MARTIN MARIETTA
news
ASTRONAUTICS GROUP

June 3, 1988 Number 11

First Titan IV rolled to launch complex

Siebers suggests improvements to Small ICBM production

Bernard R. Siebers, a senior assembly mechanic, seated second from the left, earned recognition this month from his management and the Success Through Suggestions program for two ideas: (1) a way to reduce the time it takes to bond external protection material onto the outer surface of the Small ICBM, and (2) a tool for use on the Small ICBM skirt that reduces initial labor and rework. Present at the cost-savings presentation were, seated left to right, John R. Adamoli, vice president and program director, Small ICBM; Siebers; and Harold E. Toney, manager, Defense Production Facility. Standing left to right, are Michael A. Avdem, foreman, Small ICBM; Joesph P. Marcus, director, Production Operations and Facilities, Strategic Systems; and Max J. Atwood, industrial engineer, Production Operations.

Corporation rated technology champ

Martin Marietta was ranked "expert" by the experts in a survey published in the June 1988 issue of *High Technology Business* magazine. Topping the charts in the aerospace/defense industry, Martin Marietta was chosen as the company that uses technology to its best advantage.

To compile survey results, *High Technology Business* interviewed securities analysts and company chiefs who rated the 20 largest companies in ten separate industry categories to determine who were the "technology champions." The magazine then selected the winners based on the survey responses and additional interviews with analysts.

Winners in each industry segment were ultimately determined by how well the companies use technology internally to improve the bottom line.

According to *High Technology Business*, survey winners tended to encourage risk-taking, foster communication, and look for less-tangible benefits of advanced technology. Martin Marietta was also noted for its innovative yet disciplined management.

Findings also stated that successful U.S. organizations have made administrative changes to integrate technology more effectively.

The article pointed to several major projects that showcase the Corporation's work, including the National Test Bed, the upgrade program for Titan rocket boosters, and advanced strategies for automation and computer-integrated manufacturing.

"This success rate is due, at least partially, to Martin Marietta's investments in technology, which keep it on the cutting edge of product development, design, and manufacture," said Peter Aseritis, vice president of research at Smith Barney Harris Upham. ■

Titan IV to test upgraded solid rocket motor

A major milestone will be reached when Hercules Aerospace Company, a Martin Marietta subcontractor, conducts the first vertical test firing of a Titan IV upgraded solid rocket motor next summer. Hercules is working with the Air Force Astronautics Lab (AFAL) at Edwards Air Force Base, Calif.

At the AFAL, Titan IV upgraded solid rocket motors will be tested the way they will actually be assembled in late 1990 and launched in 1991 from Cape Canaveral, FL.

Hercules, selected in October 1987 to develop and manufacture the upgraded solid rocket motors, intends to prepare and test-fire five motors to closely duplicate flight loads and ensure that handling and assembly procedures are thoroughly proofed before initial operation.

Ultrasonic testing of the motor segments will be performed before assembly in the test stand. Transportation and nondestructive examination of test motors was included in the program to ensure the most complete solid rocket motor qualification possible. Test firings will take place with the nozzle in a downward position. This will be the largest solid propellant motor ever tested in the nozzle-down flight configuration.

The existing AFAL test facility, used previously for a Titan 34D firing, is being extensively modified for the upgraded solid rocket motor test program. Development tests will involve a complete Titan IV stage zero including nose faring, thrust vector control system, batteries, raceway, and aft skirt.

"We will be overseeing the testing of all motor components that normally go to the launch site to simulate the flight configuration as closely as possible," said Bill Sparkman director of Martin Marietta's solid rocket motor upgrade program.

Hercules booster segments and other major components manufactured by various subcontractors will be shipped to AFAL via rail, lifted from cars onto a special transporter (which will be used at Vandenburg Air Force Base), and driven up a seven percent grade hill to the test site.

Upgraded Titan IV solid rocket motors are due to fly in 1991. ■

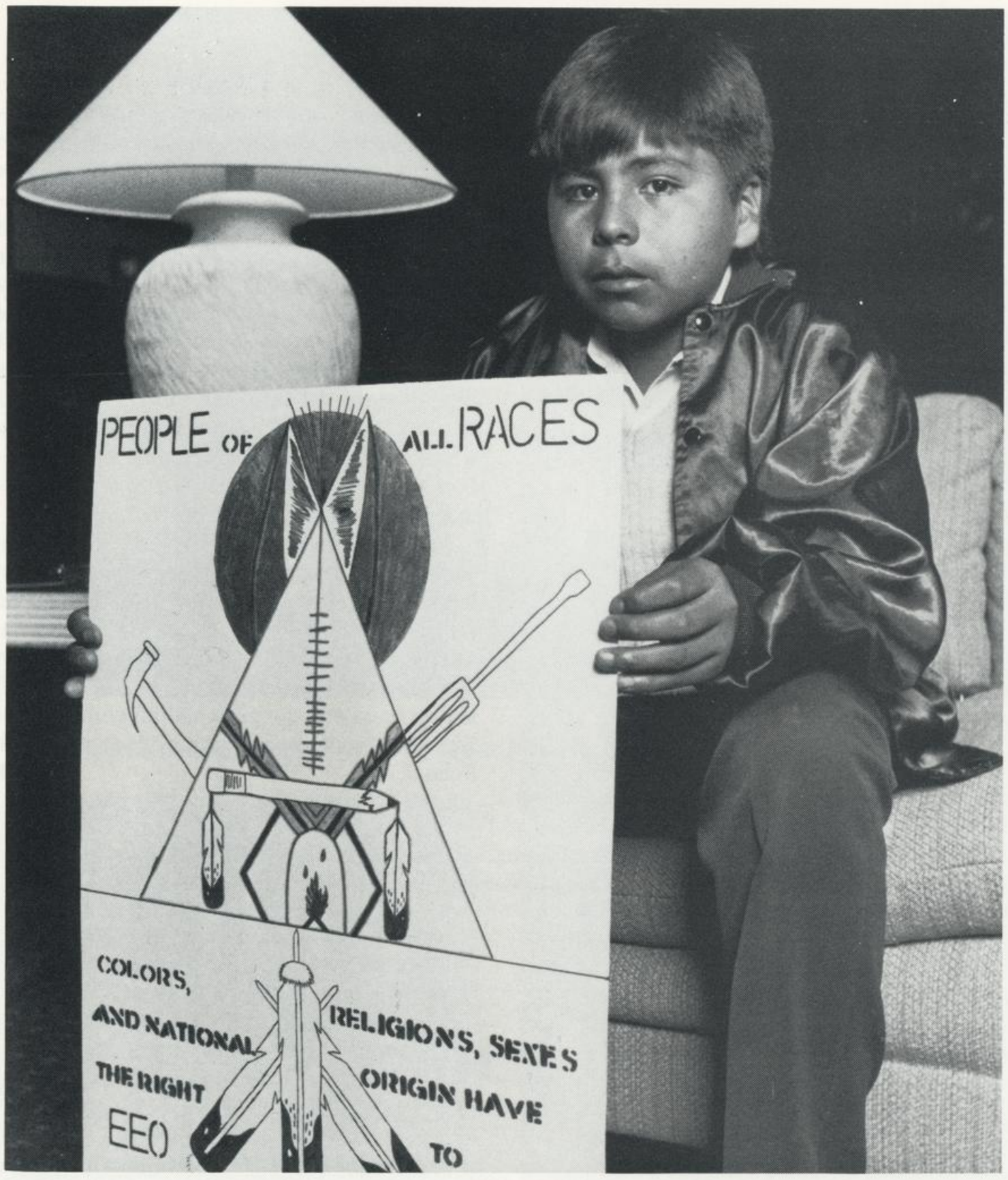
Commercial Titan signs Astrotech

Martin Marietta recently signed Astrotech Space Operations, L.P., to a six-year blanket purchase agreement to provide payload processing services for Commercial Titan payloads.

A partner of WESPACE, Inc., a subsidiary of Westinghouse Electric Corporation, and Space Industries, Inc., of Houston, Astrotech will provide payload processing services, consisting of final assembly and checkout, of all systems placed into a flight-ready payload delivered to a launch vehicle.

The first payload to be processed will be the JCSAT-2 Japanese communications satellite, that Martin Marietta will launch in 1989 for the Japanese Communication Satellite Company.

Astrotech has processed ten commercial payloads that were launched on NASA's Space Shuttle. ■



Martin Marietta recently participated in the first equal employment opportunity poster contest sponsored by the U.S. Labor Department. Shown above is Johnson Roanhorse, an American Indian from Fort Washakie, Wyo., whose poster was selected the overall contest winner.

Martin Marietta helps sponsor Indian kids' poster contest

Awareness of the frequently neglected American Indian work force rose to new levels through Martin Marietta's participation in the first Equal Employment Opportunity (EEO) poster contest on May 18 in Denver.

The contest, sponsored by the U.S Labor Department's Office of Federal Contract Compliance Programs (OFCCP), was presented as part of the Council for Tribal Employment Rights "Partners In America's Progress Symposium."

More than 300 children from 21 reservations throughout the six-state Rocky Mountain region competed by submitting original posters portraying their opinions on fair employment. The effort was a special pilot project of OFCCP to mark the 22nd anniversary of the EEO Law.

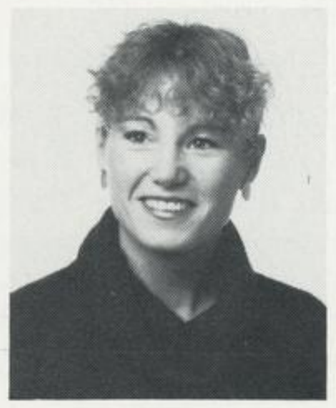
Six Indian elementary school children from reservations in Colorado, South Dakota, and Wyoming were flown to Denver with their winning entries. Martin Marietta sponsored the travel expenses of two students—eighth-grader Johnson Roanhorse and seventh-grader Julius LaJeunesse of the Shoshone and Arapahoe Tribes from Fort Washakie, Wyo.

Roanhorse took top honors in his division and also was selected as the overall contest winner, while LaJeunesse's poster was selected as runner-up.

Ralph Barr, director of EEO at Martin Marietta Astronautics Group, served as one of eight competition judges from various local companies and government organizations. "I thought Roanhorse's poster depicted the appropriate EEO message for our country. These kids are surprisingly aware of the urgency of employment needs. Their main message is consistent and clear—'we need jobs now for our future'," said Barr.

As a result of the message delivered at the symposium, Martin Marietta is spearheading a private industry council to provide Indians access to jobs. Barr is chairman of that effort. ■

Astronautics Group selects candidate



Bicknell

Barbara Bicknell has been selected as the Astronautics Group's candidate for the 1988-89 Technical Operations corporate intern program. Bicknell was chosen from a field of 16 Astronautics Group applicants.

Interviews will be held at Corporate headquarters and the final selection will be on June 21. Bicknell will compete with candidates from the Electronics and Missiles Group, Information Systems Group, and Manned Space Systems.

Bicknell joined Martin Marietta in December 1980, and is the propulsion and fluid system analysis lead on the Space Station integrated propulsion and fluids system study for the Space Systems company. In addition, for the past three years she has been the principal investigator for the low-gravity venting research and development program. Her studies have involved evaluating fluid behaviors in low-gravity environments and designing and testing fluid systems for orbital spacecraft and launch vehicles. This summer, Bicknell will conduct free-floating experiments while onboard KC-135 aircraft.

Bicknell is active in the American Institute of Aeronautics and Astronautics (AIAA) Society. She serves on national AIAA committees and, for the Rocky Mountain section, is chairman of the technical committee.

Bicknell earned a bachelor's degree in mechanical engineering from the University of Notre Dame, and spent a year in Tokyo as a foreign exchange student. ■

Open House slated for next summer

Martin Marietta Astronautics Group has announced plans to hold a Family Open House next summer to display company facilities and programs to employees and their families/guests.

The 1989 date was selected as a good time for the event since most of the facility renovation and construction will be complete. In addition, the majority of employees will be concentrated at three locations: Deer Creek, Littleton Systems Center, and Waterton.

The Family Open House is designed to allow families, retirees, and guests to view the products and work areas of Martin Marietta employees. Further information will be available as the event approaches.

Cost-cutting concepts save company money

Elizabeth A. Merrill, personnel program coordinator, second from the left, received recognition this month from the Success Through Suggestions program for her cost-saving idea. Merrill suggested a notification system to recover tuition fees due Martin Marietta by employees who have participated in any onsite educational program and left the company. Presenting Merrill's award are, left to right, Betty B. Hilton, administrator, Personnel Development and Training; John F. Hallen, director, Organizational Development/Management Development; and Richard E. Weber, vice president, Personnel.

Corporation to develop gallium arsenide circuitry

Martin Marietta Corporation and ITT Corporation have been awarded a $49.3 million contract to develop a gallium arsenide material that will help pilots fly and fight in all types of weather.

During the three-year Phase 1 period, Martin Marietta Electronic Systems, Martin Marietta Laboratories, and their subcontractor Alpha Industries will develop gallium arsenide Microwave/Millimeter Wave Monolithic Integrated Circuits. This new technology will provide significant packaging advantages for microwave and millimeter-wave systems that have not been possible with any other material.

The joint effort contract, awarded by the Electronics Technology and Devices Laboratory of the U.S. Army Laboratory Command, requires the design and development of gallium arsenide computer chips for advanced electronic systems. Martin Marietta and ITT are one of only four industry teams selected to participate in Phase 1 of this Defense Department program to demonstrate the mass producibility, performance, and cost of a variety of defense electronic systems.

Martin Marietta will be concentrating on gallium arsenide technologies vital to the development of millimeter-wave radars for the next generation of military aircraft navigation and targeting systems and precision-guided weapon systems. Both types of systems are currently produced by Martin Marietta Electronics & Missiles Group in Orlando.

When perfected, millimeter-wave radar will provide capabilities to "see" through rain, fog, and other obscurants with a high-frequency signal that can detect the difference between real and false targets. Currently, precision-guided weapons require an observer to pinpoint intended targets with a laser beam. These advanced radars can eliminate this need by autonomously pinpointing targets.

Gallium arsenide, a rare, bluish-white metallic substance combined with a crystalline element, is a material that brings new capabilities to the processing of millions of bits of electronic information in micro-circuits.

Ultra-thin wafers layered with gallium arsenide and integrated circuitry, can operate computers and other equipment at speeds ten to 100 times faster than silicon, currently the most commonly used microchip material.

Gallium arsenide is produced through a machine that superheats gallium and arsenic and layers the evaporated elements onto a wafer. The work is so precise that layers of gallium arsenide can be produced in hundred-layer stacks, with each stack thinner than a human hair.

Gallium arsenide is expected to eventually replace silicon because the material is less affected by temperature and radiation. Gallium arsenide can be used for electro-optical devices and purely electric ones.

Martin Marietta has been working for several years to produce a commerical-grade gallium arsenide material that has a wide variety of applications in electronic components, ranging from target seekers of weapons to communications systems. ■

Construction notes

(Editor's note: The following is the first of a new series of articles to inform employees of current facilities construction or modifications.)

Advanced Computer Laboratory (ACL): The new Advanced Computer Laboratory facility, located North of the Advanced Research Laboratories (ARL) at the Waterton plant, is now under construction. Building completion is scheduled for August 19, 1988.

Air Force roads: Repair and repaving of the Air Force roads North of the Missile Storage Building on Air Force property at the Waterton plant is scheduled to begin early in June. This work may cause minor traffic disruption, but will be scheduled to avoid interference with heavy traffic times.

Deer Creek Facility: Renovation of the third floor at the Deer Creek Facility is now complete and occupied by approximately 850 employees.

EMF III: Construction of the new Electronics Manufacturing Facility (EMF) III is continuing and the building should be ready for occupancy in early September.

Final Polishing Building: Construction in progress on the three 500,000 gallon waste processing tanks and the final polishing building at the Waste Treatment Plant at Waterton will continue to disrupt traffic through mid-August.

First Floor Engineering Building: Remodeling construction activities are continuing on the first floor of the Engineering Building. All work is expected to be completed by late July.

Recreation Area: Renovations and improvements have been completed at the Recreation Building located immediately West of the softball fields at the Martin Marietta Recreation Area just off Highway 121.

Vaulted Space: East Bay, LSC: 50,000 square feet of vaulted space is now under construction at the east bay of Littleton Systems Center (LSC). The anticipated completion date is mid-September.

For further information or questions on construction projects, please contact Mike Lee, manager, Facilities Engineering at Ext. 7-6074 or Ext. 7-8252. ■

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Children's center receives $5,000 from Martin Marietta

Sister Angelus Caron encourages children at the Havern Center as they read aloud. Martin Marietta's $5,000 donation to the center will be used to purchase additional books, said Linda Ford, director of development. The Havern Center, located in Littleton, is a school for children that have difficulty in learning because of neurological dysfunction. Since its organization in 1966, the center has helped more than 700 children return successfully to their regular classrooms.

Employee survey set for June 13-24

Salaried and hourly Astronautics Group employees will participate in a corporate-wide Employee Communication Survey to be administered in Denver June 13-24. The survey format will be similar to the one taken in 1984.

"We plan to use the data to improve communication within work groups and across the Astronautics Group," said John F. Hallen, director of Organizational Development/ Management Development, and coordinator of the survey for the Astronautics Group. Employee input will help determine areas needing improvement and areas considered satisfactory.

"The data has tremendous impact on many areas, and serves as a long-term influence," Hallen said, "significantly affecting management decisions and capital investments, areas not readily visible to all employees."

The results of the survey will be published in a special issue of the *Martin Marietta News* near the end of October.

"We expect managers to engage people in problem solving, to make Martin Marietta an even better workplace for all of us," Hallen said. "Although technically this is a six-month project, it will be an open-ended process, with some items worked continuously until they are improved." ■

Titan IV rolled out at Cape

The U.S. Air Force rolled the first Martin Marietta Titan IV expendable space launch vehicle from the solid motor assembly building to launch complex 41 at Cape Canaveral on May 21.

The Titan IV, scheduled to make its first flight this fall, is the newest addition to the Titan family of launch vehicles designed to complement the Space Shuttle for assured space access for critical national security payloads.

Titan satellite launchers have been the major boosters for the Air Force space program for more than 20 years. The Titan IV is an improved version of the Titan 34D space launch system and is capable of placing 39,000-pound payloads into a low Earth orbit or 10,000 pounds into geosynchronous orbits.

Martin Marietta builds the first and second stages and provides the overall systems engineering and integration, payload integration, and launch services for the Titan IV program. The company is currently under contract to build 23 Titan IV launchers for the Air Force.

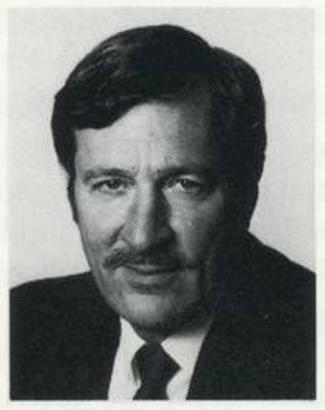
On the cover

The first Martin Marietta Titan IV expendable space launch vehicle was recently rolled from the solid motor assembly building to launch complex 41 at Cape Canaveral.

For the next several months, specialists from Martin Marietta and the U.S. Air Force will check the compatibility of the rocket with the new launch pad to prepare the Titan IV for launch.

The Titan IV is expected to make its first flight this fall.

Stofan appointed Engineering V.P.



Stofan

Martin Marietta Corporation appointed Andrew J. Stofan to vice president, Engineering, on June 1.

Stofan, who previously served as the National Aeronautics and Space Administration (NASA) associate administrator for Space Station development, brings nearly 30 years of experience from that organization.

Stofan joined NASA in 1958 as a research engineer at the Lewis Research Center, where he rose through increasingly responsible positions to become director of launch vehicles in 1974. In that position, he was directly responsible for the launch of Atlas/Centaur vehicles and the development and launch of Titan/ Centaur vehicles. In 1978, he moved to NASA's Washington headquarters as deputy associate administrator and, in 1980, became acting associate administrator for space science.

During his government service, Stofan received the Presidential ranks of Meritorious Executive and Distinguished Executive, and has received the NASA Exceptional Service Medal, the NASA Distinguished Service Medal, and several NASA Group Achievement Awards. ■

Jeffco employees urged to vote on June 7

All eligible South Jefferson County employees are encouraged to vote Tuesday, June 7, in a special election to fund road improvements.

The election, which is proposing a one-half percent sales tax increase, would allow the issuance of $31 million in bonds to fund road construction projects within a proposed new South Jeffco road district.

Proposed road improvements include: Belleview Avenue—Kipling to Eldridge; Bowles Avenue—Sheridan to C-470; C-470 and Bowles Interchange; Coal Mine Avenue—Pierce to Kipling; Ken Caryl Avenue—Sheridan to Simms; Kipling Parkway—Quincy to Geddes; Pierce Street—Bowles to Coal Mine; and Simms Street—Quincy to Ken Caryl. ■

Employee services/recreation

RTD Bus Service—Effective June 13, routes 76 and 105 will service the 7:30 a.m. and 8 a.m. start times and 4 p.m. and 4:30 p.m. quit times at the Deer Creek facility. Riders will no longer have to travel to Waterton en route, because separate 76 and 105 buses will serve Waterton. New schedules should be available from RTD by June 10.

Get a Fresh Start—Free smoking cessation classes are available to all Martin Marietta and Air Force personnel, their spouses, and dependents. Classes consist of four meetings from 5-6:30 p.m., June 13, 16, 20, and 23 in Room 200C at the DSC I facility, Wadsworth and Mansfield. To register, call the Employee Services office, Ext. 7-6750 or Ext. 7-6605.

Mile High L5 Space Society—The National Aerospace Plane is the topic Bob Gibson, manager of System Readiness, Space Launch Systems, will address Friday, June 10, 7 p.m. at South Park West. For information or to register guests, call President Barry Tuell, Ext. 7-8137 (work), and 973-7874 (home).

Radio Club—The Waterton Amateur Radio Society will meet at 5 p.m., Tuesday, June 7, in the hamshack at the recreation area. Contact Jeff Owings, Ext. 7-6898.

Saddle Club—The club will meet Tuesday, June 7, at the Recreation area for Family Night and a pot-luck supper. There will be a board of directors meeting at 5 p.m., followed by a 6 p.m. pot-luck, and meeting at 7 p.m. Contact Mary Smith, Ext. 1-8154, or Irene Woodzell, Ext. 7-5804.

Skyline Hunting and Fishing Club, Inc.—The club will meet at 5 p.m., Monday, June 13, at the Recreation area clubhouse. The club will conduct hunter education classes in June and July. The June dates are: 21-24 and 27, 7-9:30 p.m. at DSC I and June 25, 8 a.m.—1 p.m. at the Skyline Hunting and Fishing Club Range. Those enrolled must attend all six classes. A minimum of 10 students is needed at the first class to continue classes. The total cost is $7, and there is no need to preregister. For more information, contact instructor Dick Benson at his home, 985-3728, or Recreation, Ext. 7-6605 or Ext. 7-6750.

Parapsychology Club—The group will meet from 5-7 p.m., Thursday, June 16, in the cafeteria at LSC. Nonemployees are welcome to attend, but corporate policy requires a minimum age of 16. Employees must provide escorts for their guests and give names of guests to Janna Winkel, Ext. 7-7814, DSC, or Helen Hussander, Ext. 1-6887.

Denver Corporate Games—The eighth annual Denver Corporate Games are slated for Friday and Saturday, June 3 and 4. More than 100 employees will participate as athletes or volunteers. All events are free and spectators are encouraged to attend and cheer on the team. Events include:

- Track will begin at 6 p.m., Friday, at Jefferson County Stadium, 6th Avenue and Kipling;
- Volleyball begins at 6 p.m., Friday, and continues on Saturday at Green Mountain High School, 13175 W. Green Mountain Drive;
- Tennis begins at 6 p.m., Friday, and continues on Saturday;
- 5-km road race will be held at 8 a.m., Saturday, at Denver West Office Park, Cole Blvd. and West Colfax;
- Bicycle time trials will be held at 7 a.m., Saturday, at Adolph Coors Company;
- Bicycle criterium trials include the following: Masters, 10:30 a.m., Saturday; Women's, 11:15 a.m.; and Men's, noon at Denver West Office Park, Cole Blvd. and West Colfax;
- Golf, 7:30 a.m., Saturday, at Applewood Golf Course;
- Racquetball, 8 a.m., Saturday, at Green Mountain Recreation Center, 13198 W. Green Mountain Drive;
- Swimming, 9 a.m., Saturday, at Green Mountain Recreation Center;
- Trap Shooting, 9 a.m. at R. F. Clement Range, 4000 S. Carr Street.
- Bowling, 9 a.m. at Holiday Lanes, 10350 West Colfax.

Funplex Discount—Coupons offering one free activity (bowling, skating, or miniature golf) with the purchase of the same activity at full price, are available from the Recreation office located in Room 407, third floor, Deer Creek facility, from 10:30 a.m. to 12:30 p.m. and 1 to 3:30 p.m. daily. Coupons are also available from volunteer recreation representatives at SSB, DSC, LSC, Greenwood, and Terrace Towers.

LSC Toastmasters—Improve communication skills and gain self-confidence. Attend Toastmasters Club meetings on Wednesdays at 4:30 p.m., Room 209G at LSC. For information, contact Jim Harrer, Ext. 7-4588 or Alex Hubert, Ext. 7-6520.

Commodore Users Group—The club will meet at 5 p.m. Tuesday, June 21. For more details and the location, contact Chuck Barton, Ext. 7-9950.

People

- Natalie Ortberg, a staff engineer in Strategic Systems, has been selected to appear in the 16th addition of *Who's Who of American Women*. Inclusion in the prestigious publication is limited to those individuals who have demonstrated outstanding achievement in their own fields of endeavor and who have thereby contributed significantly to the betterment of contemporary society. Fewer than 1/100th of one percent of women in the United States appear in the publication. "To be recognized in your own field is rewarding—especially when you work in a nontraditional occupation," Ortberg said. Ortberg's husband and father also work for Martin Marietta.

- Stacie Bateman, the 18-year old daughter of Lee E. Bateman, staff engineer in Systems Engineering, Defense Systems, won gold medals in the Colorado State Winter Special Olympics held at Keystone this past winter. Bateman earned the medals in the downhill skiing event and the giant slalom competition. She is a student at Green Mountain High School. ■

SIP values

Unit values for the Savings and Investment Plan (SIP) for employees represented by United Aerospace Workers (UAW) and United Plant Guard Workers of America (UPGWA) in March (February values in parentheses) are:

Fund A	indexed equity
0.9205777569	(0.9536113000)
Fund B	fixed income
1.0446466248	(1.0397204936)
Fund C	company stock
0.9042329844	(0.9508795751)

PSP values

Unit values for the Performance Sharing Plan (PSP) for salaried employees in March (February values in parentheses) are:

Fund A	indexed equity
4.2908980007	(4.4247920854)
Fund B	fixed income
2.9102901360	(2.8869856477)
Fund C	company stock
4.7018622928	(4.9276799574)

Briefing set for degree in systems management

Sheila Bell, coordinator for the University of Denver master of science in Systems Management degree program, will brief those interested at 11:30 a.m. on Tuesday, June 7, at the Technical Support Building, Conference Room 501.

New students and continuing University of Denver students pursuing this degree may register for the July/August 1988 term from noon to 1 p.m.

For more information, contact Educational Services, Ext. 7-4050.