MARTIN MARIETTA
news
DENVER AEROSPACE

Number 12/1984

SRO in Factory

Gen. Casey: Fifth Peacekeeper flight test 'a great success'

The launch last week of the fifth in a consecutive series of Peacekeeper intercontinental ballistic missiles (ICBM) from Vandenberg Air Force Base, CA, was termed "a great success."

Maj. Gen. Aloysius G. Casey, commander of the Ballistic Missile Office (BMO), the Air Force's executive management agency for the ICBM, added, "The Peacekeeper flight test program is on schedule, within budget, and its performance has been better than planned. We've had fantastic accuracy with the flights so far."

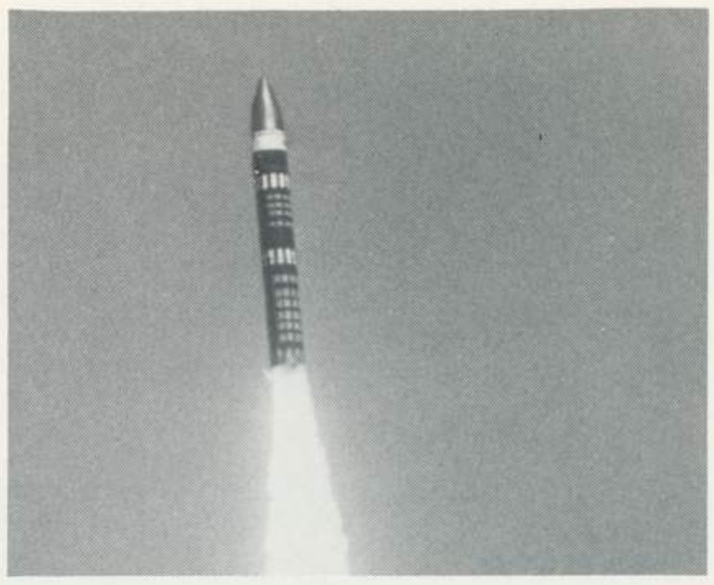
Martin Marietta Aerospace has been assigned a principal role in developing the system. Denver Aerospace's strategic and launch systems division is responsible for multiple development tasks under assembly, test, and system support (AT&SS); launch system development; and basing studies contracts. The company also will have a major role in the assembly, checkout, and support of the Peacekeeper during deployment.

The test came one day after the U.S. Senate narrowly approved continued production of the multiple-warhead ICBM, which is to be installed at fixed launch bases in Wyoming and Nebraska starting in 1986.

The latest launch, at 9:50 a.m. PDT, June 15, was the fifth in a series of 20 Peacekeeper test vehicles, and marked the end of the first of a four-phase series of research and development test flight program.

It also marked the first use of the MK 21 reentry vehicle (RV), the baseline RV for the Peacekeeper system.

The just-concluded first phase emphasized functional performance and validation of the missile's guidance systems and booster performance. It also demonstrated the ICBM's capability to carry a full operational payload. The next phase will demonstrate the system in a more stressing environment, silo operations (beginning with the ninth missile), and full integration of the MK 21.



Peacekeeper No. 5

That latest 30-minute flight covered slightly more than 4,100 nautical miles to a target area on the Kwajalein Missile Test Range in the Pacific Ocean. Launched from an above-ground canister on a concrete test pad, the missile carried six unarmed reentry vehicles, including the MK 21. The next three Peacekeeper flights also will be launched from canisters. However, the final 12 research and development test missiles will be be launched from modified Minuteman test silos at Vandenberg.

How they voted: Peacekeeper

The U.S. Senate—on the rare, tie-breaking vote of Vice President George Bush—defeated 49-48 a bid last Friday (June 15) to cut $2 billion in production money for the Peacekeeper intercontinental ballistic missile, but to allow $600 million to keep the missile assembly line ready for the future. As vice president, Bush is also president of the Senate and therefore allowed to vote to break a tie. Earlier the Senate voted 55-41 to table an amendment that would have eliminated all Peacekeeper production funds from the $291 billion defense authorization bill under consideration. Senate voting breakdown on the measure to cut production money was:

	For	Against
Alabama	None	Jeremiah Denton (R) Howell Heflin (D)
California	Alan Cranston (D)	Pete Wilson (R)
Colorado	Gary Hart (D)	William Armstong (R)
Florida	Lawton Chiles (D) Paula Hawkins (R)	None
Louisiana	Russell Long (D) J. Bennett Johnston (D)	None

Where to register to vote

Colorado counties are gearing up for the anticipated onslaught of voter registration that usually typifies a presidential election year. In addition to various municipal points, many counties will be setting up voter registration booths at shopping centers. Martin Marietta News will report various counties' registration points and special locations as they are announced.

ARAPAHOE COUNTY: (Mon-Fri) Administration Bldg, 5334 South Prince St, Littleton, 795-4244; County Motor Vehicle Branch, 14th Ave and Chambers Rd, 343-1888; Aurora City Hall, 1407 South Havana St, 695-7090, 8 a.m.-5 p.m.; BowMar Town Hall, 4850 Homestead, 794-3746, by appointment; Cherry Hills City Hall, 2450 East Quincy Ave, 789-2541, 8:30 a.m.-5 p.m.; Deer Trail Town Hall, 769-4464; Englewood City Hall, 3400 South Elati St, 761-1140; 8 a.m.-5 p.m.; Glendale City Hall, 950 South Birch St, 759-1513, 8:30 a.m.-4:30 p.m.; Greenwood Village City Hall, 6060 South Quebec St, 773-0252, 8:30 a.m.-5 p.m.; Littleton City Hall, 2255 West Berry St, 795-3700, 8 a.m.-5 p.m.; and Sheridan City Hall, 4400 South Federal Blvd, 795-3414, 8 a.m.-4:30 p.m.

Libraries: John V. Christiansen, 2305 East Arapahoe Rd, 798-2441, Mon 5-9 p.m., and Sat. 10 a.m.-5 p.m.; Castlewood, 6739 South Uinta St, 771-3197, same days and times as Christiansen; Sheridan, 3201 West Oxford Ave, 789-5422, Mon 5-8 p.m., and Sat. 10 a.m.-5 p.m.; Glendale, 5050 East Center Ave, same days and times as Sheridan; Byers, 1-822-9392 and Deer Trail, 1-769-4421, will take registrations whenever open; and Littleton Bemis, 6014 South Datura, 795-3827, Mon 5-9 p.m., Sat. 9 a.m.-5 p.m.

DENVER COUNTY: Denver Election Commission, 414 14th St, Rm 116, 575-2351, Mon-Fri 8 a.m.-5 p.m.; Motor Vehicle Branch, 675 South Broadway, Mon-Fri 8 a.m.-12 p.m. and 1-4 p.m.; City and County Bldg, Clerk and Recorder's Office, Rm 281, Mon-Fri 8 a.m.-4:30 p.m.; and Colorado Drivers' License Bureau, West Sixth Ave and Bannock St, Mon-Fri 8-11 a.m. and 12-5 p.m.

Libraries: Bear Valley, 5171 West Dartmouth Ave, call 935-0616 for hours; Park Hill, Montview Blvd and Dexter St, 322-3631 for hours; Montbello, 12955 Albrook Dr, 373-0767 for hours; Ross-University Hills, East Amherst Ave and South Birch St, 757-2714 for hours; and Woodbury, West 33rd Ave and Federal Blvd, 455-3930 for hours.

Supermarkets: (Mon-Sat, 11 a.m.-7 p.m., June 11-30) Safeway stores at 20th and Washington, Colfax and Josephine, 14th and Krameria, Sixth and Corona, 44th and Lowell, Evans and Downing, and First and Steele; King Soopers at 14th and Speer, 2727 West Evans, Ninth and Corona, 13th and Krameria, Monaco and Evans, Bear Valley, 755 South Colorado Blvd, 5125 West Florida, and 2200 West Alameda.

JEFFERSON COUNTY: (Mon-Fri, 8 a.m.-5 p.m.) city clerks' offices in city halls at Arvada, 8101 Ralston Rd; Edgewater, 5845 West 25th Ave; Golden, 911 10th St; Lakewood, 44 Union Blvd; and (Mon-Fri, 8:30 a.m.-4:30 p.m.) county clerk's offices at 1700 Arapahoe St, Golden; 7521 West 57th Ave, Arvada; 5000 South County Hwy 73, Evergreen; 10394 West Chatfield Ave, Ken Caryl; and 3333 South Wadsworth Blvd, #122-A, Lakewood.

On the cover

Denver Aerospace employees jammed the second floor factory at the Waterton plant for the visit earlier this month by astronauts Bruce McCandless and George Nelson. The two narrated films and slides while discussing their recent space shuttle missions using the manned maneuvering unit (MMU) designed and built by Martin Marietta. McCandless, right, was the first human to fly free in space without benefit of a lifeline using the MMU last February. Nelson, left, flew the MMU to rendezvous with the ailing Solar Maximum Observatory Satellite on the shuttle's last mission in April.

Santa's volunteers going year-round

It's still called Operation Santa Claus, and the group does play St. Nick to less fortunate families each Christmas. Last season, in fact, the 100-plus volunteers delivered about $17,000 worth of food baskets and toys to 101 families with a total of 376 children.

But, the group's chairman, Dwaine Schilling, pointed out "government agencies recently have either reduced or eliminated financial support to many organizations that had provided assistance to those in need. Consequently, less and less of their operating funds are available now for routine maintenance or special projects. Operation Santa Claus would like to help them fill that gap."

However, to commit itself to this task, Operation Santa Claus has to call on that most precious volunteer commodity—time.

"We need to know whom we can count on for that time," Schilling said. "The involvement of our people—that's the magic. This year we're targeting for more employee personal involvement in our community to help people in their time of need. The year-round success of our program depends upon the willingness of our people to give of their time." Schilling added those interested in joining the volunteer ranks should contact Betty Purkey, ext 5265.

The chairman added, "Extended year-round projects are not totally new to the community-minded volunteers of Operation Santa Claus. They have been involved with several group projects over the years, including Easter Seals, Jerry's Kids (the Jerry Lewis muscular dystrophy campaign), Porter Memorial Hospital Critical Care Unit, a senior citizens center, the Wheat Ridge Regional Center (formerly Ridge State Home and Training School), Toys for Tots, and The Shalom House, as well as with deserving individuals, one needing a $2,500 motorized wheelchair."

He's especially ambitious this year—"for several reasons. First, because we're going to adopt more year-round projects. Also, we're going to concentrate on young people's needs. The children of the world are subjected to an environment over which they have no control and...are not able to help themselves. We want to help them and have, in fact, adopted a motto—'Just for Kids.'

"Finally, Operation Santa Claus will be observing its silver anniversary this year. The 25th year of anything worthwhile has got to be all the more memorable for the participants."

Operation Santa Claus was born 24 years ago when a handful of Denver employees in what was then called the avionics department—now electronics—decided instead of giving each other presents and cards, they wanted to contribute something special to their community at Christmas by redistributing those funds to a needy family.

Soon, other departments joined in to make it a company-wide annual activity, although limited in funds. Then, about eight years ago, a system was initiated to collect scrap tab runs and sell them to a paper recycling company. Those additional funds doubled the Christmas activity and even left over enough funds to provide additional assistance to specific causes throughout the year.

Lab to prototype intelligence systems

Denver Aerospace will build a laboratory to develop a prototype (mockup) of analyst support environments for new military intelligence systems and to upgrade existing systems.

Under the $847,000 contract awarded by the Air Force's Rome Air Development Center at New York, the laboratory will be used to design support environments—including terminals, displays, and computers—for those intelligence systems.

The 22-month program will be managed by James R. Herrington of Technical Operations' software department, under Parker S. Stafford.

The company was chosen over Boeing Aerospace Company to receive the contract.

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DENVER AEROSPACE
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June 22, 1984

Improved external tank welds developed at Michoud

A new variable polarity plasma arc welding technique has reduced recurring costs in the manufacture of space shuttle external fuel tanks. Those cost savings could exceed $100,000 per tank when the new procedure is fully implemented.

The culmination of five years of research, the new technique was developed jointly at NASA's Marshall Space Flight Center at Huntsville, AL, and by Martin Marietta Aerospace at NASA's Michoud assembly facility in New Orleans.

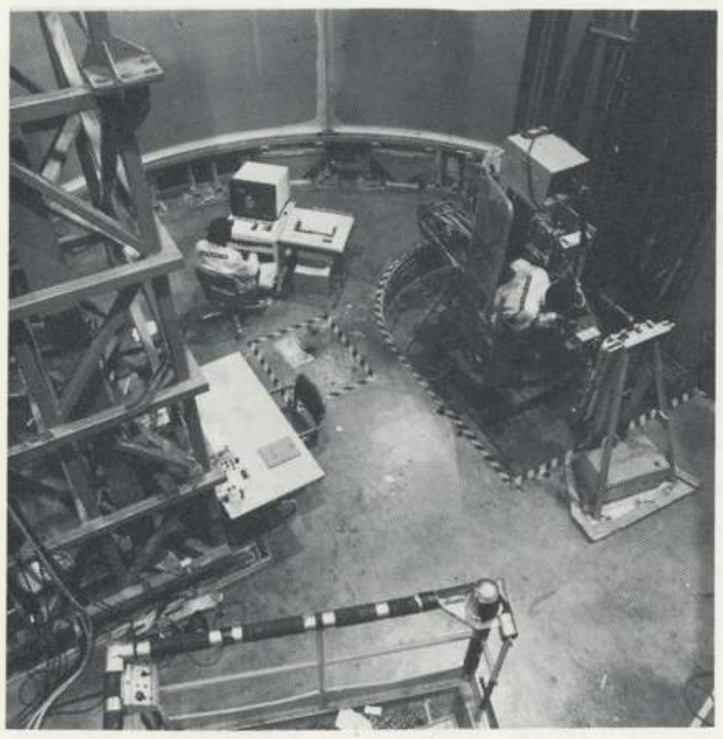
Plasma arc welding, a replacement process for the more traditional tungsten inert gas welding, is now being used to make most of the half-mile of welds on each external fuel tank, the largest and only non-reusable component of the space shuttle system.

The technique is making a significant contribution to Martin Marietta's efforts to reach production rates of 24 tanks a year by the late 1980s to match the growing number of space shuttle flights by both NASA and the Air Force.

Initially, plasma arc was developed as a metal cutting technique, but NASA and Martin Marietta explored the technique as a way to join thin sheets of aluminum alloys, usually less than a quarter-inch thick. Side-by-side comparisons with other weld systems led to the first production line use of plasma arc welding at Michoud.

Plasma arc technology uses a keyhole-weld method and reversed polarity flow to produce clean, effective welds. The computer-aided system first melts a hole through the metal, then continues to burn the hole along the weld line. Molten metal fills in behind the keyhole, producing a defect-free weld.

During the weld operation, the surface polarity of the metal is reversed for four milliseconds every 23 milliseconds. The reversed electrical polarity forces impurities out of the keyhole, resulting in a cleaner weld. The system minimizes preparation of the metal before welding, reduces the number of weld passes necessary for a reliable weld, and decreases defects by 90 percent.



Plasma arc welding

Currently, a vertical barrel weld tool uses plasma arc technology at Michoud, and additional weld stations are scheduled for installation over the next few months. By 1986, 11 major weld tools will be converted to plasma arc to produce more than 90 percent of the welds in each external tank.

Some of the first groups of salaried Denver Aerospace employees participating in a Martin Marietta corporate-wide survey are shown filling out the forms. The survey is aimed at enhancing communication throughout the corporation, improving day-to-day operations, promoting problem solving and planning, and launching long-range improvements. Survey results are expected by late August and those results—along with implementation of changes based on the survey—will be covered in subsequent issues of Martin Marietta News. The current survey is the first phase of a program that is scheduled to be extended to hourly employees as well during the first half of next year.

May PSP values

May 31 unit values for the Performance Sharing Plan were Fund A (indexed equity), 2.1414011491; Fund B (fixed income), 1.9089613523; Fund C (Martin Marietta stock fund), 2.1055080821; Fund D (TRASOP), 0.8318217424.

'Quit' smoking sessions resume

Dr. Leonard R. Kowalski, director of medical services, has scheduled another round of sessions throughout the company to assist Denver Aerospace employees to give up smoking. Each half-hour group session includes time for one-on-one consultation. Call ext 5801 to reserve a time. The June and July schedule follows:

- Littleton Systems Center (LSC), room 210A: Tuesday, June 26, 11-11:30 a.m.; 11:30 a.m.-noon;
- Denver Systems Center (DSC), room 200K: Tuesday, July 10, 11-11:30 a.m., 11:30 a.m.-noon;
- Greenwood Commons Bldg 6130: Tuesday, July 17, 11-11:30 a.m., 11:30 a.m.-noon.
- Space Support Bldg (SSB), sixth floor presentation room: Tuesday, July 31, 11-11:30 a.m., 11:30 a.m.-noon.

New vehicular security program initiated by plant protection

A new vehicle registration and bumper decal system is being initiated for Denver Aerospace personnel as well as badged, permanently assigned contractors and vendors under a new program to enhance security at all facilities.

Plant protection stressed the new program in no way alters current security procedures requiring all persons entering Martin Marietta facilities to show official badges.

Forms will be distributed with paychecks Thursday, June 28, and Friday, June 29. They must be completed by the individual for each personal vehicle used at work, and turned in to any plant protection guard station before bumper decals will be issued.

Registration forms may be obtained from plant protection guard stations at the following locations: main plant firehouse, SDF, SSBN, the main gate, DSC, LSC, GEPS, and GWC 8100.

Bumper decals are to be placed on the left front bumper of vehicles and on the front fender of motorcycles.

Personnel entitled to reserved parking are scheduled to receive new identification stickers during August.

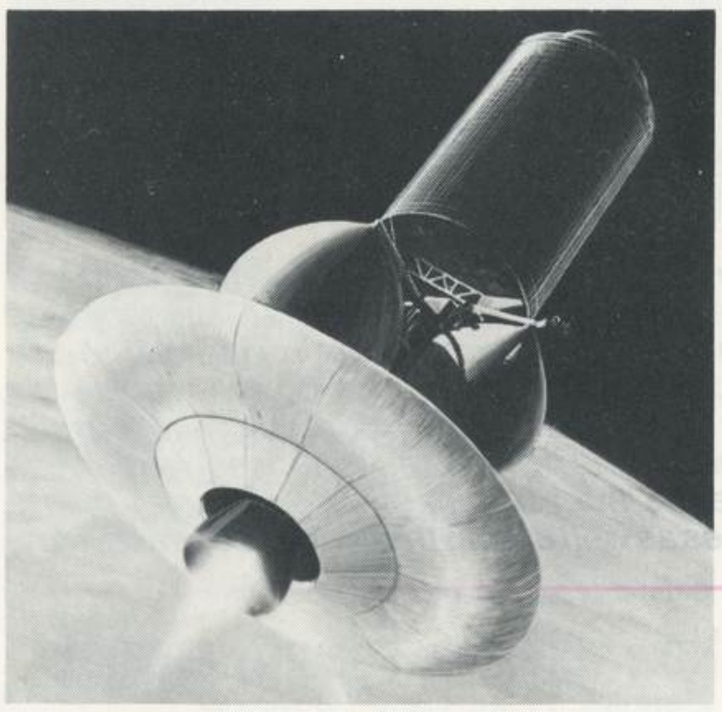
Personnel must notify plant protection about any change in vehicle status after the forms are completed and a decal issued. They also must return the decals when terminating employment.

Questions should be referred to plant protection members assigned to the guard station at an individual's work location, or employees may call ext 4646.

Orbital transfer vehicle contract a win; possible 1991 flight

Denver Aerospace—a pioneer in advanced rocket upper stage development since the 1960s—is studying a reusable orbital transfer vehicle (OTV) to reduce costs of deploying satellites and spacecraft into high orbits, including geosynchronous.

The $1 million, 15-month contract was one of two awarded last week by NASA's Marshall Space Flight Center for parallel OTV concept definition studies. The second study went to Boeing Aerospace Company.



Artist's concept of OTV

About 15 persons will work the program at its peak. Most of them will be based at the Greenwood Commons facility in Denver and will be assisted by personnel from the Michoud division in New Orleans.

The earliest an OTV is expected to be flown is 1991. Its uniqueness from existing upper stage rocket vehicles allows it to be used for up to 30 missions before total refurbishment or replacement is required. Flying out of the space shuttle's cargo bay, or from a space station, it will boost payloads of up to 16,000 lb to higher orbits.

OTV would be mated with a satellite or other spacecraft and carried into space in the shuttle cargo bay. The vehicle would maneuver its payload to a new orbit and then use its rocket engines to start a descent.

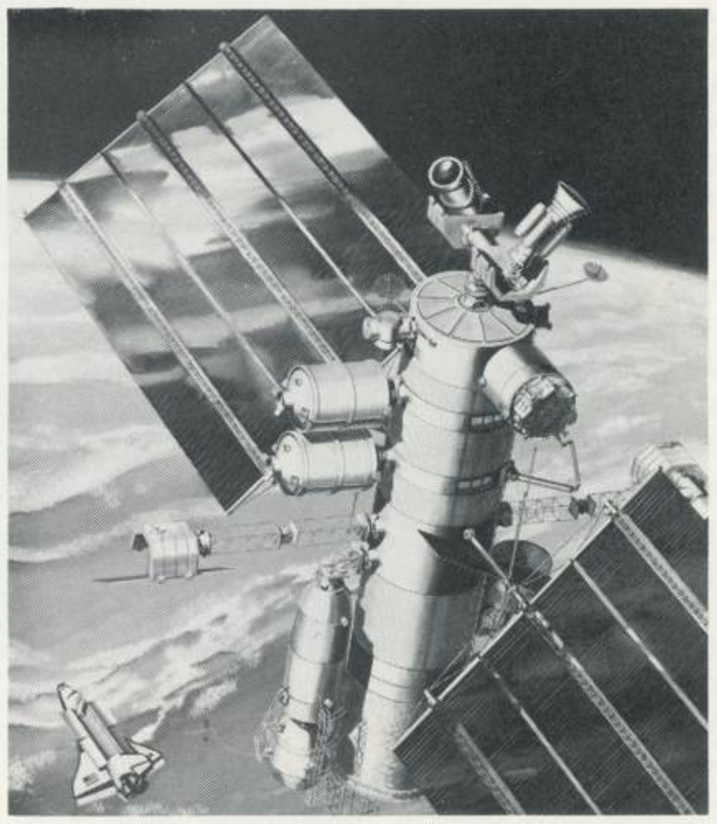
Passing through Earth's atmosphere at an altitude of about 48 miles, OTV will begin to slow, and a large aerobrake 40 to 50 feet in diameter will help reduce its speed even more. Due to orbital dynamics, it will begin to coast back up into a higher and higher orbit. When OTV has reached the desired orbital altitude, its rocket engines will be fired again to circularize its orbit for retrieval by the space shuttle or by an orbital maneuvering vehicle dispatched from a space station.

With a space station, OTV operation would be similar to that of the shuttle, except it would not be brought back to Earth after each mission. Instead, the vehicle would be stored and refurbished at the space station.

Robert B. Demoret, program director, said OTV will be used primarily to place NASA, Department of Defense, or commercial communication satellites into geosynchronous orbit.

"However, it is planned to deliver large payloads into other orbits and to boost planetary exploration spacecraft into high velocity orbits approaching their mission trajectory as well," he added.

The vehicle also could retrieve satellites from high orbits for repair or return to Earth.



With Space Station

Demoret said Martin Marietta's tasks will be to study technical feasibilities of various approaches and OTV designs, and to determine costs and development time required for each approach.

Following completion of concept definition studies, NASA will choose one or more concepts and request bids for the next phase of OTV development, system definition. Contracts for that phase are expected to be awarded during early 1986.

Air Force orders Titan 34D, three transtages

Denver Aerospace has begun work on another Titan 34D expendable launch vehicle and three transtage upper stages for the U.S. Air Force.

Thomas R. Callan, Strategic and Launch Systems Division director of business operations, said the Air Force order is worth up to $69.5 million.

The order—16th for a 34D—is expected to extend the Titan launch period into at least late 1987. (Just last February the company received an Air Force order for a 15th Titan 34D with delivery scheduled for August 1985.)

"This contract (which calls for completing a Titan launch vehicle for which materials already had been acquired) is only for the build, but along with this we should be getting an extension to the launch contracts at Cape Canaveral later next year," Callan said.

In addition, Denver Aerospace will build two transtages—to be delivered August 31, 1985, and September 30, 1986, respectively—and buy materials for a third. Delivery dates on the core vehicle and the third transtage will not be set until the Air Force exercises options in the contract, possibly sometime next January.

Transtage is an upper stage used in conjunction with Titan launch systems. It was designed by the company for the Air Force to boost payloads into geosynchronous orbit.

14th consecutive 'superior' Shuttle performance rating

NASA has awarded Martin Marietta Aerospace the firm's 14th consecutive "superior" rating for its space shuttle launch processing performance, noting "Martin Marietta continued to do a superior job processing external tanks and operating the propellant facilities."

NASA, which evaluates the work and assigns an award fee based on contract performance, has awarded Martin Marietta 100 percent performance ratings since 1976, when the company began processing the space shuttle's external fuel tanks for launch from Florida's Kennedy Space Center.

While increasing the production rate, the company has reduced the manufacturing costs and the amount of time required to build each tank. The man-hours needed to build a tank have been reduced by 116,000 hours, down to 150,000 hours from 266,000 hours.

The company has delivered 18 tanks to NASA, with five more scheduled for delivery by the end of 1984. External tanks have performed successfully on all 11 shuttle missions.

The next shuttle launch, STS 41-D, was scheduled for today (June 22) at 8:43 a.m. (EDT), from Florida's Kennedy Space Center.

With Space Shuttle

Recreation

(Editor's Note—Martin Marietta Denver Aerospace's Recreation Department is located in Engineering bldg, module 124, and can be reached by telephone at ext 6750 or 6605. Flyers on sports and other extracurricular activities, ticket discounts, special sales, and trips are available from that office or from the department's information racks throughout the company.)

ALPINE—The Rocky Mountain Alpine Club (RMAC) has scheduled a series of outings for July. The first, Saturday, July 7, is a day fishing trip to Gross Reservoir near Wondervu. Contact Barb Converse, ext 4748. RMAC plans a backpack trip the following weekend, July 13-15, to Medicine Bow National Forest, north of Rocky Mountain National Park. Contact Dave Caswell, ext 3543 or 5153. Crestone Range will be the site of a July 20-22 pack-in that third weekend. Contact Larry Espelage, ext 5376.

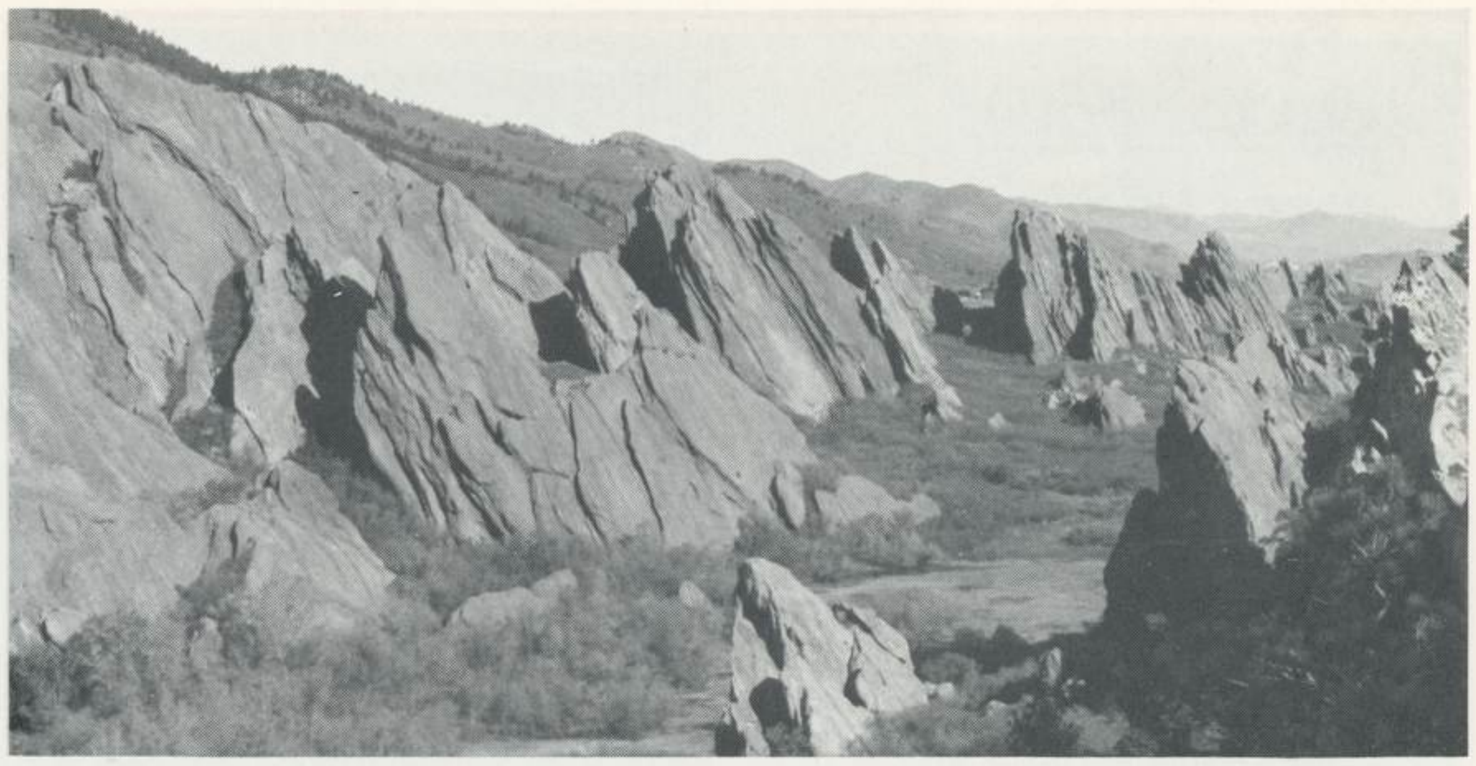
BASEBALL—Discounted tickets are still available from Recreation for the fireworks display and Denver Bears baseball game against Omaha at 7:35 p.m., Monday, July 2.

GOLF—July 25 is the registration deadline for the Martin Marietta Open, to be played at the Riverdale Golf Club south of Brighton on August 11. Entry fee for both men and women duffers is $22 each, but the maximum number of players for the two shotgun flights is 280. Riverdale is located at East 124th Ave and Henderson St.

HUNTING/FISHING—Skyline Hunting and Fishing Club has scheduled its next general membership meeting for 5 p.m., Monday, July 9, at the clubhouse behind the softball diamonds in the company's recreation area. Contact Fred Sunderland, ext 8129.

RIDING—The Ridge Riders Saddle Club meets at 7 p.m., the first Tuesday of every month at the company's recreation area clubhouse. Prospective members are invited to the next meeting July 3. The riding group also has scheduled an O-Mok-See for Wednesday, July 11. O-Mok-See is an Indian name for a variety of five horse racing competitions that include barrel and flagpole events.

SWIMMING—Tickets, discounted $2, to Hyland Hills Water World, West 90th Ave and Pecos St, are available from the Recreation office and the various recreation representatives. The facility is open daily from 11 a.m. to 6 p.m. except Wednesday, when the hours are 11-8.



500-million-year-old view

Roxborough Park—feast for senses an ageless treat

State-owned Roxborough Park, known for its towering, red sandstone rock formations in Douglas County, offers Denver Aerospace employees and their families a unique outdoor experience.

Currently closed to the general public—pending development of trails and other recreational facilities—the Colorado Division of Parks and Outdoor Recreation is offering reserved, guided, walking tours to company employees. They will be offered Tuesday and Wednesday evenings. Bookings are through the Chatfield State Recreation Area, 797-3986. Employees also may join public tours on Saturdays through the autumn months.

Roxborough, much like the company's own Waterton facility, is composed of stretches of red sandstone hogbacks that make up a geological history of some 500 million years. Aside from its unique geology, the park provides an extensive wildlife habitat and is rich in archeological evidence.

When opened officially to the public, it will be a unique wilderness area. Located near major metropolitan populations, it will afford opportunities for nature study and hiking, with the added benefit of park personnel to interpret for visitors the area's ages-long evolution.

Three Martin Marietta employees—Paul Scheffer, ext 3605; Jim Allison, 4863; and John Sandin, 1511—are working as volunteer naturalists in the park. They may be contacted for additional information.

Variety of discount tickets available from recreation

Discount movie tickets for most area theaters are just a sampling of the many specially priced entertainment offerings employees can pick up at the Recreation Office or through recreation representatives at various Denver Aerospace locations.

Also available are discount Regional Transportation District (RTD) bus tokens and Magic Kingdom Club cards—for Disneyland, Disney World, and the Epcot Center—as well as discounts to similar attractions around the country.

Recreation representatives for 1984 are:

— Greenwood Commons: Ruth Cobern, bldg 8100, second floor, ext 2048, 9-10 a.m., and 2-3 p.m.;
— DSC II: Kay Shuey, module G50 (NW corner), ext 7497, 8-11 a.m. and 1-3 p.m.;
— SLF: Lucy Winka, Personnel Office representative, ext 2818;
— LSC: Georgeanne Wood, module 205, ext 0111;
— Inverness: Vicki Edmisson, bldg 98, room 110, 790-3001;
— West Point: Nadine Holder, module 363, ext 7886;
— Main Plant: Lori Sharp, Engineering bldg, module 124G, ext 6750, 10:30 a.m.-12:30 p.m. and 1-3 p.m.;
— SSB: Marge Losey, SSB, module 400, ext 3678, 1-3:30 p.m.

Anyone interested in assuming recreation representative duties at LSC should contact Lori Sharp, ext 6750.

Mann to honor General film ducats after merger

Discounted General Cinema Theatres movie tickets will be honored at Mann Theatres, Inc, up to the expiration dates stamped on those tickets when General becomes part of the Mann chain, effective today (Friday, June 22).

Also among changes announced by the recreation department, the price of the Mann group activity ticket will increase from $2.50 to $3, effective July 1. However, a supply of those less expensive tickets is still available from recreation, and Mann also will honor those until their respective expiration dates.