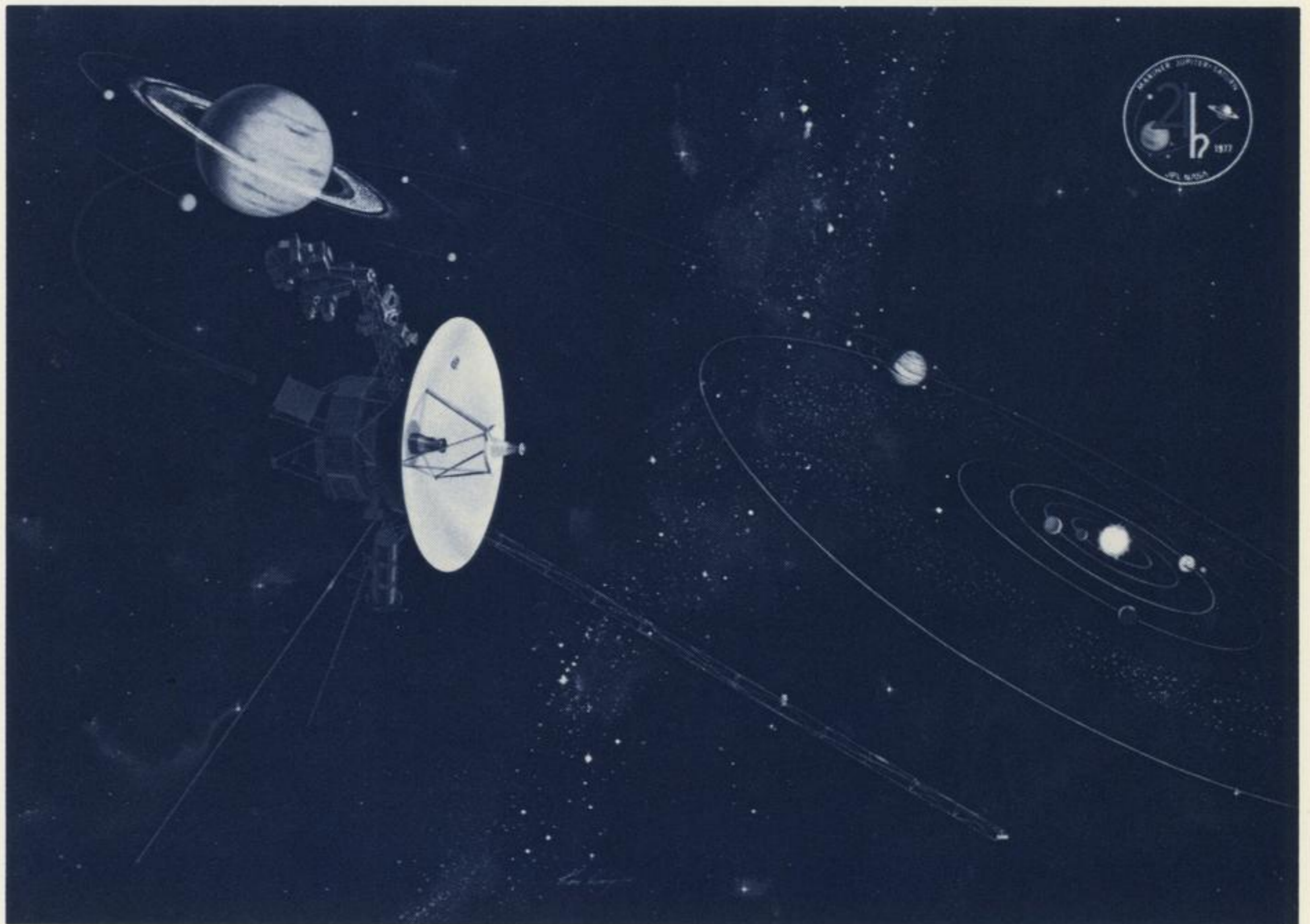
The Denver division also made a significant contribution to the Voyager spacecraft hardware.

Equipment provided the Jet Propulsion Laboratory, builders of the spacecraft, included the propellant control assembly for the Voyager propulsion system; the remote driver module, which includes the electronics to control valves and thrusters of the spacecraft's attitude control system; the hybrid buffer and interface circuits (HYBIC) which are the input/output electronics for the spacecraft computer; and the memory access module which provides additional equipment to supplement the onboard computer.

John A. Coryell is director of the Titan IIIE program with Richard J. Greenspun as project engineer. Samuel C. Lukens lead the work on the propellant control assembly and James W. McAnally was in charge of the electronics effort.

The Voyager spacecraft are scheduled for launch in August and September this year—about 10 days apart—to begin the interplanetary cruise phase of the mission.

The initial portion of the mission, which ends with the first stage Centaur shutdown, results in a circular parking orbit of 90 nautical miles. After coasting for about 43 minutes, a second firing of the Centaur puts the spacecraft in an interplanetary trajectory.



Final velocity for the trans-Jupiter insertion is provided by the spacecraft propulsion module. Following burnout of the solid rocket motor in this module, the Voyager mission module separates from the propulsion module for the remainder of the journey to Jupiter and Saturn.

The spacecraft will fly by Jupiter during the first half of 1979 and, using the gravitational assist of Jupiter, continue to an encounter with Saturn—which can occur from late 1980 through the third quarter of 1981.

JPL has incorporated the best of Viking orbiter subsystem design in the Voyager vehicle. Voyager weighs 2017 Kg (4437 pounds) at launch—1225 Kg for the propulsion module and 792 Kg for the mission module.

The mission module will carry medium and high resolution television cameras, spectrometers and photometric instruments for atmospheric and other analysis, a radio receiver to measure planetary radio emissions, sensors to measure fields and particles, and a high precision radio link for Earth to spacecraft and spacecraft to Earth communication, navigation, and scientific purposes.

Because the mission operates at such distances from the Sun, radioisotope thermoelectric generators are used onboard to produce nearly 400 watts of power needed during the Saturn encounter.

The mission module has a hot gas system with 16 small thrusters for both attitude control and trajectory correction maneuvers.

This artist's concept shows the Mariner Jupiter Saturn spacecraft as it will appear in operation as it explores the two planets.

On the move

G. A. Tefft: from a senior group engineer for systems control, systems engineering, to program engineer for special programs with responsibility for STAGE vehicle integration activities.

R.L. Parker: from a senior group engineer for systems design to program manager in marketing for launch vehicles.

A.V. Martin: from administrator contract technical requirements, special programs, to program chief contract technical requirements for technical operations project in research and technology.

H.H. Okubo: from senior group engineer for guidance and control in electronics to program engineer for electronics support of the 34D program.

A. E. Fehr: from group engineer for propulsion engineering to a senior marketing representative for thermal and propulsion engineering.

R. G. Williams: from administrator of wage and salary to chief of compensation and organization.

C. J. Meno: from administrator of employment to chief of staffing.

Division receives plaque from LULAC

The League of United Latin American Citizens (LULAC) recently presented a plaque to the Denver division "in appreciation of outstanding community services in 1976-1977."

Presenting the award to C. B. Hurtt, division vice president and general manager, was Leo E. Cardenas, state director of LULAC.



Leo E. Cardenas

LULAC, a non-profit civic organization, was founded in 1927 to assist Latin Americans in education, job placement, and other activities.

Martin Marietta has supported LULAC activities and has used the organization's services in college recruiting and to obtain qualified employees for non-professional positions. The division has also participated in LULAC's youth education programs.

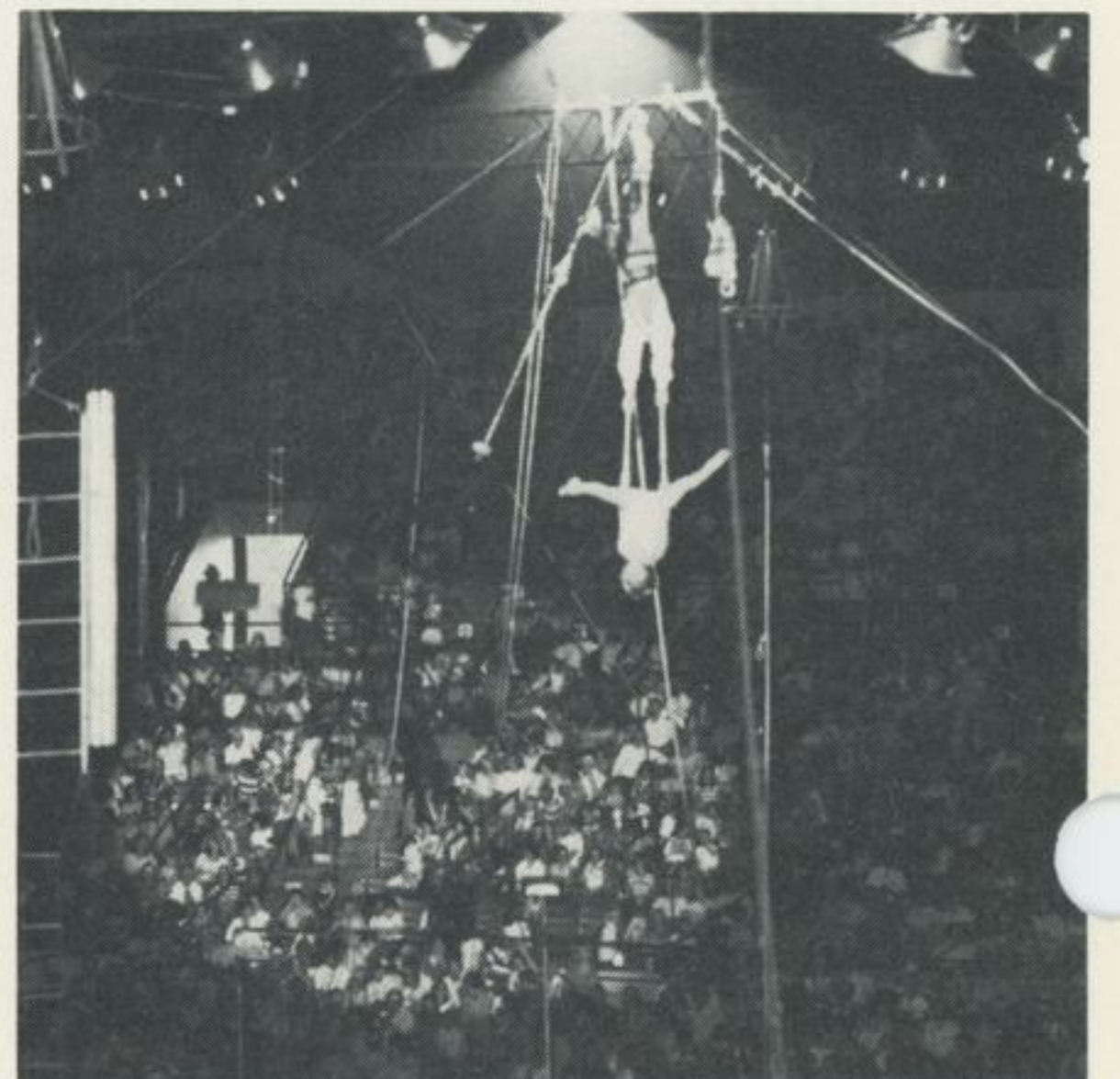
Cardenas, in addition to being state director for LULAC, is a full-time employee of the federal government as regional director for community relations services with the Department of Justice.

At least 12 Martin Marietta employees are members of the organization and several have held or are now holding offices.

R.M. Rodriguez, on loan from Martin Marietta to the National Alliance of Businessmen as youth director, was state director of LULAC from 1971 to 1973 and was a vice president of the national organization, with responsibility for youth programs in 1973-1974.

Ralph Trujillo, a division design engineer, is state treasurer; Felix Montoya, a staff engineer, president of LULAC council 3016; Jose Padilla, state director of publicity; and Manuel Medina, a senior engineer, treasurer of council 3016.

CIRCUS DAY



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June 1977

June 11 was Circus Day for Martin Marietta employees here, shown in these photos as participants and spectators.

'Evening at Pops' to begin July 10

The popular public television series, "Evening at Pops," will begin its summer season July 10. This is the sixth consecutive year the telecasts have been made possible by a grant from Martin Marietta.

Conductor Aurthur Fiedler and the Boston Pops orchestra originate the Public Broadcast System network telecasts from Boston's Symphony Hall through station WGBH.

The 12 Sunday evening programs can be seen in Denver on KRMA, Channel 6, and in New Orleans on WYES, channel 12.

Principal guests for the series:

July 10 - Chamma Dale, a member of the New York City Opera and recently appearing as Bess in the revival of *Porgy and Bess*, will present music from Grand Opera and the cabaret.

July 17 - The Claude Kipnis Theater, a company of eight performers will enact Mozart's *Eine Kleine Nachtmusik* as the daydreams of musicians.

July 24 - Jean-Pierre Rampal, called "one of the great flutists in history," will play familiar selections with the orchestra and perform his hit recording *Suite for Flute and Jazz Piano*.

July 31 - Ben Vereen, perhaps best known for his recent portrayal of Chicken George in the TV drama *Roots*, will appear with the orchestra as a singer and dancer.

August 7 - Robert Merrill and Roberta Peters, stars of the Metropolitan Opera, will sing arias and songs from Broadway musicals, including selections from *Show Boat*, *Kiss Me Kate*, and *Carousel*.

August 14 - Tony Bennett will sing a Cole Porter medley and a new arrangement of *I Left My Heart in San Francisco*.

August 21 - Itzhak Perlman is one of today's best known and most highly regarded violinists. He has performed with every major American symphony orchestra.

August 28 - Ethel Merman, in a "Merman Medley," covers 46 years of her Broadway musical hits.

September 4 - Judy Collins, who trained as a classical pianist with Denver's renowned Antonio Brico, describes herself as a "contemporary singer." Her performance will include *Both Sides Now* and *Send in the Clowns*.

September 11 - Roy Clark is a master of everything with strings—guitar, banjo, fiddle—and will demonstrate his mastery with *Alabama Jubilee*, *Foggy Mountain Breakdown*, and *Malaguena*.



Clamma Dale

September 18 - Pearl Bailey turns Boston's Symphony Hall into a cabaret with her performance of *Smile, Tired, Carnaby Street*, and *Hello, Dolly!*

September 25 - Edward Villela and Polly Shelton, in a series of American Vignettes, dance at the U.S. Military Academy celebrating America's warm-weather pastimes: the beach, the baseball game, and the picnic.

Viking biology instruments are shut down

Performing all the experiments they were designed for and more, the Viking biology instruments have been turned off after completing their search for life on Mars.

But, Viking lander 1 and Viking lander 2 are still performing other tasks. Meteorology instruments are taking the planet's temperature and measuring its winds; the seismometer is checking for Marsquakes; and cameras on both landers and both orbiters are continuing to take photographs of the Red planet.

Activities for lander 2 have been reduced because of the winter cold.

The biology instruments on the landers were turned off because they had depleted supplies of high-pressure helium, nutrients, and other consumables.

Biologists continue to study various combinations of soil and chemicals in laboratories across the United States in an attempt to duplicate results from the biology instruments on Mars.

From Michoud

Employees complete action workshop

Thirty-four Michoud operations employees recently completed a two-day Action Workshop on communication, human relations, and time management. Each received a certificate of achievement.

The workshop, designed to develop staff potential, was conducted by a professional management education firm. The workshop focused on three critical areas needed to develop individual and team effectiveness: understanding office relationships, team time management, and effective communication.

Those completing the workshop were:

Martha Anderson, Suzette Archie, Debra Berkman, Susan Boudreaux, Joy Dammun, Becky Dunlap, Earline Escarra, Mary Finch, Audrey Fritter, Doris Gray, Leona Hall, Pamela Hearty, Bobbie Hilliard, Patricia Houser, Sharon Hursey, Peggy Hurst,

Shirley Kirk, Frances Lee, Mary Lestelle, Barbara Lombard, Terry McGrath, Phyllis Norris, Arlene Mouton, Barbara Ory, Hazel Patyrak, Marilyn Robinson, Kay Seaner, Sally Selby, Sylvia Squyres, Joan Stevenson, Marie Troullier, Judy Tyser, Gale Webb, and Doris Zutz.

Loaned executive named for United Way

James F. Lamantiniere has been named to represent the Michoud operations as a loaned executive to the United Way of Greater New Orleans for the organization's annual fund drive.

During his eight-week assignment, beginning August 1, Lamantiniere will be responsible for working with United Way Volunteer leadership and staff to implement a successful campaign.

The loaned executive program provides the United Way with competent personnel to coordinate and manage the community's largest volunteer effort.

Lamantiniere, chief of cost accounting, joined the Michoud operation in 1974 as a specialist in finance.

In Michoud

Call Ray Lacombe at 3606 with suggestions or information for articles for *Martin Marietta News*.

MARTIN MARIETTA

news

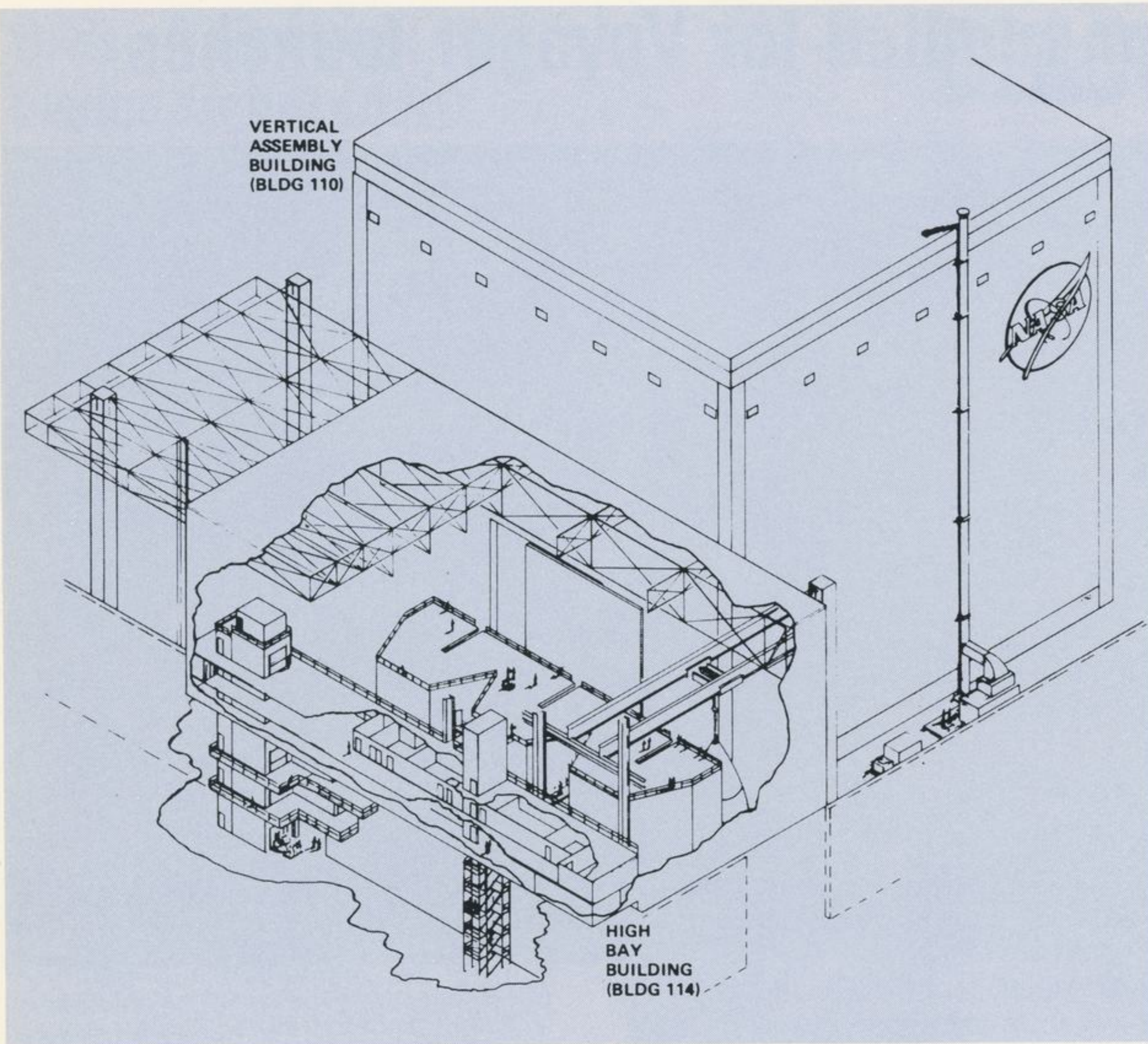
MICHOUD OPERATIONS

Michoud honored for veteran hiring program

Michoud operations was recently honored by the Louisiana Department of Labor, office of employment security for its "outstanding support of President Carter's Jobs for Veterans program."

During the past 18 months, 36 percent of the 1002 employees hired at Michoud were veterans.

E. M. St. Romain, Sr., district coordinator for veteran placement in the New Orleans area, said, "The results achieved were significant contributions to the President's program. The plaque is a small token of appreciation for Martin Marietta having done its part so well in the Jobs for Veterans program."



New high bay building is planned

A new high bay building is being planned for the Michoud complex for a future production rate of 24 tanks per year. The new facility will be adjacent to the vertical assembly building.

Design is to begin in July with construction to begin in mid-1978. The building will be completed in mid-1980.

Initially, the building will provide three work positions, with one used for application of ablator to combat aerodynamic heating/erosion conditions on the tank and the other two used to spray the external tank with foam insulation to prevent ice and frost forming before launch and during flight.

The building will be constructed so that two more work positions can be added later.

As planned, the building will be 210 feet long, 100 feet wide, and 138 feet high. Each work position will be about 95 feet high and 43.5 feet in diameter.

The vertical assembly building is 202 feet high with 45,000 square feet of floor area. It has six work positions—called cells—in which the external tank's liquid hydrogen and liquid oxygen tanks

have their thermal protective system applied, where tanks are cleaned, where the liquid oxygen tanks are proof and leak tested, and where intertank mating is done.

