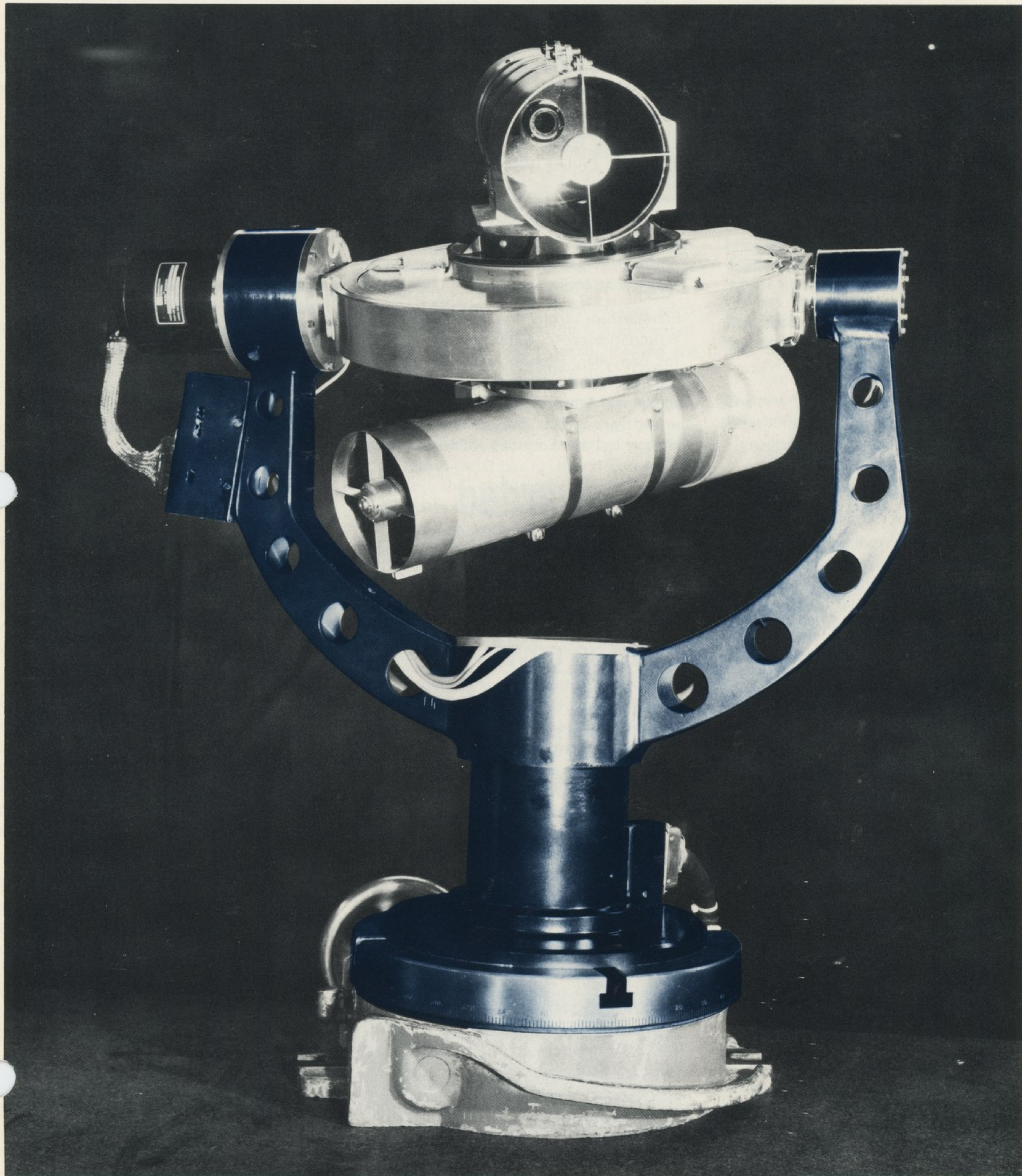


MARTIN MARIETTA

# news

DENVER DIVISION

NUMBER 5/1977

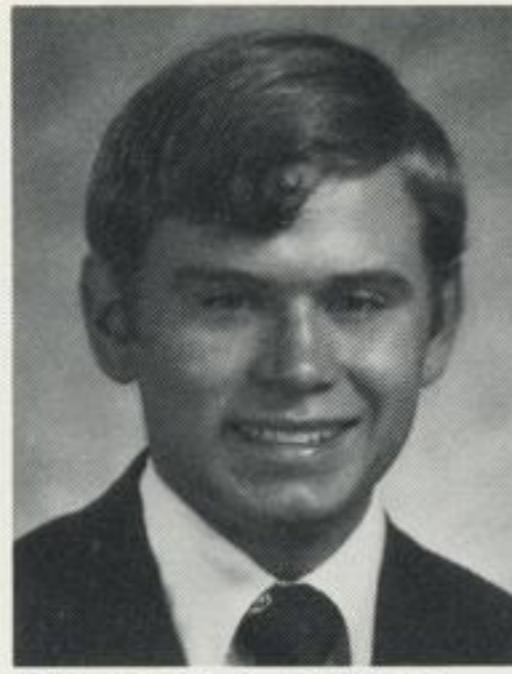




Mary Beth Gray



David W. Hart



Gregory L. Miller



Ronda J. Schroer



Londa Kay Weese



Laurie Lee West

## Six earn Martin Marietta Foundation scholarships

Six sons and daughters of Denver division employees have been awarded Martin Marietta Foundation scholarships for the 1977-78 college year. Four of the recipients live in the Denver area, one lives in Louisiana, and one lives in California.

Those awarded scholarships are:

*Mary Beth Gray*, the daughter of Mr. and Mrs. Carroll Gray. Her father is a mechanical engineer for the Michoud Operations;

*David W. Hart*, son of Mr. and Mrs. Walter Hart. The elder Hart is an electrical engineer in Denver;

*Gregory L. Miller* is the son of Mr. and Mrs. Clifton Miller. His father is an inspector, assembly and electronics in Denver;

*Ronda J. Schroer*, daughter of Mrs. and Mrs. Ronald Schroer. Schroer is an engineer in Denver;

*Londa Kay Weese* is the daughter of Mr. and Mrs. Lonnie Weese. He is a design engineer in Denver; and,

*Laurie Lee West*, daughter of Mr. and Mrs. Gordon West. Her father is a mechanical engineer at the division's Vandenberg Air Force Base facility.

Scholarships from the Martin Marietta Foundation are for \$1500 and are granted for one year. Each is renewable for succeeding years if the student meets academic requirements. Selections are made by a special scholarship committee chosen by the Foundation. None of the

committee members is employed by Martin Marietta or associated in any way with the Corporation.

The academic plans and backgrounds of the scholarship recipients:

Mary Beth Gray will graduate from Slidell High School and expects to enroll in a pre-medicine course at Louisiana State University. She wants to be a psychiatrist. She has been active in student government, was on the yearbook staff, is a member of the National Honor Society, and participates in hanggliding.

David W. Hart, a graduating senior at Cherry Creek high school, wants to attend Princeton University and major in physics or mathematics. He is an honor student and his hobbies are chess, bicycling, and skiing. He is also interested in philosophy and international relations.

Gregory L. Miller plans to attend the University of Colorado after graduation from Sheridan high school. His major will be aerospace engineering. He has played in the Sheridan high school band, plays soccer, and listed astronomy, fishing, and hiking as his hobbies.

Ronda J. Schroer, who ranks first in her class at Douglas County high school in Castle Rock, expects to attend Florida State University. She plans to be a business major with an emphasis in accounting. She was president of the language club and assistant editor of the school newspaper.

Londa Kay Weese has participated in the honors program at Thomas Jefferson high school. She plans to major in music education at the University of Northern Colorado. She plays the piano and guitar and has sung with McGregor's Beggars, a vocal ensemble.

Laurie Lee West is an honor student at Santa Maria high school. She expects to attend the University of California, Berkeley and major in biochemistry. She has been a laboratory assistant and has done independent study in biochemistry. She is also interested in creative writing.

## Space sextant contract awarded

A four-year, \$7.1 million contract to build a qualification model and a flight model of the division's space sextant has been awarded by the U. S. Air Force Space and Missile Systems Organization (SAMSO).

Dale Mikelson is manager of the program. Donald A. Willis is the technical director with Robert A. Booker heading system design and Arno C. Serold leading the software effort.

William J. Owen, inventor of the space sextant, will perform special design assignments on the program.

The space sextant is one of five experiments that will be on board a new spacecraft to be built for launch in December 1980. The division will seek also to build the new spacecraft (see: *Division to bid on new spacecraft*).

The division started work on the space sextant concept in 1973 and has completed two preliminary design contracts and is completing a contract to build an engineering breadboard and test model.

The space sextant allows a spacecraft or satellite to determine by itself its position and attitude without aid from ground stations.

### On the cover

Shown on the cover is an engineering model of the division's space sextant. The division recently received a contract for a qualification model and a flight model of the instrument (see story). The 43 pound instrument provides a high altitude navigation and attitude reference system for spacecraft with navigation accuracy of 800 feet in any orbit and an attitude accuracy of 0.4 arc seconds in any orbit. It has a design life of five years.

### MARTIN MARIETTA NEWS

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Denver Division  
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April 1977

# RTD bus replaces car pools; employees call service 'great'

Mrs. Patricia Bellis, a scheduler in the division's publication services reproduction area, and Gordon E. Bowman, who operates a copy camera in the same area, used to share the ride with three other people. Then their car pool dropped to two members.

But recently their car pool took a dramatic spurt in the number of riders. They now share The Ride with as many as 70 other Denver division employees. And the best part is that neither Mrs. Bellis nor Bowman have to drive.

"We think it is great," they said almost in unison in giving their reaction to the recent bus service started by the Regional Transportation District (RTD) from the Southmoor area to division facilities.

Both ride the later bus, with Mrs. Bellis getting on at the Southglenn Shopping Center about 6:45 am and Bowman getting on at Broadway and Geddes about 10 minutes later.

"I usually have to stand because I am the last one on the bus," Bowman said, "but I don't mind. Standing on the bus is a lot easier than driving my car and I am saving a little money."

When Mrs. Bellis and Bowman were sharing a ride in each other's car, they each spent about five dollars a week on gas alone. Their bus fare is just \$3.50 a week—35 cents each way each day.

"We pay 10 cents more than those who ride the earlier bus because the RTD bases its fares on both time of day and length of ride," Mrs. Bellis said.

Mrs. Bellis and Bowman work 7:30 am to 4 pm and the later bus fits their work schedule perfectly. They get off at the Administration building about 7:15 each morning and board the bus for the trip home about 10 minutes after quitting time.

The RTD bus makes seven stops on division property, discharging and picking up passengers at EMF, SSB, the Administration building, the inventory building, behind the factory, at RDL, and at the Engineering building.

There has been another bonus from riding the bus. Bowman explains, "There are people who I knew at work who I found live in my neighborhood and I didn't know it." The reverse is also true. Some people Mrs. Bellis and Bowman used to



see in their neighborhoods have turned out to be fellow employees.

Do they like the bus?

Mrs. Bellis and Bowman both recommend using the bus to commute to work. "And we haven't heard any complaints from any of the other riders."

R. E. Weber, director of professional and industrial relations, says the division and RTD are exploring the possibility of adding more routes and perhaps another run on the current route.

## 8 Titan IIIs to be built in follow-on contract

A follow-on contract for eight more Titan III launch vehicles was recently awarded the division by the U. S. Air Force.

Included in the \$77-million contract was the acquisition of materials for potential fabrication of three additional Titan IIIs. The contract extends through September 1980. It will not increase the current division workforce of 3300.

The new contract brings to 138 the number of Titan IIIs purchased from the division by the Air Force and NASA since the initial contract December 1, 1962.

Thus far, 101 Titans have been flown on a wide variety of missions ranging from nuclear detection satellites and orbiting communication stations to the twin Viking spacecraft that landed on Mars in the summer of 1976.

*Patricia Bellis and Gordon E. Bowman are all smiles as they leave the RTD bus to begin a days' work. The bus has replaced their car pool.*

## Division to bid on new spacecraft

The Denver division is preparing to bid on a new, one-of-a-kind spacecraft to be flown in 1980 to test five government furnished experiments. The spacecraft will be procured by U. S. Air Force Space and Missile Systems Organization's (SAMSO) space test program.

Robert L. Boyce has been named manager of the proposal.

The division is seeking to build the spacecraft as prime contractor, to integrate the experiments, and to provide one year of mission operations.

Request for proposal (RFP) is expected in mid-April with a 45-day response time. Contract is expected to be awarded in September 1977.

The spacecraft is scheduled to be placed in a 400-nautical-mile circular, sun-synchronous orbit in December 1980.

The five experiments planned for testing aboard the spacecraft include the space infrared experiment, which is the primary payload, and the division's space sextant (see: *Space sextant contract awarded division*). Others are the fault tolerant spaceborne computer, solar flare isotopic low experiment, and the heavy ion mass spectrometer.

# Water conservation program needs help from all employees; suggestions are requested

With a water shortage a virtual certainty in Colorado and the west again this year, the division is stepping up efforts to reduce water use in all facilities.

"In 1976, water use averaged about 700,000 gallons a day at the division," Ralph Stewart, facilities and maintenance services, said. "We expect to cut the use this year by at least 200,000 gallons a day.

"To achieve this goal, every employee will have to help," Stewart pointed out.

How?

Here are ways suggested and requested by facilities and maintenance services:

- Reduce actual water use by using less water for each individual task, including hand washing, machine cooling, and in laboratories.
- Turn off water taps when the water is not needed for a specific purpose, especially in manufacturing and laboratory areas.
- Notify facilities of areas where water is being wasted where you have no control over the use—for example, closed water drainage systems in manufacturing.
- Suggest to facilities ways in which you believe the division can save water by minor changes in piping and processes.

The form on this page may be used to send suggestions to facilities. If you prefer not to use the form, or have another idea after you send the form, call HELP (4357) with your suggestion.

"We have no corner on water conservation ideas nor can we be every place to see water use—or waste—on a regular basis," Stewart said. "We do want employee suggestions and we will take action on these suggestions.

"Water conservation is essential to the needs of our business, our community,

state, and region," Stewart said. "Just as with energy, if we don't conserve water now we may not have any to use or conserve in the future."

## Vikings employees to be honored April 26

Ceremonies to honor 70 employees selected by NASA for special recognition for exceptional contributions to the Viking project will be held April 26.

The program will begin at 10 am and will be held at the north end of the second floor factory. Arrangements are being planned by a committee headed by John H. Boyd Jr., the Denver division's director of public relations.

Spouses of those to be honored are being invited to attend. All employees of the division will be welcome at the 45-minute event.

## Bond campaign begins

The division's 1977 Payroll Savings Bond campaign will open April 11 and close April 22.

For 19 consecutive years the division has achieved more than 90 percent participation by employees in the Payroll Savings Plan program. The Bond-a-Matic program, a Denver division employee idea, has been adopted by the U. S. Treasury department and is being featured in nationwide publicity.

Goal of the division campaign is 100 percent participation.

Department campaign coordinators will meet Thursday, April 7 at 1:30 pm in the presentation room on the second floor of the Engineering building. Representatives of the U. S. Treasury department will meet with the coordinators to discuss the division campaign.

## The Economic Facts

### What's the difference?

The National Federation of Independent Business, an organization with nearly 500,000 small and independent business members, recently completed a study of the cost of living in three major world capitals—Washington, London, and Moscow.

What was the difference? Here are some cost comparisons—in time worked to buy them—of some of the common items we buy regularly.

Weekly food basket for a family of four: In Washington, you need to work 17.2 hours to earn the money for the family's food, in London, 28.2 hours; in Moscow, 64.6 hours.

As examples of items in that food basket, a kilogram of hamburger (and that is the way we will be buying it before too long) took 34 minutes of work in Washington, 76 minutes in London, and 3.5 hours in Moscow.

Bread, however, was a different story—and about the only one—in the food comparison: 21 minutes for a one kilogram loaf in Washington, 10 minutes in London, and 20 minutes in Moscow.

Outside the food basket, the differences were equally dramatic. For example:

Panty hose: 17 minutes worth of work in Washington; 15 minutes in London; 9 hours in Moscow.

Man's business suit: 25 hours in Washington; 40 hours in London; 106 hours in Moscow.

Small car: 6.9 months in Washington; 11.1 months in London; 3.1 years in Moscow.

Where would you rather live and work?

In a comment accompanying the standard of living comparison, Wilson S. Johnson, president of the National Federation of Independent Business, said, "The economic system which serves its people best provides maximum freedom and opportunity, furnishes the greatest amount of goods and services at the most reasonable price, in terms of money or time worked, and brings the highest quality of life possible to all its people."

The economic system he is describing is the one we currently have and want to keep in the United States. That is what makes the difference.

### Water conservation suggestion

To: Manager, Facilities and Maintenance Services  
I-2600

From: \_\_\_\_\_ Ext. \_\_\_\_\_

Here are my suggestions for water conservation: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# Space telescope bid submitted

A bid to build a major element of the space telescope for NASA has been submitted by the Denver division. Kenneth P. Timmons is director of the team assigned to the project.

The division is proposing to design and build the spacecraft portion of the telescope called the support system module—SSM. It includes the attitude and pointing controls, communication, data handling, thermal controls, and power systems. In addition, the division would have overall systems engineering and integration responsibilities for space telescope.

## On the move

Recent position changes include:

*Charles A. Hall:* from chief, engineering propulsion laboratories to chief, propulsion engineering section replacing Richard VandeKoppel who has been assigned to defense systems.

*Robert Vosbeek:* named chief, engineering propulsion laboratories replacing Hall.

*R.G. Williams:* assumes responsibility for central wage and salary and personnel administration for project areas.

*D.A. Foran:* named personnel administrator for manufacturing, test and structures engineering, quality and safety, product development, and engineering administration.

*H.E. Toney:* from production control resource on launch vehicle support team to chief, manufacturing engineering on launch vehicle final assembly support team.

*J.A. Stodghill:* from group industrial engineer for checkout, control, and monitor subsystems (CCMS) project to chief industrial engineer for launch vehicle final assembly team.

*Derrick K. Parish:* from administrator subcontract materiel on CCMS project to chief, program materiel for MX project.

*R.J. Nalty:* from contracts administrator to chief, program contracts with responsibility for contracts review to assure adequacy of terms and conditions and acceptable contractual risks.

*B.L. Marlow:* from contracts administrator for research and technology projects to chief, program contracts with responsibility for CCMS contract and related follow-on business.

The optics portion of the telescope assembly is being procured by NASA in a separate competition.

Fine pointing and controls studies have been conducted by the division for the past six years.

NASA plans to select contractors in October or November for both the spacecraft and the optical telescope assembly. Other firms submitting bids for the spacecraft are Lockheed Aircraft and The Boeing Company.

The space telescope will weigh about 10 tons, orbit the Earth at 310 miles altitude, at an inclination to the equator of 28.8 degrees. The 2.4-meter telescope would be placed in space in 1983 by space shuttle.

Once in orbit, it would be operated remotely from the ground much the same as the Viking landers. Space-suited astronauts from space shuttle would periodically perform maintenance, making the telescope usable for more than 15 years.

Capable of accommodating five separate instruments at its focal plane, the telescope would permit scientists to study mysteries relating to the structure, the origin, the evolution, and the energy processes of the universe. The veil of the Earth's atmosphere prevents definitive investigations of these phenomena today. The strength of the unobstructed telescope would enable astronomers to observe some 500 times the volume of space compared with Earth-bound instruments.

## From Michoud

### Employee earns scouting award

Mustafa Kamal Al-Din Abdul Kadir Al-Jabi, better known to his fellow employees at Michoud operations as Kam, recently received Scouting's highest honor for distinguished service from the New Orleans Area Council of the Boy Scouts of America. He was among 14 who received the Silver Beaver award at the council's recognition banquet.

Those honored were chosen "from literally thousands of eligible volunteers in the Greater New Orleans area," a Scout spokesman said.

Al-Jabi has also been awarded the Scouter's Key, the district award for merit and the MIKO award.

He has been active in scouting for 26 years, beginning as a cub scout in his hometown of Bagdad, Iraq.

In New Orleans, he has served as cub master of Pack 274 and is serving his third consecutive year as chairman of the pack committee. He is also a merit badge counselor.

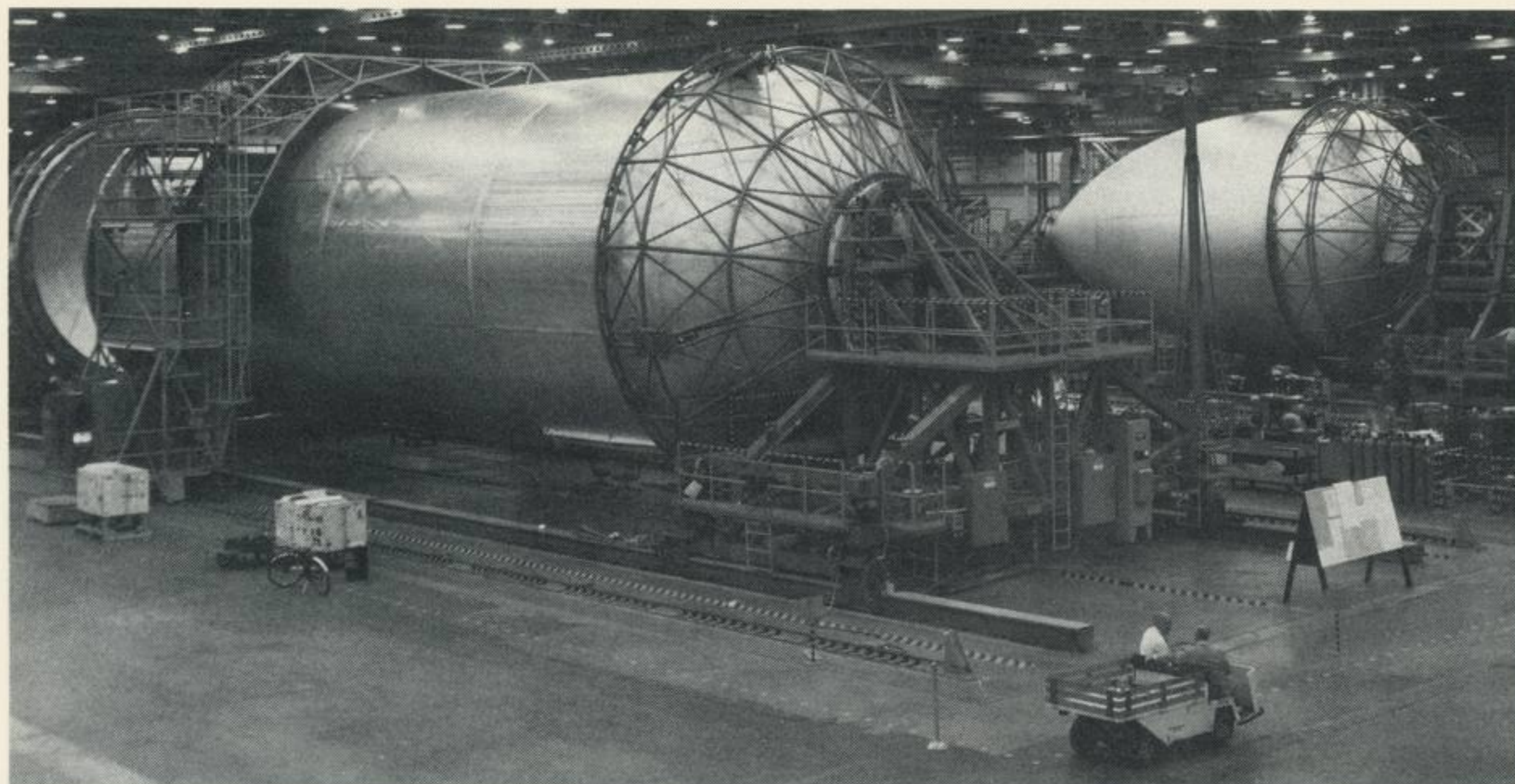
Al-Jabi joined Martin Marietta in 1974 as a facility design mechanical engineer. He has three sons, two of them already Eagle Scouts and the third a candidate for Scouting's highest rank this May.

## Holidays

Holidays remaining for 1977 for Denver division employees at the following locations:

Denver	Cape Canaveral	Michoud	Vandenberg
April 8	April 8		April 8
May 30	May 30	May 30	May 30
July 4	July 4	July 4	July 4
			July 5
Sept. 5	Sept. 5	Sept. 5	Sept. 5
			Sept. 6
Nov. 24	Nov. 24	Nov. 24	Nov. 24
Nov. 25	Nov. 25	Nov. 25	Nov. 25
Dec. 26	Dec. 26	Dec. 26	Dec. 26
Dec. 27	Dec. 27	Dec. 27	Dec. 27
Dec. 28	Dec. 28	Dec. 28	
Dec. 29	Dec. 29	Dec. 29	
Dec. 30	Dec. 30	Dec. 30	

All employees have an equal number of holidays for 1977. At Michoud, Mardi Gras Day, Feb. 22, was substituted for Good Friday. Vandenberg employees observed President's Day, Feb. 21.



This was the scene at the Michoud assembly facility recently as the two major sections of the first external tank neared completion. The tanks have been completed and are undergoing proof tests. The first external tank is

scheduled for delivery late this summer and will be mated with the three main engines of the orbiter at the National Space Technology Lab in Hancock, Mississippi for propulsion tests.

## Proof testing begins on MPTA liquid oxygen tank

Another milestone in the external tank program was passed recently when proof testing of the liquid oxygen tank for the main propulsion test article (MPTA) was begun at the vehicle assembly building at Michoud.

The 12,449-pound all-aluminum tank, built to hold 1.3 million pounds of liquid oxygen, was filled with 145,832 gallons of demineralized water containing a trace of chromate to prevent corrosion. The air in the vacuum chamber surrounding the aft dome was then pumped out to set up a vacuum.

The leak detector tape system will monitor the tank welds for leakage throughout fill, proof, and drain operations. The de-

tector tape system consists of a water soluble material covering a metallic foil which in turn is secured to the tank weld with a black vinyl tape strip. A leak in the weld will dissolve the water soluble material and provide a ground path from the foil to a lamp in the control circuit, alerting test personnel to a defective weld.

Test conductor for the hydrostatic test is Hal Dulaney.



Liquid oxygen tank is moved by straddle to the vehicle assembly building (top) and then lifted into the hydrostatic test cell (bottom).



## New business manager named at Michoud

William P. Ewig has been named business manager for Michoud operations.

In his new assignment, Ewig will be responsible for finance, contracts, project planning and performance measurement, management systems, project support, and computer services.

Before his promotion, Ewig was director of planning and computer services. He had held that position since 1973.

### In Michoud

Call C. H. Fleischer at 3835 with suggestions or information for articles for Martin Marietta News.

## Michoud operations night at the Superdome set for Sunday, April 10

Easter Sunday night, April 10, has been designated Martin Marietta Michoud operations night at the Superdome.

"This particular night was chosen so that the greatest number of Michoud employees and their families will have the opportunity to attend since all operations are normally shut down on Sunday nights," George E. Smith, vice president and project director said. "Also, the top-ranked Denver Nuggets will be in town to play the always colorful New Orleans Jazz prior to the NBA playoffs.

"To show our families how we appreciate their patience during the long hours we have been working during the first article phase of the external tank program, we want to take them out April 10," Smith said. "Every employee buying a ticket will receive a free ticket from the company for a member of his family or a friend."

The loge section on one side of the court has been reserved and the normal \$6 tickets will be available for \$4. All adults attending the game will receive a milk glass coffee mug with a Jazz decal and an especially designed logo commemorating the night.

Arrangements have been made to show a narrated color film of the progress being made at Michoud on the external tank program. The film, produced by the Denver division public relations department, will be shown at halftime on the Superdome's giant screens.

Employees may obtain tickets from:

Contracts, Jack Garner; product assurance, All Cassity; materiel, Vern Brethel; production operations, Mike Brannen; finance, Otto Rohlinger; professional and industrial relations, Ray Lacombe; planning and computer services, Len Enger; and engineering, Ed Tanner.