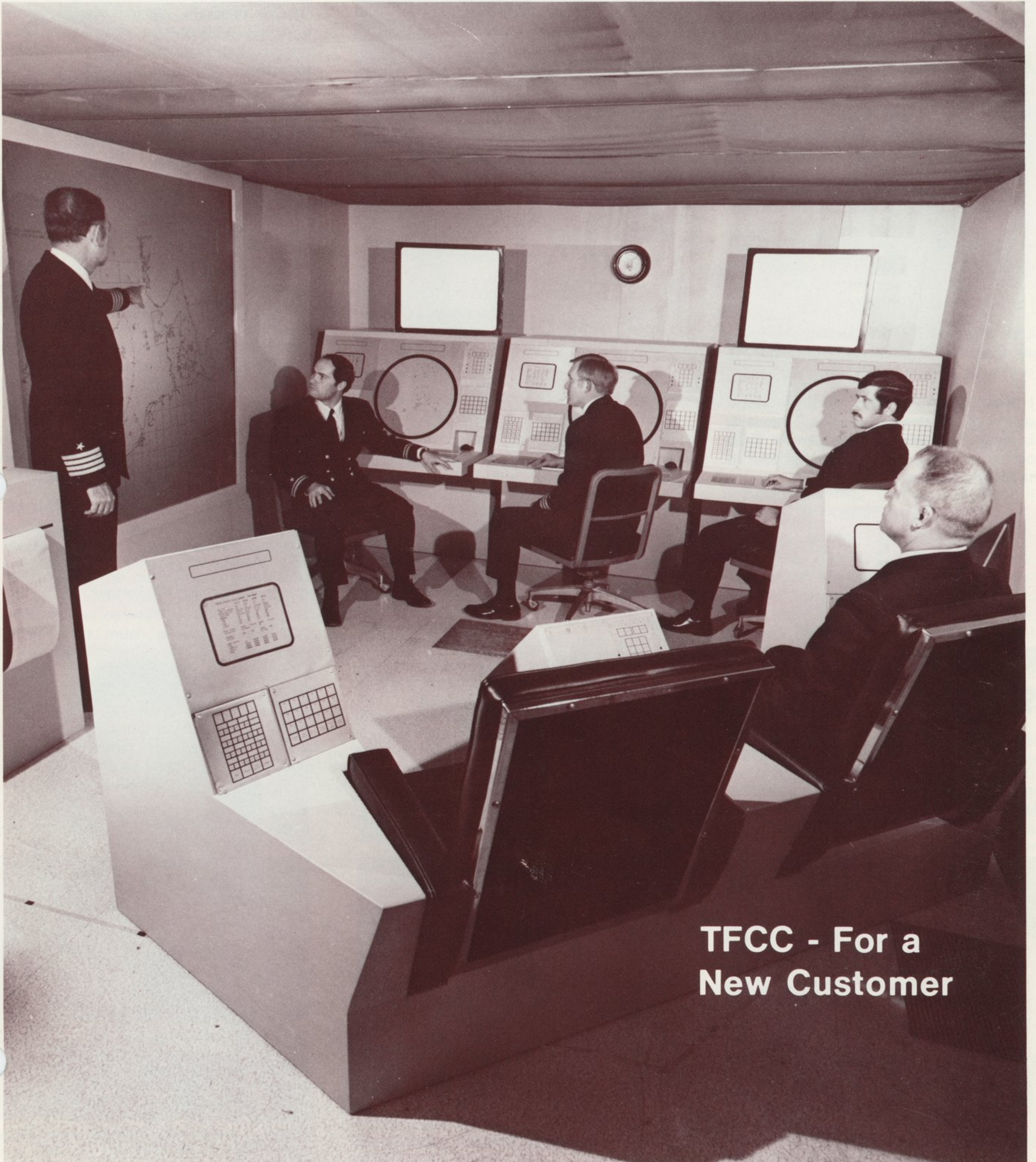


MARTIN MARIETTA

news

DENVER DIVISION

NUMBER 3/1976



TFCC - For a
New Customer

TFCC contract brings division new customer

A contract to build a developmental model Tactical Flag Command Center (TFCC) and a TFCC System Test Facility has brought the division a new customer—the Navy.

Selection of the division and team member Sperry Univac for the TFCC was made by the Naval Electronic Systems Command Headquarters, Washington, D.C.

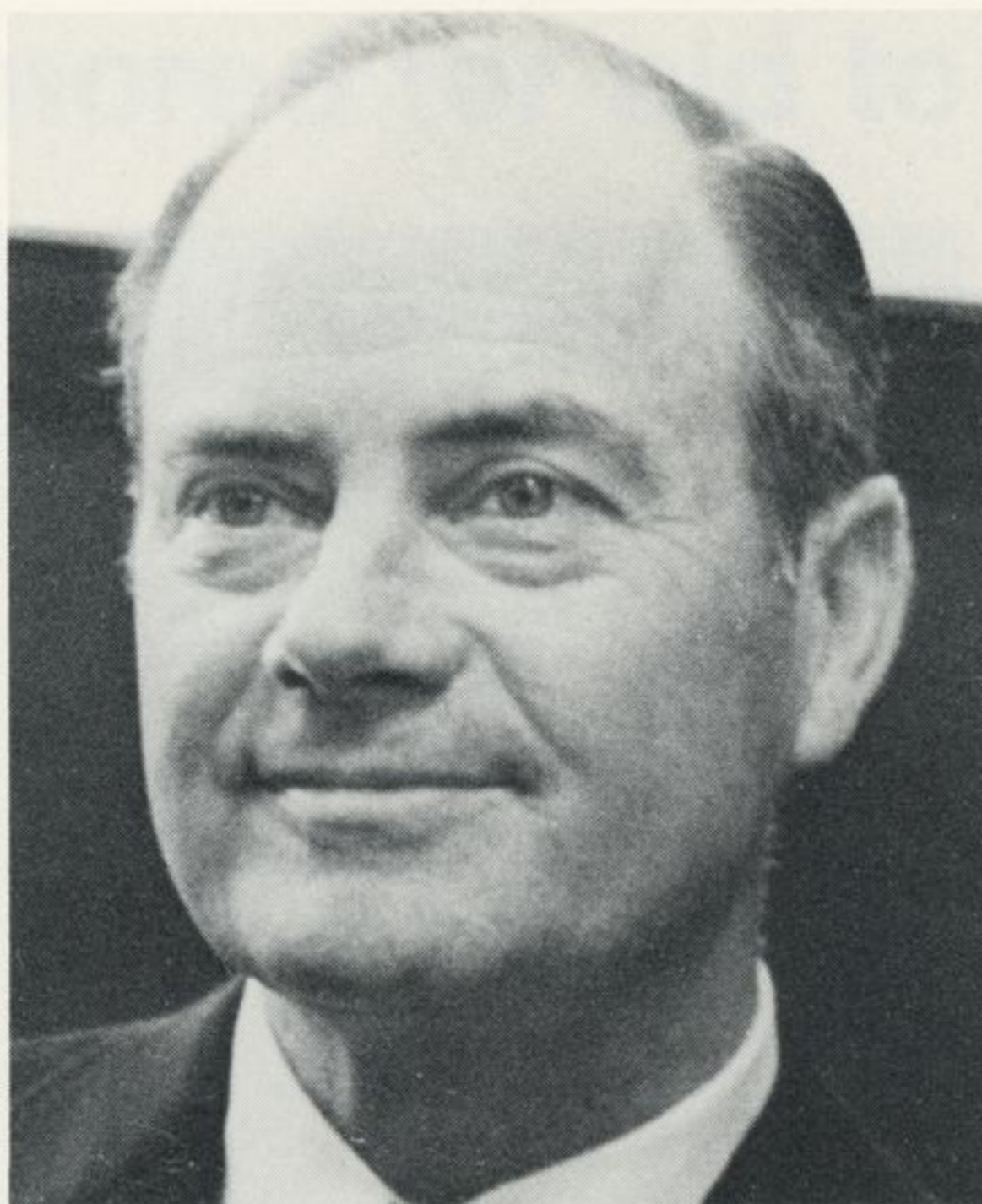
James B. Sanders, the division's TFCC program director, said the 32-month contract is in two phases.

"During the first phase," Sanders said, "we will arrive at a set of performance and design specifications for the TFCC."

Following Navy evaluation of the specifications, the division will implement the specifications and build a TFCC systems test facility. The tests will demonstrate the operation of the TFCC in a shipboard environment.

Sanders joined Martin Marietta 10 years ago following retirement from the Air Force after 26 years' service.

"I became familiar with Martin Marietta quality much earlier, however," he said. "I flew The Martin Company's B-26 bomber in a World War II combat tour in the Mediterranean Theater."



James B. Sanders TFCC program director

Sanders received his flight training in the Army Air Corps aviation cadet program. He retired from the Air Force in 1966 as a colonel.

While in the Air Force, Sanders was codesigner of a special missiles and astronautics center. Its function was one of command and control.

His assignment for 15 years prior to retirement was in technical intelligence.

Sanders was awarded his BS degree in military science from the University of Maryland and holds a master's degree in international affairs from George Washington University. He is also a graduate of the Army War College.

About 40 people will be assigned to the TFCC program during the 32-month contract with special talents in systems engineering, systems analysis, software systems design, quality assurance, logistics, shipboard installations, and administration.

Representatives from Sperry Univac will also be in residence.

At times personnel from the Navy's TFCC software development monitor contractor will also be onsite.

Other Martin Marietta members of the program team include Fred Hudoff, deputy director and systems engineer; Dr. B. Clovis Landry, systems architect; A. B. Huff, test and evaluation; William P. Stocking, integrated logistics support; Robert W. Gilliom, business and data management.

"We have some outstanding people on the program," Sanders said. "Our new customer will be served well by them."

On the cover:

An aircraft carrier mockup of the Tactical Flag Command Center (TFCC) was prepared by Martin Marietta during proposal effort to obtain the TFCC contract. Employees posing as staff members of the center are all legitimately

wearing Navy uniforms. From left to right are Capt. Ralph Tucker (retired); Lt. (jg.) B. Clovis Landry (recently off active duty); Lt. Comdr. Donald Jones (reserve); Lt. (jg.) Ronald Blue (reserve); Capt. A. B. Huff (reserve).

Remaining 1976 Holidays

Holidays remaining for Denver division employees in 1976 include:

April 16, Good Friday; May 31, Monday, Memorial Day; June 2, Friday, Bicentennial Day; July 5, Monday, Independence Day; Sept. 6, Monday, Labor Day; Nov. 25, Thursday, Thanksgiving Day; Nov. 26, Friday; Dec. 27 through Dec. 31, Christmas holidays.

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Denver Division
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March 1976

Historic flags to be displayed

Ten historic American flags will be displayed in the engineering building lobby for a week beginning March 22.

The exhibit is a project of the Greater Columbine Centennial-Bicentennial Commission.

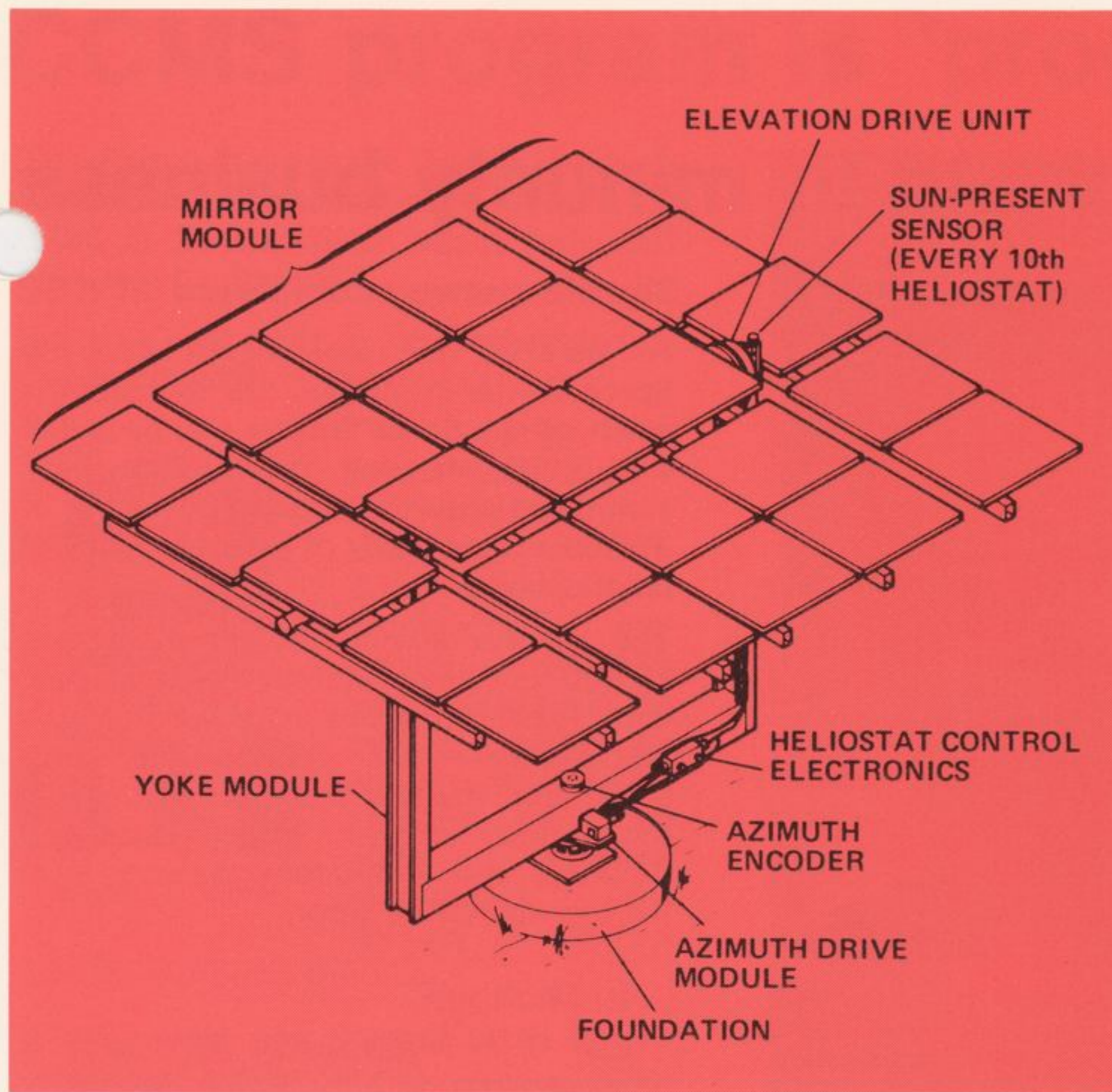
Flags in the exhibit include Grand Union, Resolution, Bunker Hill, Green Mountain, Sons of Liberty, Bennington, Third Maryland Regiment, Star Spangled Banner, Fifty Star, and Colorado.

The flags were handcrafted by the Rocky Mountain 4H'ers 4-H Club under the direction of Mrs. Judy Yeo. Special display stands for the flags were constructed by Michael Hirst, a student at Columbine high school.

Plaques describing the origin and history of each flag are an integral part of each stand.



Robert G. Morra, director of the division's manufacturing test and structures engineering, was the featured speaker at the Engineer's Week program of the Pikes Peak Chapter of Professional Engineers of Colorado. Speaking in Colorado Springs, Morra discussed the Viking Project as a case study fitting the week's theme, "American Ingenuity—200 Years of Engineering."



Schematic of one of 80 heliostats to be built by division



M. Marx Hintze is program manager

Division gets heliostat array, control contract

The division has been awarded a multi-million dollar contract to design and build a heliostat array and control system for the Sandia test center in Albuquerque, N.M.

Sandia Corporation is operating the solar energy test center for the federal government's Energy Research and Development Administration (ERDA).

Heliostats are sun-following mirrors that bounce the sun's light to a receiver mounted atop a tower. The concentrated energy is absorbed by a circulating fluid as heat. The heat is held in storage or could be used to power a steam turbine generator to produce electrical energy. (Energy storage is needed to bridge nights and cloudy days.)

The project is part of a national program directed by ERDA to generate electricity from solar thermal energy in central power plants.

During the 12-month contract, the division will build 80 heliostats. Each will have 25 four-foot by four-foot mirrors.

In addition, the contract calls for designing and building a control system that will keep the heliostats pointed toward the sun and its energy focused on the energy receiver.

M. Marx Hintze, who was proposal manager for the division's bid on the contract, is program manager for the project.

Others assigned to the program are Loy E. Rovenstein, safety and quality; Robert A. Englund, systems engineer; James A. Kaehler, electronics design; Sidney Broadbent, mechanisms; Harold Hunter, structures; Alden E. Clawson, materiel/contracts; Lloyd P. Oldham, alignment and focusing; Thomas W. Hawkins, software development; and Paul R. Brown, manufacturing and onsite installation.

Floyd A. Blake will provide overall technical approval.

Long distance telephone calls are long on costs

Fifty people, eight hours a day, five days a week for a full year—that's what the long distance call time and costs added up to in the division in 1975.

Not counting in-state and overseas calls, division employees talked three million minutes on long distance calls that cost the division \$820,000.

Three simple rules, if followed, will help reduce the time and cost of calls this year.

1. Plan what you will say, what questions you will ask *before* making a call.
2. When the operator is placing a call for you, stay near the phone. A delay in your answer is expensive.
3. Eliminate the chit chat, stick to business in your calls.

Employee honored for volunteer work

Fitzroy (Buck) Newsum, manager of civic liaison in the division's public relations department, has been honored for his work with Action's Technical Assistants (ATA) program.

ATA is a program of Denver's Commission on Community Relations, matching talents from professions and trades and linking them with nonprofit social agencies and small businesses.

Newsum's ATA assignments show the variety of people assisted by the program:

Case 1: A young man manufacturing decorative mirrors needed assistance in expanding his marketing area. Newsum helped him evaluate his productive capabilities, showed him how to approach new marketing areas, and convinced him of the need to increase his self-confidence. "His was a selling job that may seem routine to most businessmen, but one that is quite puzzling to a neophyte," Newsum said.

Case 2: A veteran's organization assigned its public relations function to a young woman one month before a convention was scheduled. Newsum provided her a list of news contacts and counseled her on the proper way to gain their support. He helped her establish objectives, set deadlines, and establish a method for analyzing her progress. He also assisted in preparing news releases.

Case 3: An individual, supervising a youth boxing program, was using his own funds to finance the program and was reticent to seek outside help for the worthwhile effort. With Newsum's assistance, the man was able to broaden support for his program and eventually ran a successful junior olympics program.



Mrs. Annette Finesilver, executive director of ACTION, presents volunteer award to Fitzroy (Buck) Newsum. Newsum was honored for his work with ACTION's Technical Assistants program.

Last year's crisis is not forgotten at division

Arab oil is flowing again, lines at gasoline stations have disappeared, newspaper front pages and television newcasts have gone on to other crises. The energy problems have been dismissed by many people as last year's news.

"It seems we have short memories when it comes to energy problems," R. H. Snodgrass of the division's facilities and maintenance services says. "But forgetting those problems and last year's headlines can lead to disaster."

Snodgrass, who is leading the division's energy conservation program, quickly added that the Denver division has not forgotten those problems or those headlines.

For the division, energy conservation has a two-sided impact. On one side, the program contributes to national efforts to cut energy use and reduce our dependence on outside sources. On the other side, the program contributes to division efforts to reduce costs—or at least hold them in line—during the critical times we are now in.

In 1975, energy savings in the division were about 30 percent over past years. But the costs of energy went up about the same amount, thus the savings in power just about kept dollar costs equal to those of 1974.

This year has started off well in the energy conservation program. January power figures were down about 32 percent from a year ago. But, again, costs are still on the rise and dollar savings again may be minimal.

Energy conservation goals for 1976 are such, however, that there are anticipated dollar savings even though costs are expected to continue to rise.

Those goals include:

Electricity: 69 billion kilowatt hours, down 15 billion from the 84 billion used in 1975.

Fuel (natural gas, propane, and oil): 500 billion BTUs compared with 535 billion used in 1975.

Gasoline: 20 percent reduction

Dollar savings have not been specifically stated because of the unknown cost figures.

To save all this energy will require all the same efforts as last year—and more. Temperature levels in buildings will be

Energy problems more than job for Snodgrass

Solving energy problems is more than an 8-to-5 job for R. H. Snodgrass who leads the division's energy conservation program.

"Neither I nor the division can treat energy problems as if they existed only for us," Snodgrass said. "We must be concerned with what is going on in our local and our national community."

To meet these community responsibilities for himself and the Denver division, Snodgrass is active with three groups whose efforts are directed toward energy problems. He is a member of:

The legislative action committee on energy, a part of the energy conservation work team appointed by Colorado Governor Richard Lamm;

The resource mobilization council of the Colorado department of education;

The conservation contingency planning committee of the Federal Energy Administration.

"Sure, the outside work takes extra time," Snodgrass said, "but in a way I'm

lower in winter and higher in summer, but not so low or so high that they will be uncomfortable.

"Employees may have to change their mode of dressing, but we don't expect any real problems with comfort," Snodgrass said.

Lighting levels have been reduced and may be reduced further. Lights will be on when needed and off when they are not.

Heating, air conditioning, and lighting will soon be controlled automatically by a new building automation system that will control more quickly and more efficiently than the manual system generally in use now.

"Stated simply, our objective is to eliminate all unnecessary energy use," Snodgrass said. "Employees can help by telling us when power, heat, cooling, or lights are not needed.

"And we can use all the suggestions we can get for saving energy," Snodgrass added. "I know employees sometimes believe their suggestions, their ideas are tossed aside without much consideration. For what it's worth, I can give them my personal assurance that energy saving suggestions will be studied and every one that is practical will be implemented."



doing it for my own good. If we don't solve our critical energy problems I could be out of a job—along with everybody else because industry couldn't operate—and I do like a warm home and hot meals."

United Way sends thanks to employees

"Employees from Martin Marietta, with their generous contributions, made our success much easier to achieve," Jack Prater, campaign director for Mile High United Way, said in a recent letter to Richard E. Weber, division director of professional and industrial relations and head of the division's United Way campaign.

Employees pledged more than \$145,000 to United Way through payroll deductions. With a corporate gift of \$24,000, nearly \$170,000 will be available to assist more than 70 people-helping organizations in the metropolitan area.

The area-wide 1975 United Way campaign raised \$8,611,659—99 percent of the goal.

"Thousands of people in Adams, Arapahoe, Boulder, Denver, and Jefferson counties are smiling because they will receive the help they need," Prater said. "They are smiling because Martin Marietta employees gave the United Way. Go ahead. Pat yourself on the back. You deserve it."

CCMS program is 'progressing favorably'

The first unit from the Denver division's commercial-type production facility at 786 S. Federal Blvd. hasn't rolled off the assembly line—yet.

But that's all right, it isn't scheduled to be completed for a few months.



Eugene C. Wood

"We are progressing favorably," Eugene C. Wood, program director for checkout, control and monitoring subsystem (CCMS), said. "We have the people and the equipment for meeting our first major program milestone, the delivery of the first development unit this year."

CCMS is for the Space Shuttle launch processing system (LPS). It is a major part of the electronic equipment that will perform checkout, propellant loading, launch control, systems monitoring, and data processing for the Space Shuttle vehicle prior to and during its launch.

The equipment being produced is a significant departure from the unique requirements of flight hardware the division has become accustomed to producing. The CCMS contract, awarded by NASA in August 1975, has put the division in the commercial-type electronics field.

"To satisfy cost and reliability requirements of the contract," Wood said, "we are using as much proven commercial, off-the-shelf hardware as will meet program requirements. We are designing and building the unique electronics equipment ourselves. This unique hardware uses some of the most current digital electronics technology, such as microprocessors and ultrahigh-speed logic and memory devices.

Use of refurbished Saturn launch vehicle consoles is an example of the innovative



Console from Saturn program, at left, was modified by Jim Lantzy (with tablet and pen)

to form console for CCMS. Ron Carlson, far right, electronics designer, discusses console with Lantzy.

approach to program cost savings. Two consoles have been joined, turned upside down, legs and hoods added to form an efficient two-bay console for CCMS.

Another difference for the CCMS program is that the leased facility is a separate cost center with its own design, procurement, fabrication, test, quality, and business management functions all under one roof.

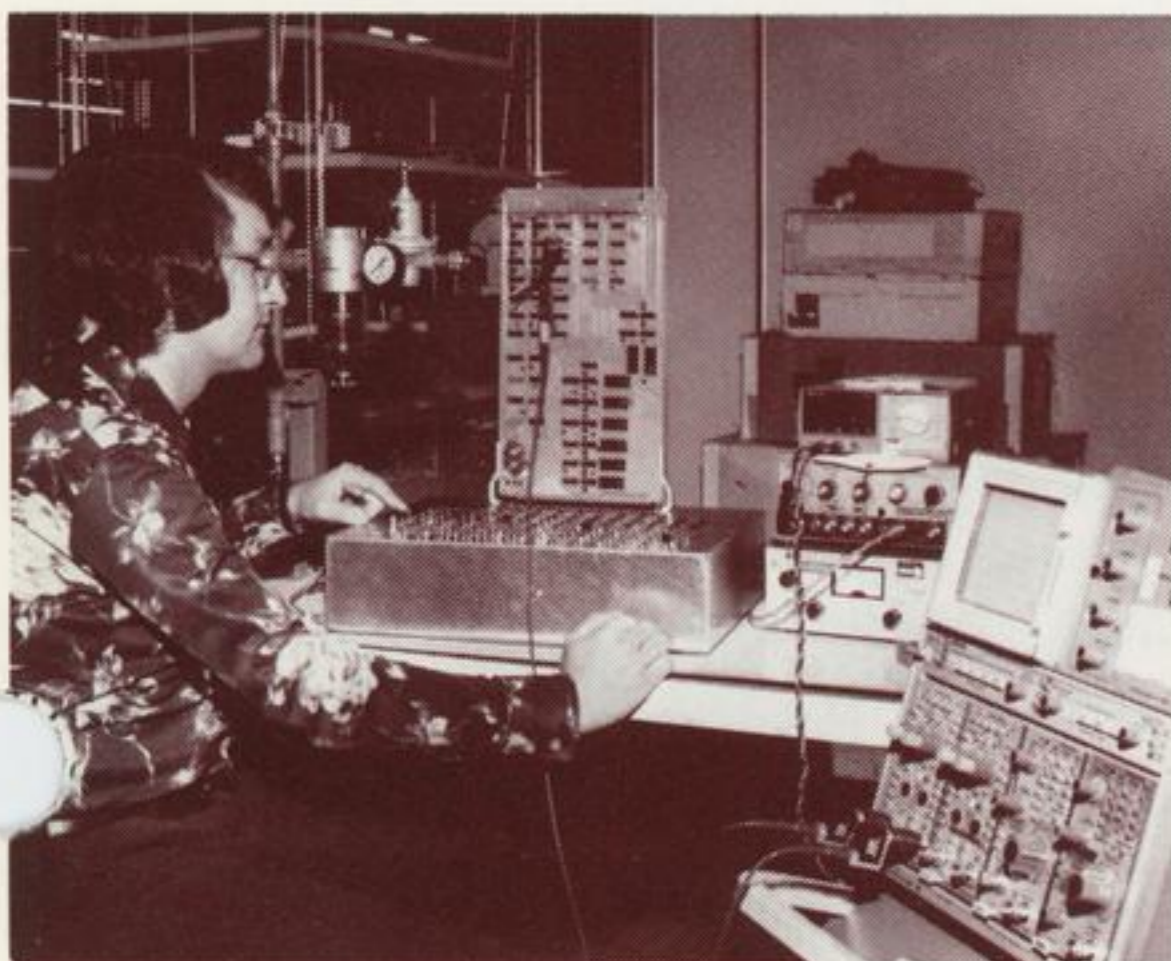
Currently 160 employees work at the facility with the peak expected to be about 180 in midsummer when production increases.

The people and their talents have been drawn from other successful division

programs—Skylab, Viking, and Martron Systems, for example.

Included on the Wood's management team are Curtis D. Brudos, deputy director; William W. Brett, chief engineer; Edmund F. Haeger, business manager; Pat E. Pecht, manufacturing manager; Richard Brown, quality manager; Jack Kempton, manager of installation and test; J. R. Grace, procurement; William J. Wise, software/computer related design; and Henry J. Summers, non-computer design.

Space Shuttle, for which the CCMS is a key element, will be operational in 1980. It is a reusable, low-cost, space transportation system that will replace virtually all current U.S. launch vehicles.



Mike Miller is running a test on a printed circuit board that will become part of the first CCMS unit.



L. M. Collier completes a terminal on analyzer cable.



Morse Galitello assembles a wire wrap board, one of the components of the CCMS.

From Michoud

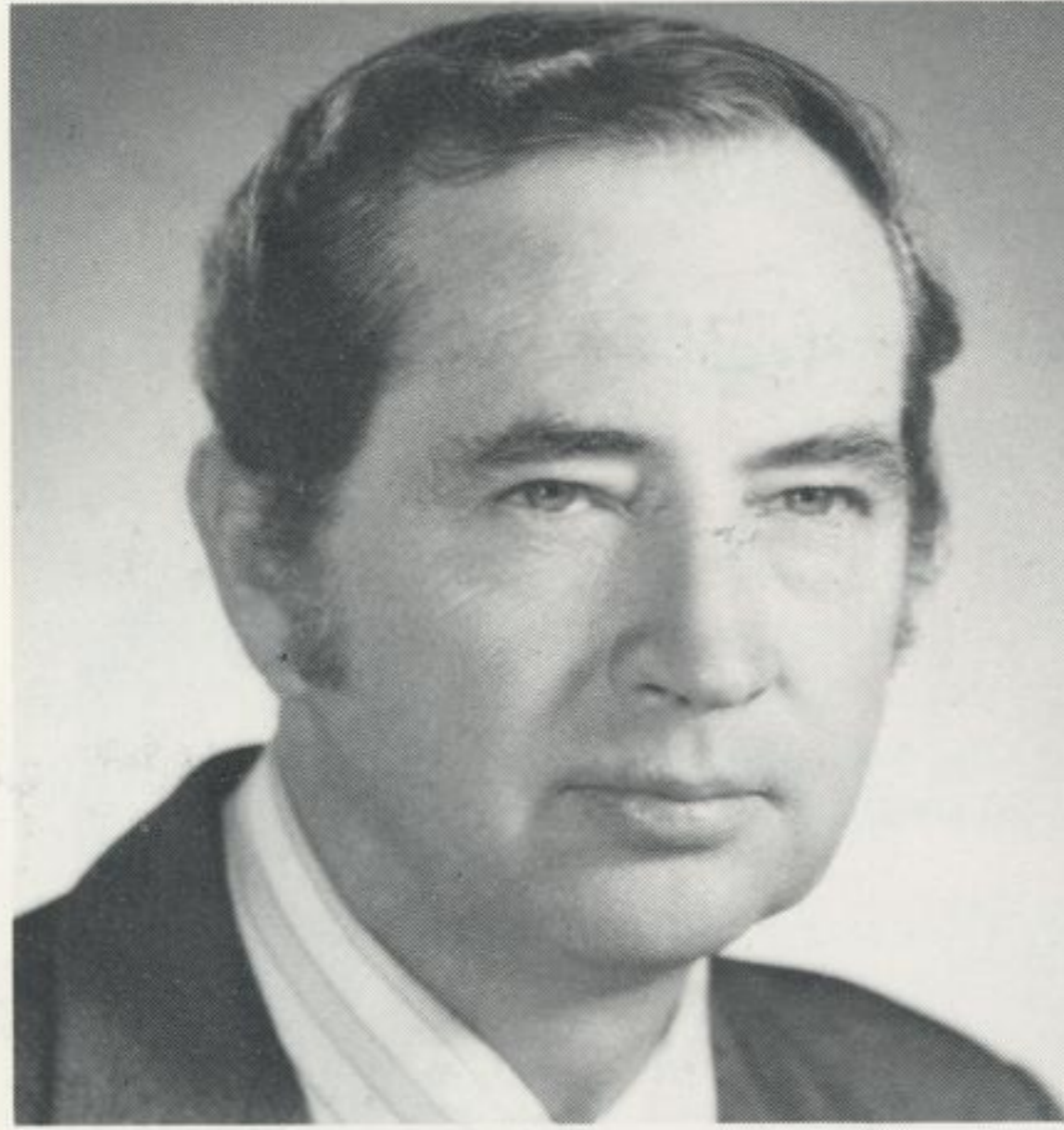
Martin Marietta honored for aid to minority business

Southern University's minority business and economic development program honored Martin Marietta early this year for support and cooperation in enhancing Louisiana minority-owned businesses in 1975.

Martin Marietta and seven other corporations were selected from 400 Louisiana corporations for significant contributions in aiding minority suppliers to obtain subcontracts from major corporations.

Awards were presented by U.S. Senator J. Bennett Johnson of Louisiana.

Seven hundred persons representing minority business witnessed the presentations at the award banquet.



Robert C. Littlefield has been named manager of the National Aeronautical and Space Administration's Michoud Assembly Facility. He has overall management responsibility of the 891-acre facility. Martin Marietta is the major tenant of the facility.

Shuttle runway completed at KSC

As part of the reshaping of Kennedy Space Center's Complex 39 to meet the needs of the Space Shuttle era, paving of the orbiter landing facility has been completed with the pouring of the last of 252,000 cubic yards of concrete required for the work.

The massive paving project includes a 15,000-foot-long, 300-foot-wide runway with 1,000-foot overruns at each end, a 30,000-square-yard parking apron, a 9,150-foot towway from the runway to the vicinity of the Vehicle Assembly Building, and a 650-foot taxiway from the towway to the apron.

In Michoud

Call C. H. Fleischer at 3876 with suggestions or information for articles for the Martin Marietta News



Wayne E. Wright, left, minority subcontract specialist, and Vernon C. Brett, chief of procurement support, display the award from Southern University for Martin Marietta's support of the university's minority business program.



When it returns from its space missions, Space Shuttle orbiter will land on this

15,000-foot-long runway at Kennedy Space Center.



Michoud 1975 tennis tournament winners are shown with their trophies. Left to right, Don Igou, men's singles consolation runnerup; Terry Hibbard, men's doubles winner; Arlin Schaap, mixed doubles runnerup (also holding Jan

Schaap's trophy as women's singles winner); Tim Dautenhahn, men's singles runnerup; Dave Parker, mixed doubles winner and men's doubles runnerup; Mohan Misra, men's singles winner and men's doubles winner; Arvind Patel,

men's singles consolation winner and mixed doubles runnerup; Pam Mitchell, mixed doubles winner; Ed Moore holding Ruth Moore's trophy as women's singles runnerup. Jeff Mourer, men's doubles runnerup, was not present.