

MARTIN MARIETTA

news

DENVER AEROSPACE

Titan 34D
first launch



Newest Titan model makes flight debut

A new generation launch vehicle, the Titan 34D, has made its maiden flight.

It lifted off from launch complex 40 at the Canaveral Air Force Station October 30 and put two communication satellites in orbit. This was the 131st launch of a Titan III in the past 18 years.

The booster succeeds the Titan IIIC, and marks the fifth generation of Titans to serve the nation's needs. The 34D provides added thrust and longer burntime.

Like all previous Titan models, the 34D is produced under an Air Force contract by Denver Aerospace. The company serves as the program's integrating contractor, builder of the liquid propellant core stages, and launch operations contractor.

The new booster combines the advantages of solid rocket technology with liquid propellant booster stages, and multi-start orbital transfer stage. The vehicle will be used to launch payloads into orbit from both Florida and California.

When launched from Cape Canaveral, the 34D, using either the inertial upper stage or the transtage, is able to place a 4100-pound spacecraft into geosynchronous orbit 19,400 nautical miles above the equator. From Vandenberg Air Force Base, California, the booster places payloads up to 27,000 pounds in a 100-nautical-mile polar orbit.

From 1965 until its latest flight on March 6, 1982, Titan IIIC vehicles alone placed 83 Department of Defense and NASA payloads into space, totalling approximately 115,000 pounds of spacecraft. Another predecessor, Titan IIIE, launched the West German Helios spacecraft to within 23 million miles of the Sun in 1974; both Viking spacecraft to Mars in 1976; and two Voyager spacecraft in 1977, to begin their tour of Jupiter, Saturn, and the outer planets.

The Titan 34D consists of a two-stage liquid propellant core vehicle with a 10-foot diameter solid rocket motor (SRM) attached to each side. The SRMs and liquid fuel core first stage of the 34D were lengthened 69 inches to provide additional fuel and longer powered flight.

The vehicle carries more than 663 tons of fuel and oxidizer, compared with 598 tons for the IIIC. Added propellant in the solid rockets increases thrust by 200,000 pounds to a total of 2,600,000 pounds. Stage 1 burntime has been increased 18 seconds to 165 seconds.

The inertial upper stage (IUS) was used on the first flight and is planned for other selected flights. The transtage will also be used.

The IUS and the transtage provided the capability to boost spacecraft from the parking orbit, attained by the 34D, to substantially different or higher energy mission orbits. The Titan 34D/IUS combination weighs 757 tons.

Solar One power plant dedicated

On the cover

A Titan 34D lifts off from launch complex 40 on its maiden flight. The modified vehicle, with more thrust and a longer burntime, provides the Air Force with prime and back-up launch capability during the transition from expendable launch vehicles to the reusable Space Shuttle system.

The world's largest solar power plant, using technologies developed by Denver Aerospace, was dedicated November 1 in California's Mojave Desert.

Solar One, a 10-megawatt solar thermal power plant located in Daguerre, California, uses 1818 heliostats to reflect the sun's light onto a large boiler atop a 300-foot tower. The mirror arrays track the sun across the sky so that the maximum amount of light is reflected to the tower.

Key to the function of the Southern California Edison owned facility is the heliostat collector field and its computerized controls, both designed and built here.

In addition to assisting in the sun-tracking process, the collector field control computers detect and diagnose collector system malfunctions. It also records all pertinent operating data.

In addition to Solar One, the company has designed and built the 225-kilo-watt photovoltaic power plant near Phoenix, Arizona; a 350-kilo-watt photovoltaic facility near Riyadh, Saudi Arabia; and a 500-kilowatt thermal system in Almeria, Spain.

The company was recently awarded a \$1.2 million contract to design the solar system for a 60-megawatt repowered facility for the Arizona Public Service Company.

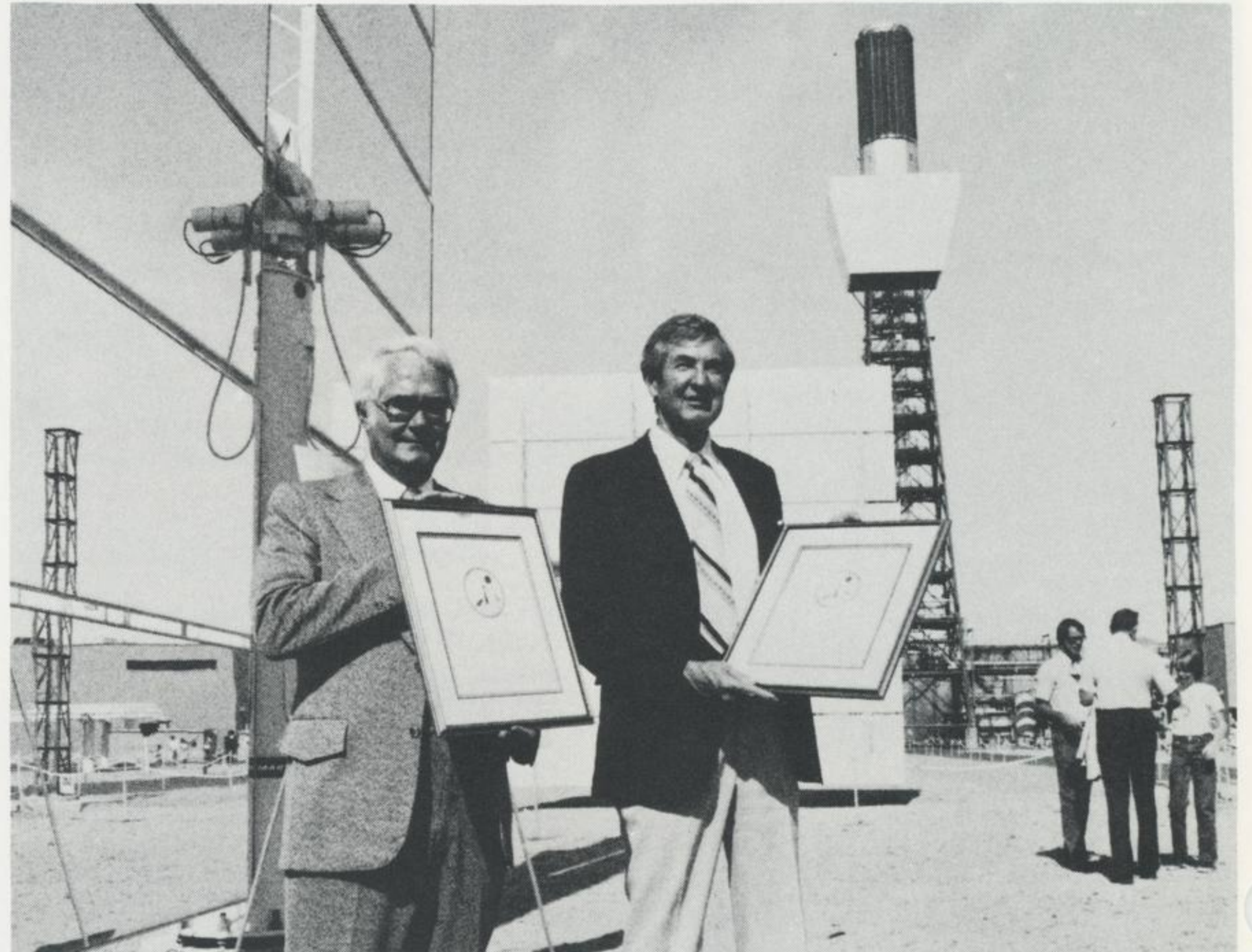
34D transtage is delivered

The first transtage for the newest member of the Titan family—the 34D—has been delivered.

It is capable of boosting 4000-pound satellites into geosynchronous orbit.

The transtage, being built in the factory at the main facility, is basically the same as that used so successfully on the workhorse Titan IIIC launch vehicle.

The 34D transtage version is the first built here in almost four years.



Ray M. Weeks, left, and Paul Brown were presented awards for their leadership of the Martin Marietta team and its outstanding performance in supplying and installing the collector field for the 10-megawatt Solar One power plant. Brown was program director for the supply of 1,818 heliostats and control system, and Weeks was site manager for hardware installation. The award was presented by Southern California Edison, owner of the facility.

SRB parachutes ready for STS-5; work begins on larger main chutes

The solid rocket booster parachute subsystem is ready to fly on STS-5 and to retrieve the SRBs soon after launch.

After detailed investigation of subsystem components and operations following the STS-4 mission, the subsystem for STS-5 has the same configuration as that flown on STS-4.

On the left SRB, the drogue chute and the three main parachutes are new; on the right SRB, the drogue parachute and one main parachute are new. Two main parachutes have been refurbished after previous use on STS-2.

On the STS-5, scheduled for liftoff November 11, retrieval of the parachutes will be different. Instead of the chutes separating from the SRB at water impact as on earlier flights, they will remain attached to be manually released by the retrieval crews.

In addition to providing on-going support to the Space Shuttle missions, the SRB group is intensely involved in preparation for a drop test program in which even larger main parachutes will be tested.

The new main parachutes are 21 feet greater in diameter than those flying on STS-5 (136 feet in diameter compared with 115 feet). They will be required to reduce the impact velocity of the SRB from around 60 miles per hour to approximately 50 miles per hour.

The 50,000 pound air drop test vehicle used to develop the present system is back at Denver. It is being refurbished and modified for the drop test program that is planned to start in February 1983.

Looking even farther ahead, the SRB group is involved in the preliminary analysis of a parachute subsystem for the new lightweight solid rocket boosters with composite material cases instead of steel cases. These boosters, about 40,000 pounds lighter than the present boosters, will have very different flight characteristics that will require significant redesign of the parachute subsystem.

New access cards are set for MARCALL use

Employees authorized to use the long-distance MARCALL telephone system are being issued new six-digit authorization codes.

The codes are to be used after November 20.

A revised MARCALL guide is also being issued because of other changes in the system.

The new codes and the revised guide are designed to assure maximum efficiency and proper use of the system.



Officers of Corkboard Connections, a new Junior Achievement company, receive the company's charter from Dominic Verrastro, center, manager of employee relations. At left is Susan Tittman, assistant accounting vice president, with Robert E. Lee, II, quality control manager on the right. The company will manufacture a wall hanger with bulletin board and prepared shopping list.

Unit values help employees track PSP investments

Each month, *Martin Marietta News* reports unit values for the Corporation's Performance Sharing Plan funds as of the last day of the preceding month.

An employee contributing \$100, for example, to Fund A, could divide 100 by 1.5852015156 to determine how many units he had

purchased—in this case 63.08 plus. Unit values are calculated to ten digits for accuracy.

Fund A (Indexed Equity) is a fund of common stocks designed to match, statistically, Standard and Poor's index of 500 stocks. Earnings are not guaranteed, with long-term growth the objective.

Fund B (Fixed Income) is invested under terms of a guaranteed investment contract between the corporate trustees, Bankers Trust Company, and an insurance company or companies. A return of at least eight percent is guaranteed through December 31, 1982. Fund B currently pays 12.35 percent interest.

Fund C, the newest of the Performance Sharing Plan funds, is totally in Martin Marietta common stock.

The Performance Sharing Plan is a systematic personal investment program that also provides a way to reward employees, through Corporate contributions to the fund, based on the Corporation's total performance during the year.

Unit values for the Plan reported as of September 30, 1982, were:

Fund A (Indexed Equity):	1.5852915156
Fund B (Fixed Income):	1.5743030153
Fund C (Martin Marietta Stock)	1.4506462013

For information on the Performance Sharing Plan, call Mrs. Christine Duncan, Ext. 4928.

Employees earn college degrees

Two employees have earned degrees from local colleges through the Study Under Company Auspices program.

James T. Hahl, electronics, earned a bachelor's degree in business administration from Regis College.

James L. Teslow, mechanics, received a master's degree in basic science from University of Colorado at Denver.

Awards found, held for owners

Two 25-year service awards have been found.

The valuable keepsakes are being held in employee relations, Eng. 125C.

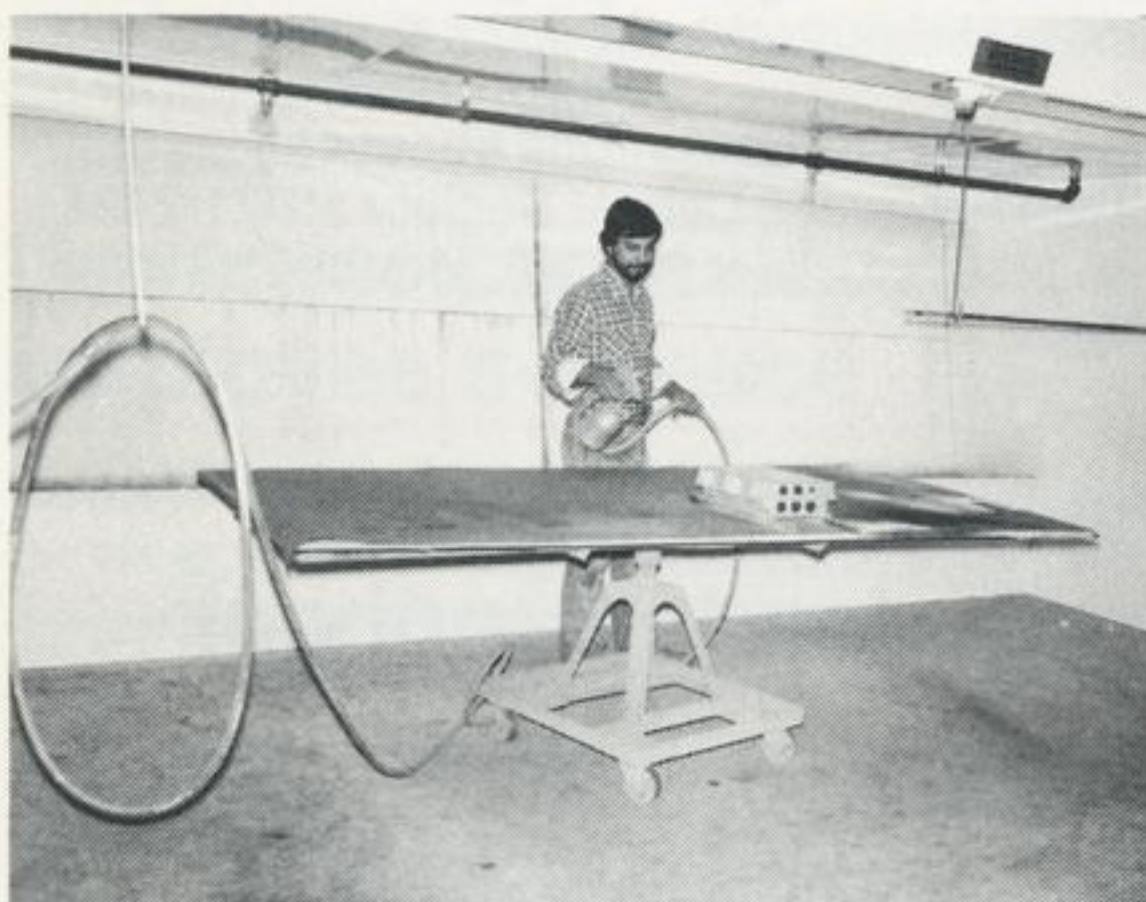
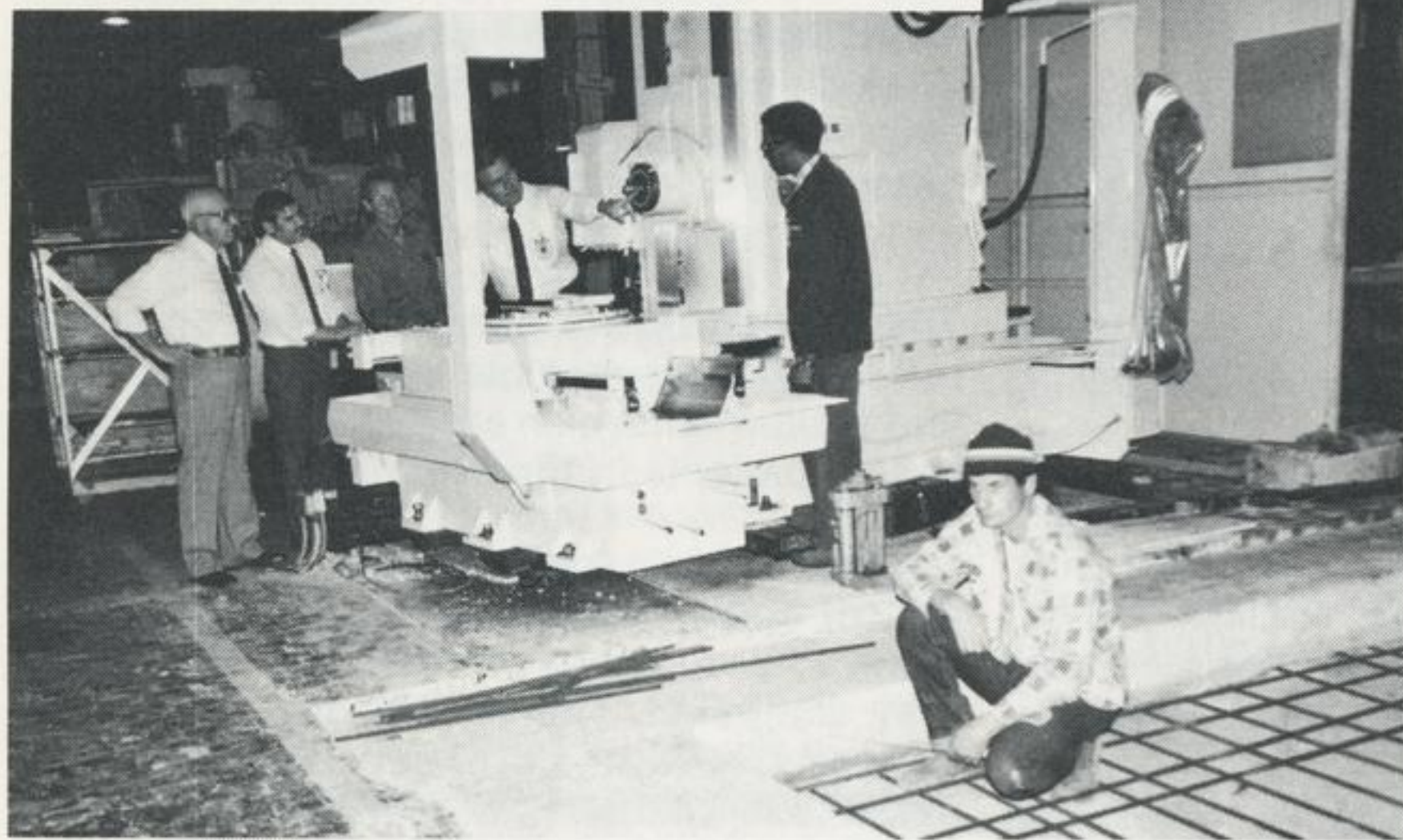
The owners of the awards may claim them with proper identification.

\$3.8 million expenditure upgrades factory, equipment



The computer numerically controlled chucker is used by Anthony Globelnik to turn cylindrical-type parts such as Titan pre-valves.

Foundation for a four-axis machining center is being prepared by James Smith, kneeling, in the foreground, as George Austerman, Valdino Ruybal, Lloyd Packer, Donald Shanahan, and Lee White inspect the new piece of equipment. With its computer numerically controlled system, it will be used to produce sophisticated detail parts.



Even paint booths are changing and this one has a make up air system that stabilizes the temperature so that small parts, like the one Glenn Lance is painting, have high quality finishes.

New machines capable of closer tolerance work have been installed in the detail machine shop in the mechanical manufacturing factory area.

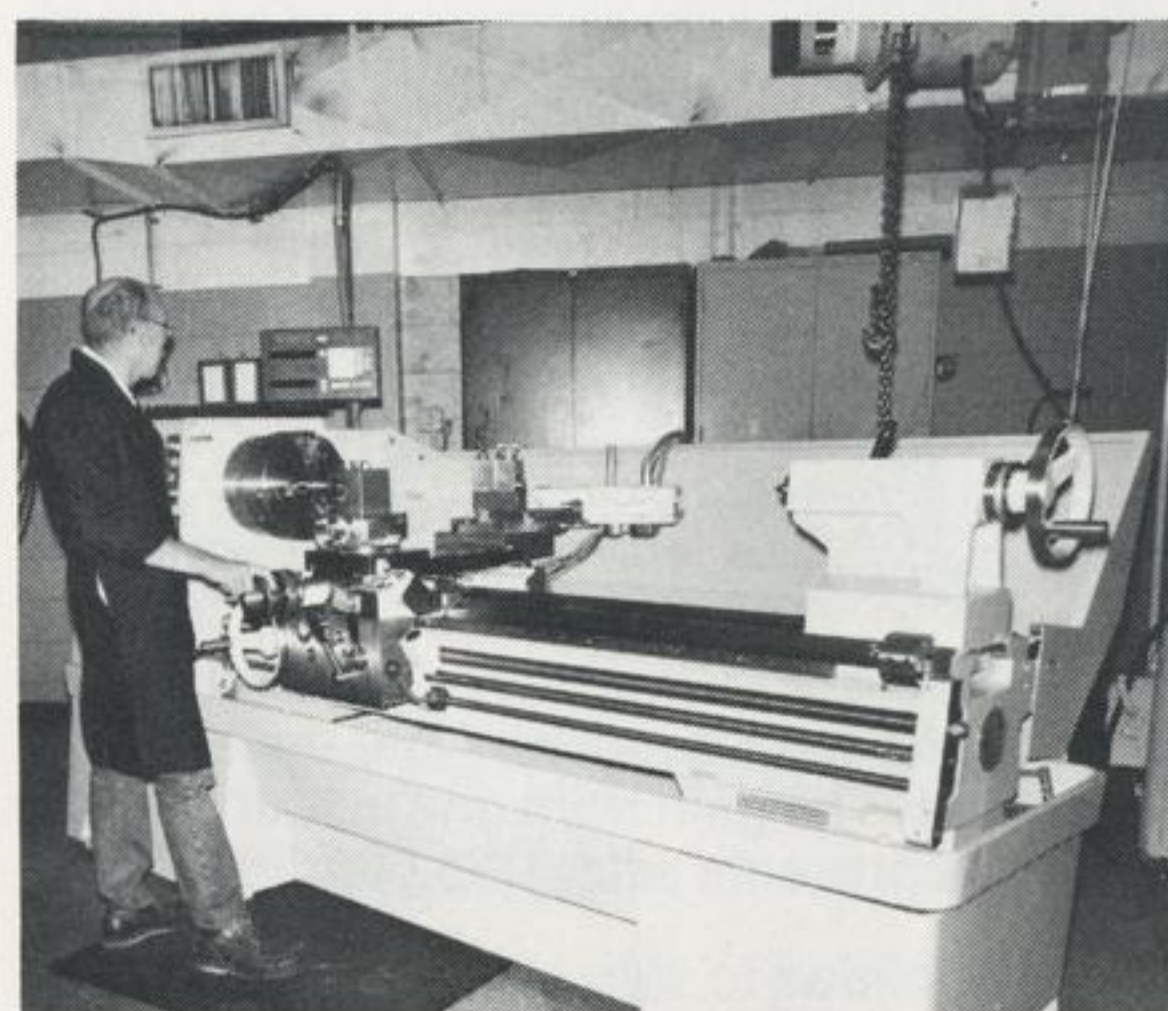
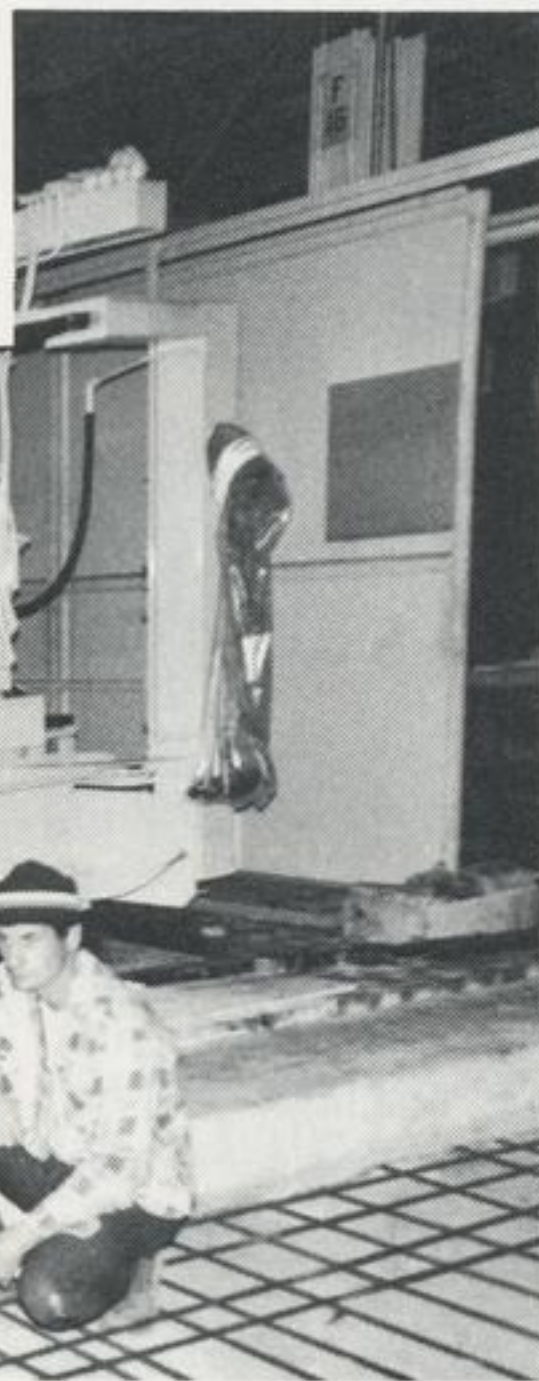
More new machinery has been ordered in an upgrade program that will continue through 1985.

The new machines, most of them computer controlled, are designed for the close tolerances of highly sophisticated spacecraft hardware and mechanisms being pursued as new business by the company.

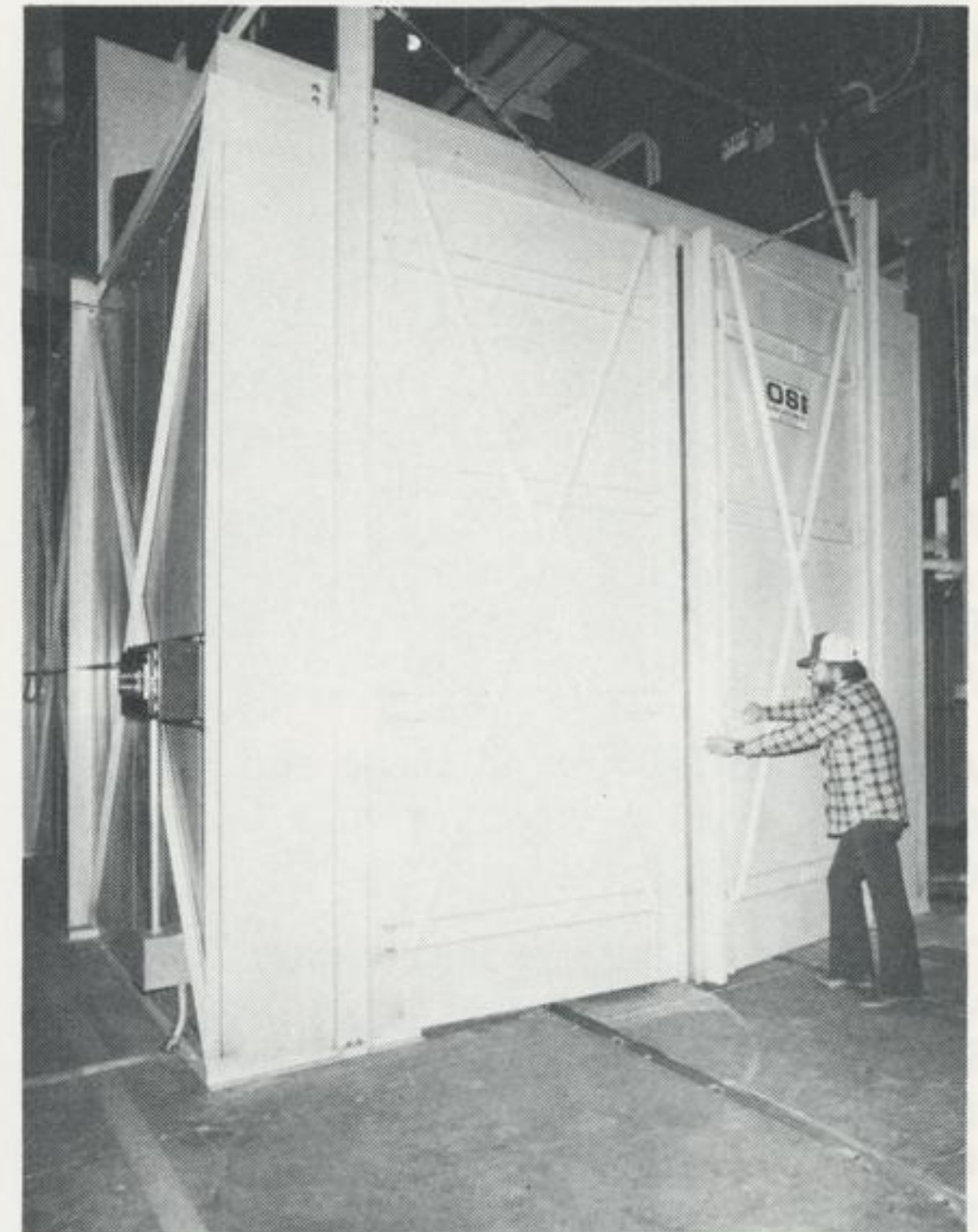
Installation of new temperature control equipment was completed in June. It is designed to keep factory temperature within two degrees of 72—the temperature needed to assure thermal stability of both machines and materials.

The program began in 1981 when \$1.8 million was spent. This year another \$2 million will go for the purchase of new equipment.

Eleven pieces of equipment were ordered in 1981, 12 in 1982. Five pieces have been installed and one is in the process. The remainder of these two orders will be delivered and installed by the first part of 1983. A supplier needs up to a year to build the ordered equipment.

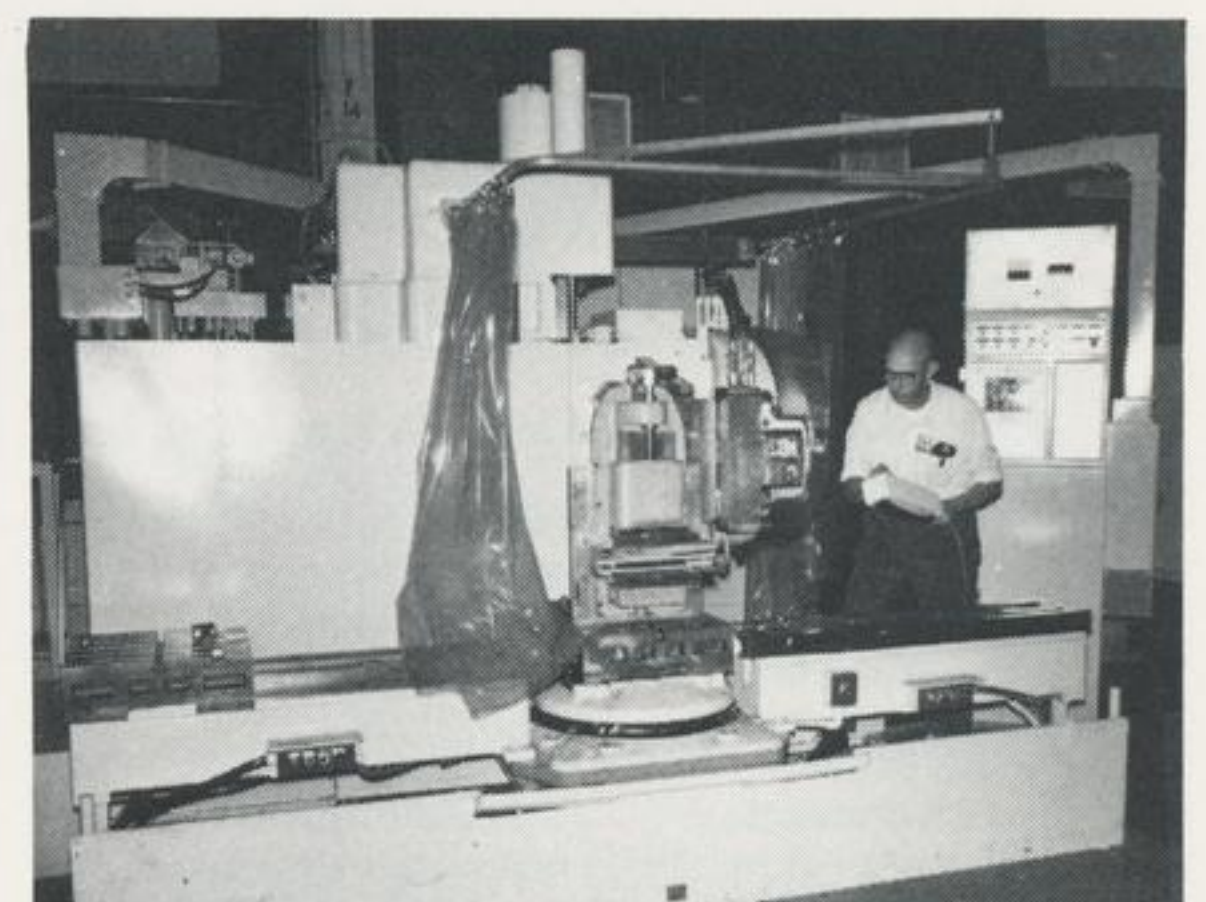
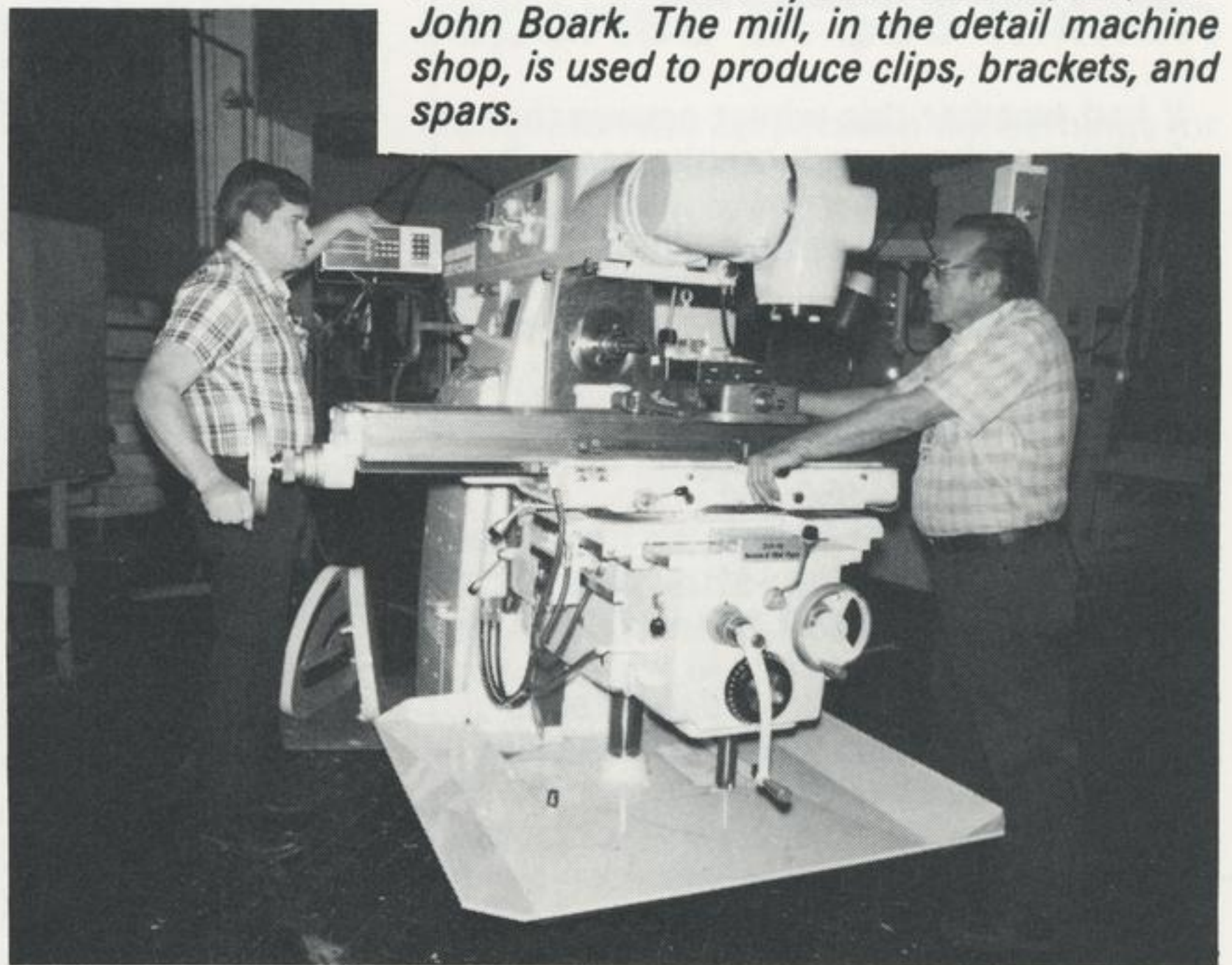


A conventional engine lathe, but with added digital readout, helps Vernon Dickensheets turn more precise shaft-type parts.



The new aluminum aging oven will stabilize and strengthen aluminum parts after its doors are closed by Richard Roche. Barrel panels for Titan launch vehicles are treated in the oven.

A 36-inch travel universal mill with digital readout is checked by James David, left, and John Boark. The mill, in the detail machine shop, is used to produce clips, brackets, and spars.



Retrofit of this three-axis machining center with a computer numerically controlled system permits greater precision for profiling detail parts. James Webb produces computer boxes and brackets on the equipment.

Canaveral open houses draw 4000 visitors

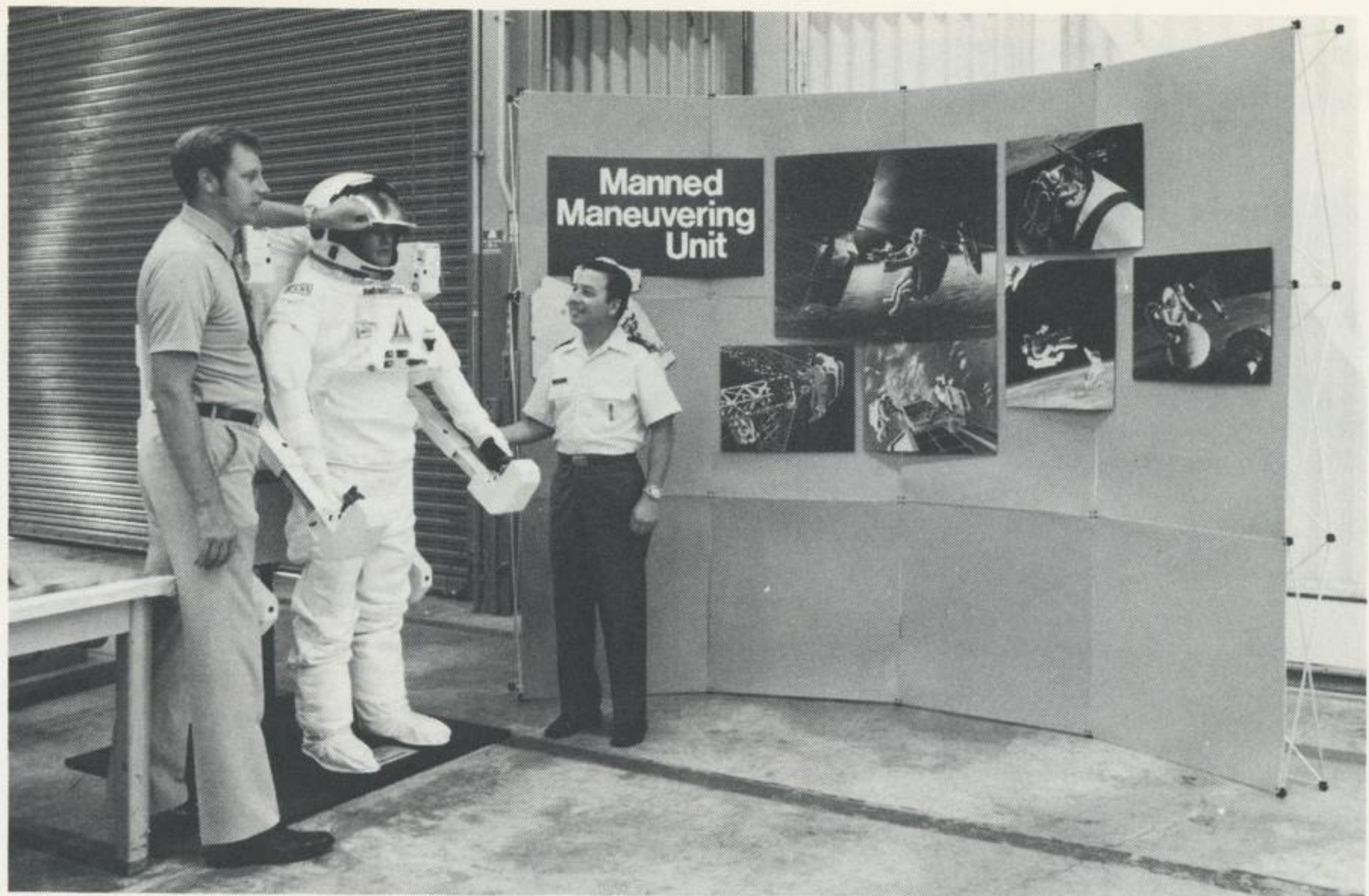
Opening of the Space Transportation System exhibit hall highlighted open house observances at Cape Canaveral and Canaveral operations.

Col. Marvin L. Jones, commander of the Eastern Space and Missile Center, unveiled the new exhibit hall, which included an exhibit of the manned maneuvering unit.

Nearly 1000 military and aerospace industry visitors attended an open house held in conjunction with the 35th anniversary of the U.S. Air Force.

A week later 3000 employees and families saw the MMU exhibit during a Canaveral operations open house.

The integrate, transfer, and launch facilities visit provided a walkthrough of the vertical integration building, including the launch control center, instrumentation room, and exhibits area. Bus tours were made to the solid motor assembly building and launch complex 40.



The manned maneuvering unit exhibit was featured recently at the Canaveral operations open house. Donald T. Beck, Canaveral operations customer and public relations, closes the visor on the model while Maj. Jose F. Velazquez, Air Force open house project director, looks on.

Emergency notices on radio stations

If bad weather this winter causes the facilities to be closed, employees will be notified by emergency announcements on six local radio stations.

Stations that will broadcast the notices are:

KLZ 560 AM
KOA 850 AM
KIMN 950 AM
KYGO 98 FM
KOAQ 103 FM
KAZY 106.7 FM

Employees are encouraged to listen to these stations when there is a threat of inclement weather.

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Call Ext. 5364 with information or suggestions for articles, or call one of the following coordinators.

Technical Operations: Kenneth E. Sedlmayr 6872
Solar Energy Systems: Leon E. Taylor 0660
Business Development: Leonard G. Taigman 4466
Space/Electronics Systems Division: J. H. Guilfoyle 6944
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November 5, 1982

Cancer Society is part of Mile High United Way

Starting this year, contributors to the Mile High United Way will be helping to fight cancer in the Denver area. The American Cancer Society here will receive funds from the campaign as a United Way partner.

And, the need is heavy here, as throughout the U.S., according to the ACS Colorado Division.

This year, about 430,000 Americans will die of cancer—1180 people a day, one every 73 seconds. That is one of every three deaths from all causes. In 1982, the ACS estimates that about 139,000 will probably die who might have been saved by earlier diagnosis and treatment.

There are now more than 30,000 persons living in Colorado who are being treated for cancer. Last year, more than 10,000 cancer patients in Colorado asked for and received assistance from the ACS Colorado Division in a broad range of services.

The service programs administered by the Society's county units are designed to assist those who cannot meet the often unexpected and extremely heavy expenses involved when cancer strikes.

In addition to service, progress is being made in attacking the disease. There are more than three million Americans alive today who have a history of cancer, two million of them with a diagnosis five or more years ago.

In the 1940s one in four cancer patients had hope of long-term survival. Now the ratio is one in three. The gain from one in four to one in three represents about 70,000 lives this year.

About 278,000 Americans, one-third of all people who get cancer this year, will be alive at least five years after treatment.

The American Cancer Society is pursuing this progress, and is the only organization with a sustained interest and capacity for a broad attack on cancer in the U.S. It provides the major funding for a balanced program of research, education, patient service, and rehabilitation.

In addition to helping current cancer patients in a variety of ways, the Division's public education programs are spreading an awareness of the disease, and helping to encourage early diagnosis and treatment.

The Colorado Division and its units throughout the state also maintain sickroom supplies and equipment which are available on loan to cancer patients in their homes.

To help fund its operations in Colorado, the Cancer Society conducts a fund-raising campaign that does not conflict with the United Way campaign. The 1980-81 income to the Cancer Crusade Colorado Division was \$2,086,854. Of this, \$1,665,748 was a result of the fund-raising campaign, and \$421,106 from legacies and bequests.

Employees with questions about cancer may call the American Cancer Society at 321-2464, from 8:00 a.m. to 5:00 p.m., Monday through Friday.

Library to distribute supervisor's handbook

New Supervisor's Handbooks will be distributed from the library in the engineering building beginning November 8.

Approximately 400 books, or one quarter of those printed, remain to be distributed.

Distribution previously was from Eng. 225C.

Space Day '82 thrills crowds

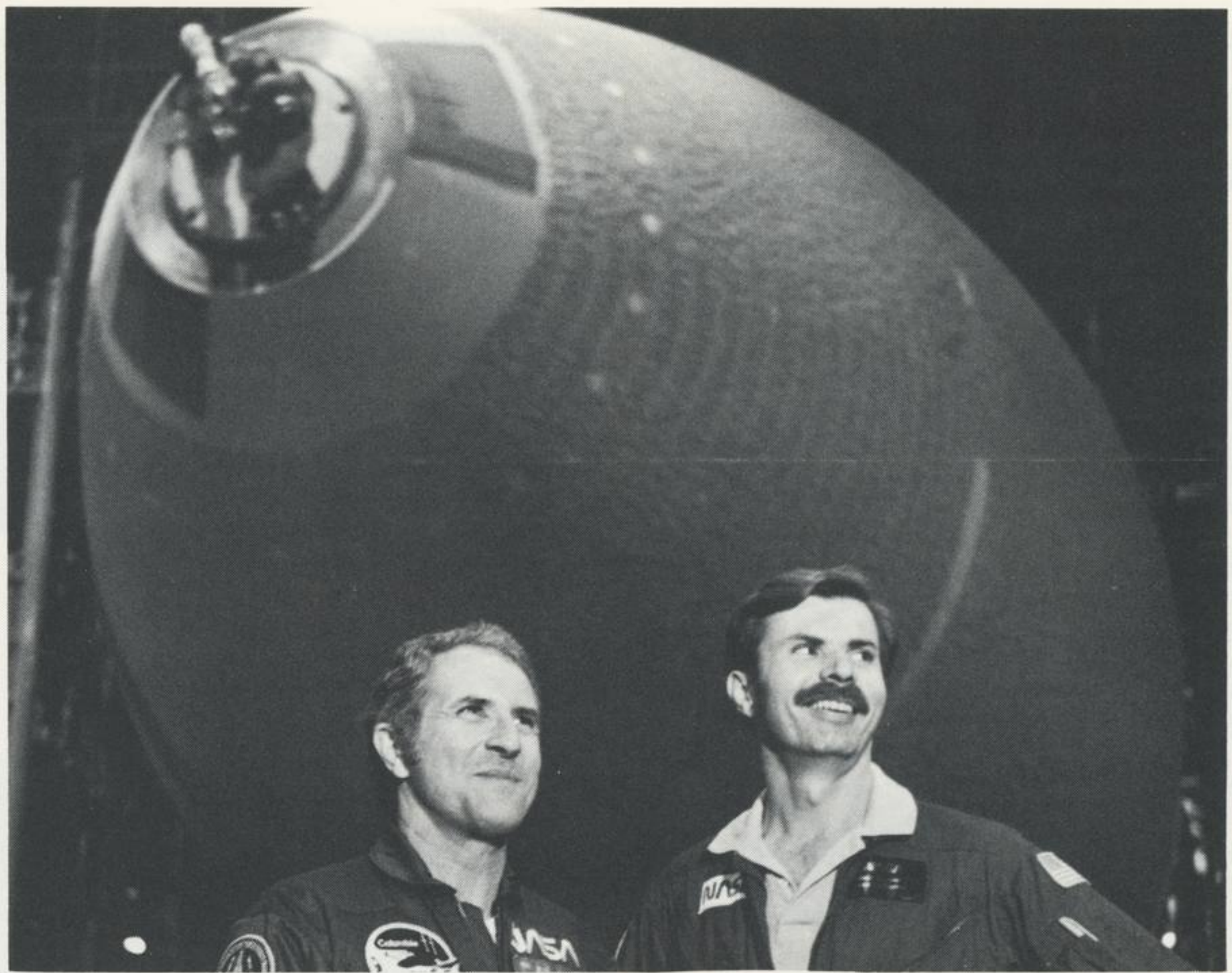
A crowd estimated at 100,000 filled the Michoud division facilities to overflowing October 16 to celebrate Space Day '82 in New Orleans.

More than 100 bus loads of area school children and thousands of others arrived under clear blue skies to discover the past and future of U.S. space efforts.

Long lines formed as Louisianians and Mississippians got their first close-up look at the external tank and dozens of space-related displays. Among the most popular exhibits were the Viking lander mock-up set on a realistic-looking Mars surface, and "Jupiter and Its Moons," a photo exhibit on loan from the Smithsonian's Air and Space Museum in Washington, D.C.

Shuttle astronauts Dick Truly and Dale Gardner, on hand for the occasion, summed up their own thoughts with, "Super good show!"

From the expressions on the faces of the thousands slowly working their way through the self-guided tour, it seems the visitors agreed.



STS-8 astronauts Richard Truly and Dale A. Gardner inspect their tank during the Michoud division open house. The eighth Shuttle mission is scheduled for July 1983.

Operation Santa Claus needs clean waste paper

"Help us help the needy," says Walter Martynec, scrap paper drive chairman for Operation Santa Claus.

As in years past, more than 100 needy families will benefit from proceeds earned through the continuing paper drive. Goodwill certificates, large baskets of groceries, and toys for children will be distributed at Christmastime.

The best paper for Operation Santa Claus is computer tabulator cards, printout paper, and plain bond paper. All metal file fasteners should be removed.

"Clean waste paper is what we want," Martynec said. "If the recycling company finds contamination in the bin, the whole lot is rejected."

Material which should not be placed in collection bins includes telephone directories, classified or confidential material, colored covers, glossy magazines, newspapers, blueprints, or ordinary trash.

Governor commends employee's service

Robert H. Snodgrass, director of facilities and services, has been commended by Governor Richard D. Lamm for work done as a member of the Citizens' Light Rail Study Committee.

"I commend you and your committee colleagues for achieving in a timely fashion the objectives which former Governor John Love and I set forth last spring," said Lamm in a letter to Snodgrass. "I believe the published findings will provide a sound and objective information base. . . ."

Recreation

Scuba—An equipment maintenance seminar will be held November 17 by the Fathom Dive Club. Ice diving will be the topic of the December 15 meeting. Both sessions will begin at 7:00 p.m. in DSC I 200K. For information, call Ronald Blake, Ext. 3619, or Gerald Voegtly, Ext. 4988.

Bridge—The duplicate bridge club meets at 6:30 p.m., November 9, in the DSC I lunch area for an American Contract Bridge League membership game.

Basketball—Discount tickets for the November 24 Denver Nuggets-San Antonio Spurs game may be ordered in recreation through November 17. Cost is \$7.70. Season tickets are available to employees at a 20 percent discount, as are \$2.00 tickets for individual home games.

Skiing—Copper Club memberships for Copper Mountain skiing are available at \$5.00, a 50 percent savings. Membership provides a \$3.00 discount on daily lift tickets all winter, except Christmas; one free day of skiing; and a benefits book of additional discounts.

Travel—Enjoy a week's vacation at Jack Tar Village, Puerto Plata, Dominican Republic, January 23-29 for \$1140 per person double occupancy. The recreation department, Par Promotions, and Ports of Call make this special price possible. Deposit required by November 15. Call recreation, Ext. 6750.

Director elected to AIA committee

John H. Boyd Jr., director of public relations, has been elected to the seven-member executive committee of the Aerospace Industries Association public affairs council.

Third quarter earnings reported at \$38 million

Martin Marietta Corporation net earnings for the third quarter of 1982 were \$38,011,000, or \$1.41 per share, compared with \$60,580,000, or \$1.62 per share for the comparable quarter a year ago.

Sales for the third quarter increased to \$891,950,000 from \$835,949,000 in the prior year's third quarter.

Nine-month earnings totaled \$94,026,000, or \$2.71 per share, compared with \$161,425,000, or \$4.31 per share, for the first three quarters of 1981.

All of Martin Marietta's operating companies, with the exception of Aluminum, were profitable for the third quarter. The aluminum company is not expected to be profitable for the remainder of the year.

Records center cleanup saves supplies, paper

The September records elimination program salvaged more than \$26,000 in office supplies and added more than 20 tons of waste paper to the Operation Santa Claus collection.

Among the reusable items saved in the records retention center cleanup were 36,960 manila folders, 5,500 yellow tab folders, 3,500 nylon post binders, 600 file pockets, and hundreds of ring binders and metal fasteners.

The paper saved is from outdated files two to five years old.