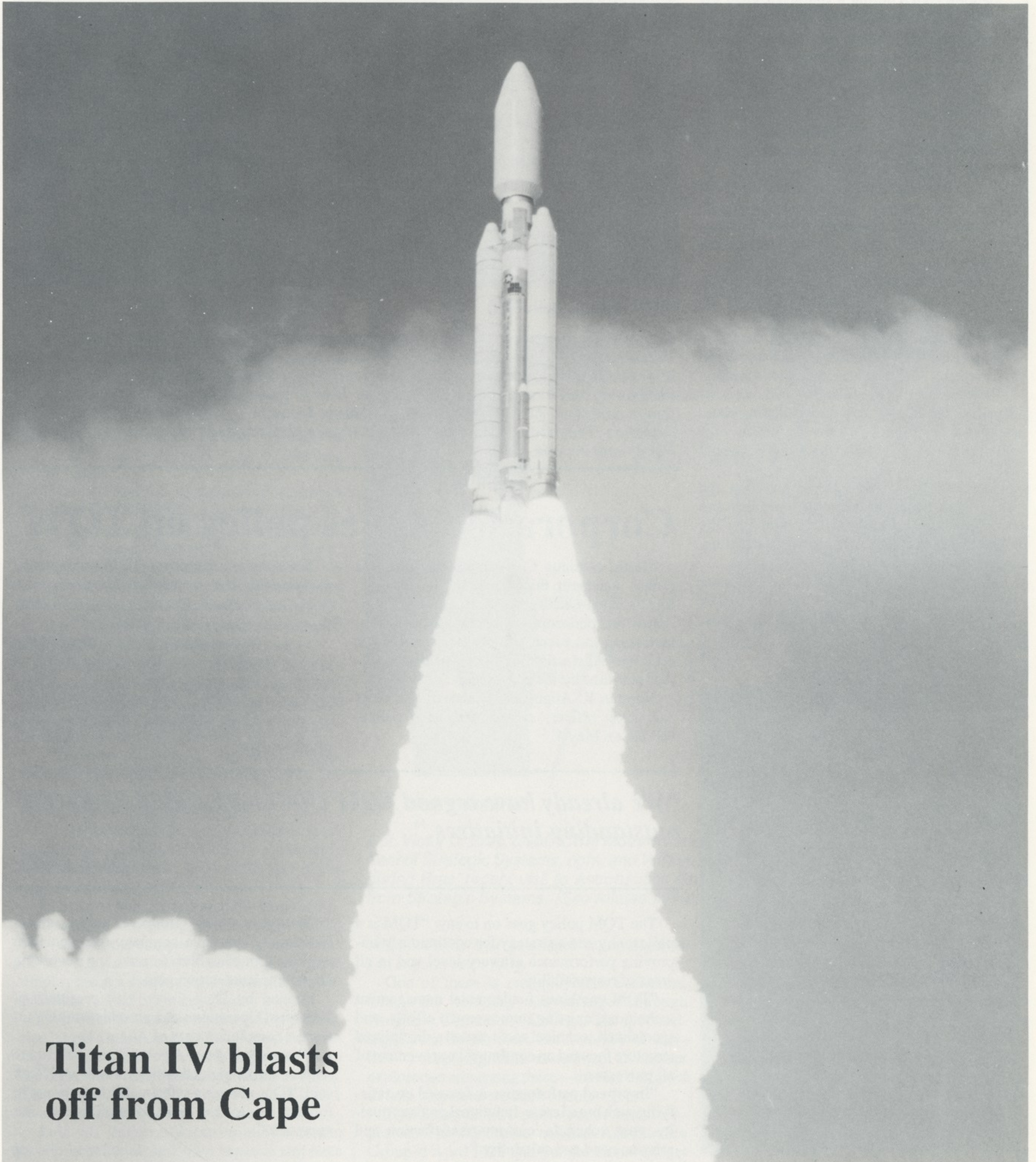


MARTIN MARIETTA

news

ASTRONAUTICS GROUP

June 16, 1989 Number 13



**Titan IV blasts
off from Cape**

Employees learn from Deming's seminar

"Hard work, best efforts, service without blemish, and everything done 'just right' will not keep us in business. They will not keep this country solvent," said internationally known quality guru W. Edwards Deming. "Making the wrong thing and doing it very well" are costing the country its future, Deming continued.

Deming spoke during a seminar shown via teleconference entitled "The New Economics of Industry and Government." Approximately 200 middle and upper management people from all Astronautics Group companies viewed the seminar this week at the Deer Creek Facility.

Deming, who is best known for his "Fourteen Obligations of Top Management," said companies will have to transform themselves to get back on the right track.

They must stop doing business the same old ways.

They must cease managing by what he called "reflex action," and must undergo a metamorphosis.

"Costs are not causes," Deming said. "If you want lower costs, work on the causes of the costs."

To undergo this metamorphosis, company managers need what Deming termed "profound knowledge." And they need to become leaders.

Profound knowledge, Deming said, is knowing what's going on. It is understanding processes and variation. It's knowing which variations are random and which have special causes.

Leadership, he said, means knowing the work, the aims of the company, and how the work fits into those aims. It's optimizing the skills of people. It's coaching, counseling, using figures to help and more.

Most of the things Deming talked about are included in his book, "Out of the Crisis." The four-hour seminar was recorded on videotape, and is available from Betty Hilton at Ext. 7-4611. ■

Cadet receives award

Cadet Donna Ginn has been named the Outstanding Cadet in Space Operations for the U.S. Air Force Academy class of 1989.

Ginn was commissioned a second lieutenant at the May 29 ceremony in Colorado Springs, and now plans to enter pilot training school.

The award, sponsored by the Astronautics Group, is a bronze statue of an eagle and fledglings dedicated to the memory of Lt. Col. Robert C. Rounding.

Rounding was an associate professor of mathematics at the academy during the 1950s and 1960s. He was killed in 1968 in an air crash in Palmdale, Calif., while on a sabbatical from the academy for service in Vietnam.

Stanley F. Albrecht, vice president of Plant Operations, presented the award to Ginn.



MST sections delivered

Barges carry sections of the new Titan Mobile Service Tower (MST) from Astoria, Ore., to Vandenberg Air Force Base, Calif. The 13 sections, called modules, arrived last month after five months of construction in Oregon. The modules will form the new SLC-4 East MST being built to accommodate the larger Titan IV space launch vehicles. The construction is part of an Air Force contract with Martin Marietta to prepare SLC-4E for Titan IV launches. The modules were transported in pairs aboard ocean-going barges at Tongue Point, near Astoria.

Corporation issues policy on TQM

Martin Marietta Corporation has issued a policy statement that "endorses the government's Total Quality Management (TQM) initiative and philosophy as a means to further enhance mission success, cost effectiveness and customer satisfaction for all products and services provided by the corporation."

Norman R. Augustine, chairman and chief executive officer, signed the new policy, GP-20, on May 4.

The statement also says: "TQM concepts and philosophies will be applied to all activities (technical, business and administrative) including subcontractors and suppliers . . ."

At the corporate level, the new TQM policy assigns implementation and administration to Technical Operations. It also tells all operating elements to "develop and implement procedures and methods necessary to meet the intent of this policy . . ."

"We already have a good TQM effort here with a number of outstanding initiatives."

—Dick Cook

The TQM policy goes on to say: "TQM is a philosophy and a strategy for continuously improving performance at every level and in all areas of responsibility.

"TQM combines fundamental management techniques, existing improvement efforts, and specialized technical tools under a disciplined structure focused on continued improvement of all processes.

"Improved performance is focused on satisfying such broad cross-functional goals as quality, cost, schedule, customer satisfaction and mission need and suitability."

At Astronautics Group, a small, cross-functional, multiple-company-representation working group has been formed, and is working on the implementation plan.

Headed by Dick Cook, vice president of Technical Operations, the group is working toward a completion date of August 1.

"We already have a good TQM effort here with a number of outstanding initiatives," Cook said. "This planning effort will just improve it, forcing us to be more disciplined in our approach."

A day in the life of the Magellan probe

During Magellan's 15-month cruise to Venus, other than periods of high activity during maneuvers, the spacecraft team goes through a daily ritual of monitoring the spacecraft, analyzing telemetry, predicting performance and planning for upcoming events.

On a typical day, spacecraft team engineers at the Main Plant first check the status of the spacecraft's six major subsystems: command and data, power, attitude control, telecommunications (radio), propulsion, and thermal. At a morning spacecraft team meeting, engineers discuss the status of the subsystems and, if there is a problem, how to analyze and correct it.

After the meeting, engineers perform a telemetry analysis and performance prediction for each of the six subsystems, using software developed over the last five years. This entails receiving the last 24 hours of data from Magellan through the Jet Propulsion Laboratory's telemetry central database. The data are analyzed and then extrapolated based on planned spacecraft events. This will, for example, tell the engineers whether the solar panels and batteries will provide enough power for upcoming events.

The balance of the day consists of planning for future "uploads" or sending command sequences to the spacecraft. Every two weeks, engineers will send Magellan a new set of

commands for the spacecraft's command and data system that will run the spacecraft until the next upload.

Meanwhile, on board Magellan, two events occur automatically each day. Both pertain to the spacecraft's attitude control system, which keeps Magellan in the proper orientation as it speeds through space.

Part of the system contains three 14-inch diameter reaction wheels that spin rapidly to conserve the transfer momentum to turn the spacecraft. Because the sun exerts pressure on Magellan as it flies, these wheels turn faster and faster to keep the spacecraft stable. Twice a day, the wheels must be slowed by burning small thrusters to twist the spacecraft in the opposite direction of the force exerted by the sun.

Also, once a day, Magellan performs a star scan. This involves turning the spacecraft to a computed position, after which it moves again to sweep the optical star scanner to "see" two known stars. The stars' positions are computed against the spacecraft's flight software to determine how far off the spacecraft's knowledge of its own attitude has drifted since the last scan (typically less than one degree). It then corrects the knowledge in an "attitude update." For the star scan, Magellan is currently using Alpha Bootes (Arcturus) in the northern hemisphere and Gamma Crux in the Southern Cross. ■

Magellan watch

Date: **June 16, 1989**
Distance
from Earth: **5,853,627 mi.**
Velocity:
Geocentric
(Earth): **5,003 mph**
Heliocentric
(Sun): **61,975 mph**
One-Way
Light Time: **29.5 sec.**
Next
Maneuver: **December 1989**

Magellan highlights video available for purchase

An 18-minute videotape of highlights of the Magellan mission is now available for employees to purchase for \$13.50.

The tape includes a six-minute production shown to employees throughout the plant May 5. This version, with music and titles, includes scenes from the Magellan rollout last fall, processing at Kennedy Space Center, and launch and deployment.

The additional 12 minutes is a compilation of scenes derived from NASA's mission highlights videotape produced for the mission. This includes: pre-launch crew activities and launch scenes; additional Magellan deployment scenes, including dramatic shots of Magellan in the cargo bay before deployment; several views of the Earth from the Shuttle; and scenes of the Shuttle landing.

Employees may purchase tapes by calling Denver Dubbing at (303) 790-2232 and giving Visa or MasterCard charge numbers, or by sending check to:

Denver Dubbing
99 Inverness Drive East
Englewood, Colo. 80112

Videotapes are available in VHS format only. The cost includes all shipping and handling charges. ■



Company honored for arts support

Arthur E. Koski, director of public relations, left, accepts a ceramic pot from John W. Madden Jr., chairman of the Colorado Business Committee for the Arts (CBCA), recognizing the Astronautics Group for its "business-arts partnership with significant impact on the community." The award, presented by the CBCA, specifically recognized Martin Marietta's innovative partnership with the Denver Symphony Orchestra.

Tourino replaces Barry as BSD commander

Brig. Gen. Ralph G. Tourino has been named commander of Air Force Systems Command's Ballistic Systems Division at Norton Air Force Base in San Bernardino, Calif.

Formerly the inspector general at AFSC Headquarters, Tourino replaced Maj. Gen. Edward P. Barry Jr., who was re-assigned to become vice commander for AFSC's Aeronautical Systems Division, located at Wright-Patterson AFB, Ohio.

The change of command ceremony took place on May 30 at Norton AFB.



White House thanks Astronautics Group

Members of the Astronautics Group's telecommunications team, management, and representatives from Northern Telecom proudly display a commendation from the White House Communication Agency in Washington, D.C. The commendation is for support during the visits of then-President Ronald Reagan and then-Vice President George Bush. The combined teams set up more than 120 telephone lines for the distinguished visitors.

CIGNA representative to provide onsite help

A CIGNA Health Plan representative will be at the Waterton and Deer Creek facilities every Thursday from June 22 through July 27 to answer questions about the new designated provider health plan.

The representative will be at the Employee Benefits offices from 9-11:30 a.m. at Waterton between the Administration and Engineering buildings, and from 1-3 p.m. at Deer Creek.

"About 4,500 employees are now enrolled in the plan," said Carolyn Aldorfer, chief of Employee Benefits for the Astronautics Group. "The transition has gone reasonably well, especially considering the change from a traditional

freedom-of-choice type plan to a managed-care concept. CIGNA is being brought in to make the transition even smoother."

The CIGNA representative will answer questions about how the physician referral system works, handling emergency needs, and selecting a primary care physician. Additionally, the representative will deal with claim matters on a personal level.

"We want to make sure that medical care is accessible and that we provide individualized service to employees," Aldorfer said.

For additional information, contact the Employee Benefits office, Ext. 7-4928. ■

Ducsai named vice president of FTS

Stephen J. Ducsai has been named vice president of Space System's Flight Telerobotic Servicer (FTS) project.

Ducsai is responsible for overall technical and management control of FTS, a National Aeronautics and Space Administration (NASA) project. In May, Space Systems won the role as the prime contractor for FTS, a space robot that will assist in the assembly of NASA's Space Station Freedom in the mid-1990s.

As vice president of the program, Ducsai also is responsible for meeting technical, schedule and cost objectives. He serves as the corporation's prime contact for Goddard Space Flight Center, NASA's manager of the project.

Ducsai joined the corporation in 1958 as a Titan I project engineer. He progressed through a series of technical and management positions, working on numerous programs, including the Titan III Transtage, Pioneer-Venus, Hubble

Space Telescope, Mariner Venus Probe Mission, Jupiter Probe mission and others.

In 1979, he was named director of the Manned Maneuvering Unit (MMU) program, responsible for the design, fabrication and delivery of the MMU and other equipment required for on-orbit inspection and repair of the Space Shuttle Thermal Protection System. This effort led to the successful flights in 1984 of the MMU, a backpack that astronauts used to fly from the Space Shuttle to repair one satellite and retrieve two others.

In 1985, he was named director of the Small ICBM Postboost Vehicle and Shroud program, responsible for the overall management of the design, development and test of the Small ICBM Postboost Vehicle and Shroud.

Ducsai received a bachelor of science degree in electrical engineering from the University of Pittsburgh in 1949. ■

Space Systems wins contract study

The Defense Advanced Research Projects Agency (DARPA) has selected Space Systems as one of nine companies to participate in its digital gallium arsenide insertion program.

Gallium arsenide is a new material that can be used to make computer chips for Department of Defense weapons systems. In this program, microcircuits made of the material will be used to demonstrate improved capabilities in specific military equipment.

Digital gallium arsenide devices are well-suited for military systems because, compared to conventional silicon chips, they consume less power, function at higher speeds, function over a wider temperature range and are much more resistant to radiation. While they typically cost more than silicon components, their greater performance can lead to cost savings because fewer components are necessary for a particular function.

Space Systems will upgrade a spacecraft on-board processor with gallium arsenide components, increasing the processing speed from 75 million operations a second to 560 million by changing the current system architecture or software. According to DARPA, the upgrade will eliminate data processing bottlenecks in the spacecraft. Steve Espy, Space Systems program manager for the project, says the upgrade will significantly improve reliability and increase the radiation hardness of the processor by a factor of 10.

Martin Marietta Electronics Systems in Orlando also received a contract to develop and demonstrate a compact signal processor for a millimeter wave radar-guided Hellfire antitank missile. ■

Operation Santa Claus bins open all year

The Astronautics Group's Operation Santa Claus organization needs year-round support for its recycled paper effort to ensure a substantial donation to needy families during Christmas.

For more than 30 years, the non-profit organization of employees has supplied food, clothing and toys to more than 200 Metro Denver families each year.

Operation Santa Claus paper bins are located in every Astronautics Group facility for collecting white and green-bar computer paper only. Colored paper or trash cannot be used, and will lower the return by more than 50 percent.

Operation Santa Claus also needs employees at each location to empty full paper bins and to return them to their proper areas.

To donate your time or to obtain additional information, contact Floyd Teiffel, Ext. 7-8122.

First Titan IV launched successfully from Cape Canaveral

The first Martin Marietta-built Titan IV space launch vehicle roared into space at 7:18 a.m. MDT Wednesday, June 14, from Cape Canaveral Air Force Station, Fla. Titan IV is the nation's largest and most powerful expendable launch vehicle.

"Congratulations to the entire team of dedicated, outstanding individuals that made the Titan IV first launch a success," said Peter B. Teets, Astronautics Group president. "I know we're all thrilled with the performance that has been demonstrated by the team and its importance to the country as well as to our corporation."

Secretary of the Air Force Dr. Donald Rice said, "This Titan IV launch is a tremendous milestone for the nation."

"The Titan IV catapults us back into the high ground in terms of launching heavy payloads on expendable boosters. This booster and this

launch are vital to our national security space program and I tip my hat to the talented people in government and industry who put in countless hours and work to make it happen."

The Astronautics Group is under Air Force contract to build 23 Titan IVs, and is negotiating another contract for an additional 26 rockets. And, Teets is quick to remind employees, this is just the beginning.

"I think there is a challenge ahead of us, though," Teets said. "And as we certainly bask in the euphoria of the event, we also should cast an eye ahead and remember that there are a lot more Titan IVs to come."

The Astronautics Group builds the first and second stages of the Titan IV and provides the overall systems engineering and integration, payload integration, and launch services for the program. ■

On the cover

Titan IV blasts off the pad at Cape Canaveral Air Force Station, Fla. Titan IV, in its maiden mission, successfully deployed a classified military payload. Titan IV is a larger version of the Titan III space launch system and is capable of placing about 40,000 pounds into low-Earth orbit, or 10,000 pounds into geosynchronous orbit—22,300 miles above the Earth.

Small ICBM program may end

Up to 430 Astronautics Group jobs could be affected when, under the current schedule, funds for the Small ICBM program run out on Sept. 30 and the program is completed.

If the program is not restarted, Astronautics Group could be forced to eliminate as many as 320 jobs in Denver and 110 at Vandenberg AFB, Calif.

"Martin Marietta is supporting President Bush's efforts to have program funding restored in time to prevent layoffs," said Jim Sterhardt, president of Strategic Systems company. "But if no funding is made available to keep the program alive, the company will soon be forced to begin sending letters to the first group of employees who will be affected by the Small ICBM cutbacks," he continued.

"We are looking very hard for positions within Astronautics Group and elsewhere within Martin Marietta Corporation for people now working on the Small ICBM program," said Dick Weber, vice president Personnel.

"Where we can, we will displace job shoppers to make room for current employees," he continued, "but, because of skills mix requirements, there will be some layoffs."

"On the positive side, we expect some build-ups in other areas that will leave us at roughly the same employment level at the end of the year as we have now."

The plant closing portion of the Worker Adjustment and Retraining Notification (WARN) Act requires the company to notify employees 60 days in advance whenever 50 or more employees at a single employment site are expected to be laid off in any 30-day period.

"We will deliver approximately 50 layoff notice letters in Denver and 17 at Vandenberg today," Weber said. "Those layoffs will occur during a two-week period beginning Aug. 18. The other layoffs will be phased through Dec. 1 to allow for orderly contract closeout."

Laid off employees can continue certain health benefits at their own expense and have



Col. Bras visits DPF

Col. Victor D. Bras, chief, ICBM Modernization, left, meets with James A. Sterhardt, president of Strategic Systems, right, and William L. Kistler, of the Defense Production Facility, during Bras' recent visit to Astronautics Group facilities. Bras met with representatives from Strategic Systems. (See related stories on page 6.)

other benefits that personnel representatives can explain more fully.

One of these is reemployment assistance, which the company has arranged through Arapahoe Community College. The Counseling/Career Center there has a variety of services—counseling, skills assessment and career exploration are among these—that are designed to help displaced workers find new jobs.

The Small ICBM phase-out is not unexpected. The Air Force notified Astronautics Group in April 1988 that Congressional budget

cuts were forcing it to end the Small ICBM program. Funding cuts were timed to phase it out completely by Sept. 30, 1989.

The intent of the phased funding reduction was to allow contractors such as Martin Marietta to hold Small ICBM teams in place until the fiscal year 1990 budget process.

Current funding for the program includes production of three Small ICBM flight test missiles. The first, FTM-1, was launched at Vandenberg AFB on May 11 and deemed an 80 percent success by the Air Force. ■

Small ICBM needed in land ICBM mix

The Air Force still believes the United States needs mobile intercontinental ballistic missiles (ICBMs) in the land-based strategic ICBM force mix, the head of the Air Force's ICBM Modernization Division asserted during a recent visit to Astronautics Group.

"We need both the Peacekeeper and the Small ICBM," said Col. Victor D. Bras, chief, ICBM Modernization Division, in the Directorate for Strategic, Special Operations Forces and Airlift Programs, Office of the Assistant Secretary of the Air Force for Acquisition.

Col. Bras said that one system should not be played off against the other.

"Looking to the longer term, we will also develop and deploy a new highly mobile single-warhead missile, the Midgetman," he said. "With only minutes of warning, these new missiles can be relocated out of harm's way. Any attack against systems like this will fail."

Both the Peacekeeper and the Small ICBM were called for in the Scowcroft Commission study in 1983.

This landmark study said 100 Peacekeeper missiles needed to be deployed immediately in existing Minuteman silos to satisfy immediate land-based ICBM force modernization needs.

It called also for development of a smaller, single-warhead ICBM based on mobile

Small ICBM launch deemed a success

According to Air Force officials, the first flight of the Small ICBM last month achieved 80-85 percent of the mission objectives, despite a performance anomaly that occurred just before completion of the firing of the Stage II rocket motor.

The near-perfect countdown and launch of the new missile was May 11 at Vandenberg Air Force Base, Calif. However, a problem occurred during the Stage II burn causing the missile to deviate from normal. After almost a minute of further flight, the destruct command was given by the range safety officer and the missile was destroyed.

The initial flight was designed to evaluate the launch sequence, ground and flight software, and missile hardware systems and subsystems. The Air Force was able to obtain valuable data from the launch and flight, both before and well after the Stage II anomaly.

An Air Force team of experts is conducting an investigation to discover the cause so that corrections can be completed before continuing the flight test program.

"We need both the Peacekeeper and the Small ICBM."

—Col. Victor D. Bras

"This is a package deal," he said, "or you really have no [ICBM Modernization] program at all."

President Bush reiterated his support for the Small ICBM in the speech he delivered at graduation ceremonies at the U.S. Coast Guard Academy on May 24.

launchers. This missile, the study said, would be a less valuable target to the Soviets, yet would continue to hold hardened Soviet targets at risk after a Soviet attack.

The study also called for renewed efforts to reach strategic arms agreements with the Soviet Union. ■

Employee services/recreation

Lose Weight at Work—Join the Weight Watchers at Work Program beginning Thursday, June 22 at Littleton Systems Center. The eight-week session meets from 11 a.m.-noon, at LSC, Room 201. The \$15 registration fee has been waived. The \$64 fee must be paid by today. Registration forms are in the information racks at LSC and South Park.

Commodore Users Group—The club will meet at 5 p.m., Tuesday, June 20, in the clubhouse at the recreation area. Amigo users are welcome. Contact Dan Whittemore, Ext. 7-6324, or Chuck Barton, Ext. 7-9950.

Stretching Seminar—Flexibility is an essential component of an exercise program. Employees are invited to learn the reasons for proper stretching, and stretching techniques from HealthMark exercise physiologists. Free, 30-minute seminars will be conducted at noon and 5 p.m. on Wednesday, June 21, and Thursday, June 22, at the Deer Creek Wellness Center. Come dressed to stretch and prepared to relax. For further details, call Ext. 7-7575, or 7-7576.

Photography Club—Platte Canyon Photography Club members will meet at 7 p.m. Monday, June 26, at the Public Service building, 10001 W. Hampden Ave. Contact Bill Privratsky, Ext. 7-4969, for details.

Running Club—The top male runners in the recent three-mile Shepherd races were Milt Hale, Lee Hendrick, Larry Stoltenberg, Bob Haberkorn and Gary Cox. The top female finishers were Sharon Brooks and

Melanie Baker. The runners accumulating the most points during the spring race series were Bob Haberkorn, Tom O'Brien (fastest man), Melanie Baker (fastest woman), Bill Johnson, Len Cresawn, Rob Leitch, G.W. Cox, Vaughn Larsen, Milt Hale, and Lee Hendrick.

Wellness Center—The Deer Creek Wellness Center is currently adding services and equipment to meet employees' needs. Call to make an appointment for free weight loss or fitness consultations, free body composition analysis testing, and cholesterol screens (\$2). Free blood pressure checks are done on a drop-in basis. HealthMark exercise physiologists are available 11 a.m.-5:30 p.m. weekdays. Call 7-7575, or 7-7576, to schedule appointments.

Golf Tournament Results—The top finishers in the Martin Marietta Partner Two-some Scramble golf tournament held May 20 at Raccoon Creek were: best ball champions, Chris Talley and Chip Woods, 65; second place, Eric Anderson and Paul Anderson, 66; third place, John Mitchell and Ron Drobnik, 67; and fourth place, Randy Sprague and Rick Burris, 68.

Ball Invitational Tournament at Riverdale Dunes—On May 13, 49 Martin Marietta employees played in the first Ball Invitational Golf Tournament with employees from Rockwell International and Ball Aerospace. Martin Marietta placed second. Individual and team winners from the Astronautics

Group were: low gross, Rick Burris, 74; low gross team, Ray Nalty, 83, George Munger, 75, Bill Gleason, 90, and Rick Burris, 74; total score 322.

Lakeside Amusement Park—Discount coupons for unlimited ride tickets at Lakeside are available in the recreation racks and from the recreation offices at Deer Creek and Waterton. Coupons can be used Sunday through Friday. With the coupon, the unlimited ride ticket is \$6.50 on Sunday (regular price \$7.95) and \$5.50 Monday-Friday (regular price \$6.95).

Elitch's Amusement Park—Discount coupons for the unlimited ride ticket at Elitch's are available at the recreation offices at Deer Creek and Waterton, and from recreation representatives at LSC, Viewpoint I, South Park III, the Space Support Building and Greenwood Commons. The coupons can be used every day of the week through August 27. With the coupon, the unlimited ride ticket is \$8.75, (regular price \$10.95).

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