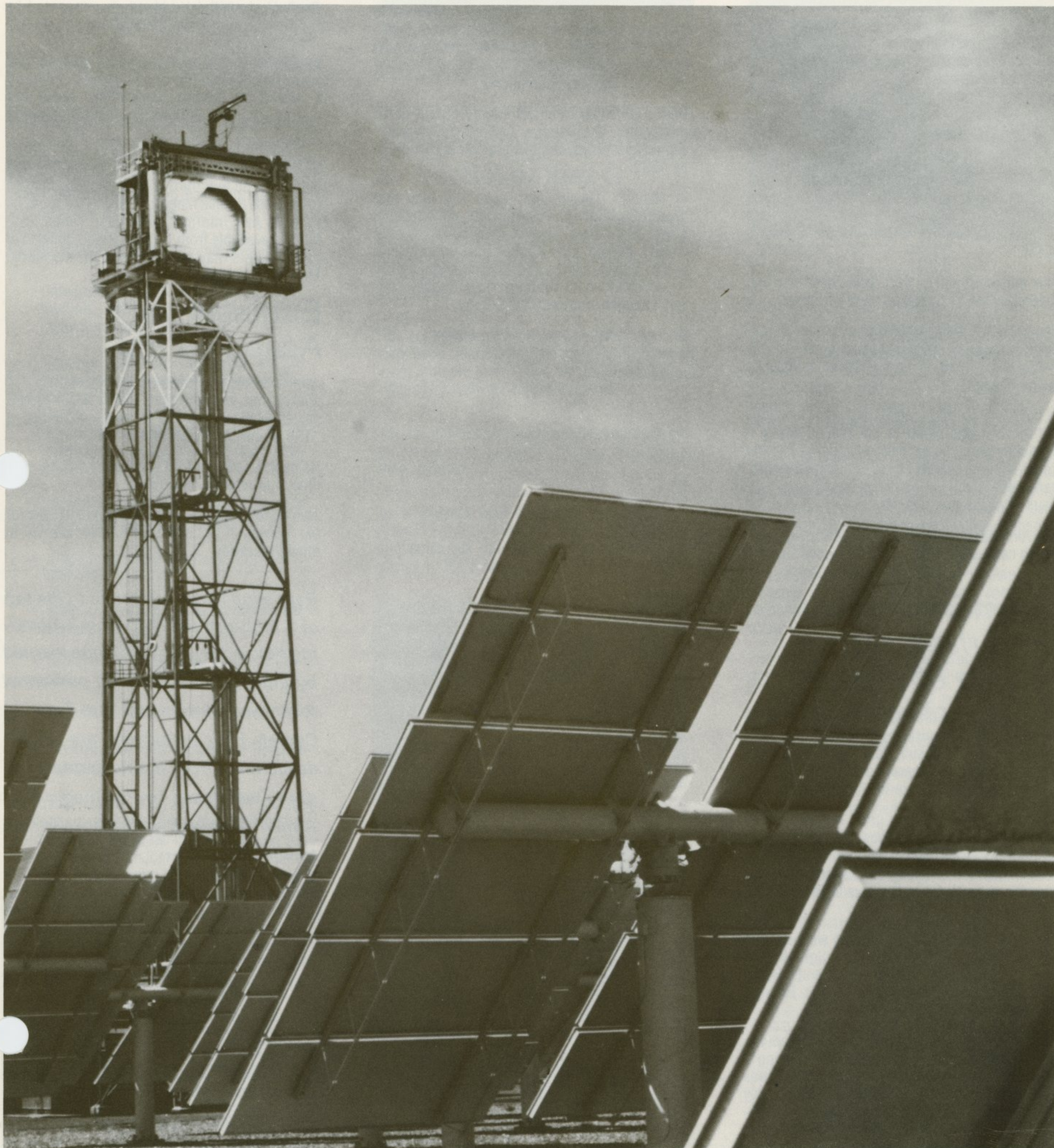




**NUMBER 16/1981**

**MARTIN MARIETTA**  
**news**  
DENVER AEROSPACE





# Solar power plant dedicated in Spain

A 500-kilowatt solar thermal power plant that will provide electrical energy to the local power systems of Almeria and surrounding communities in the Costa del Sol area of Spain has been completed and was dedicated September 21.

The collector field for the plant was designed and built by Denver Aerospace.

"This solar thermal central receiver test facility will demonstrate the potential for a cost-effective source of electrical energy that is independent of the world's limited supply of fossil fuels," said A. E. Hawkins, vice president of solar energy systems.

The contracts for the collector field were awarded in 1979 through a consortium of European countries and the United States called the International Energy Agency with DFVLR—the German equivalent of NASA—as the operating agent.

The mirror modules were contracted for and funded by the U.S. Department of Energy.

The collector field, installed by Denver Aerospace, is made up of 93 heliostats. Twelve mirror modules mounted on a single pedestal make up each heliostat.

In the Almeria design, liquid sodium is heated in the receiver and piped to the ground where it produces steam to generate electricity. The hot liquid sodium can be stored for several hours, permitting electrical power generation to continue after the sun has set.

The Almeria project's computer control system, which causes the heliostat field to focus sunlight

on the central receiver, also was developed by Denver Aerospace, which has been involved in research and development of solar thermal central receiver systems since 1974.

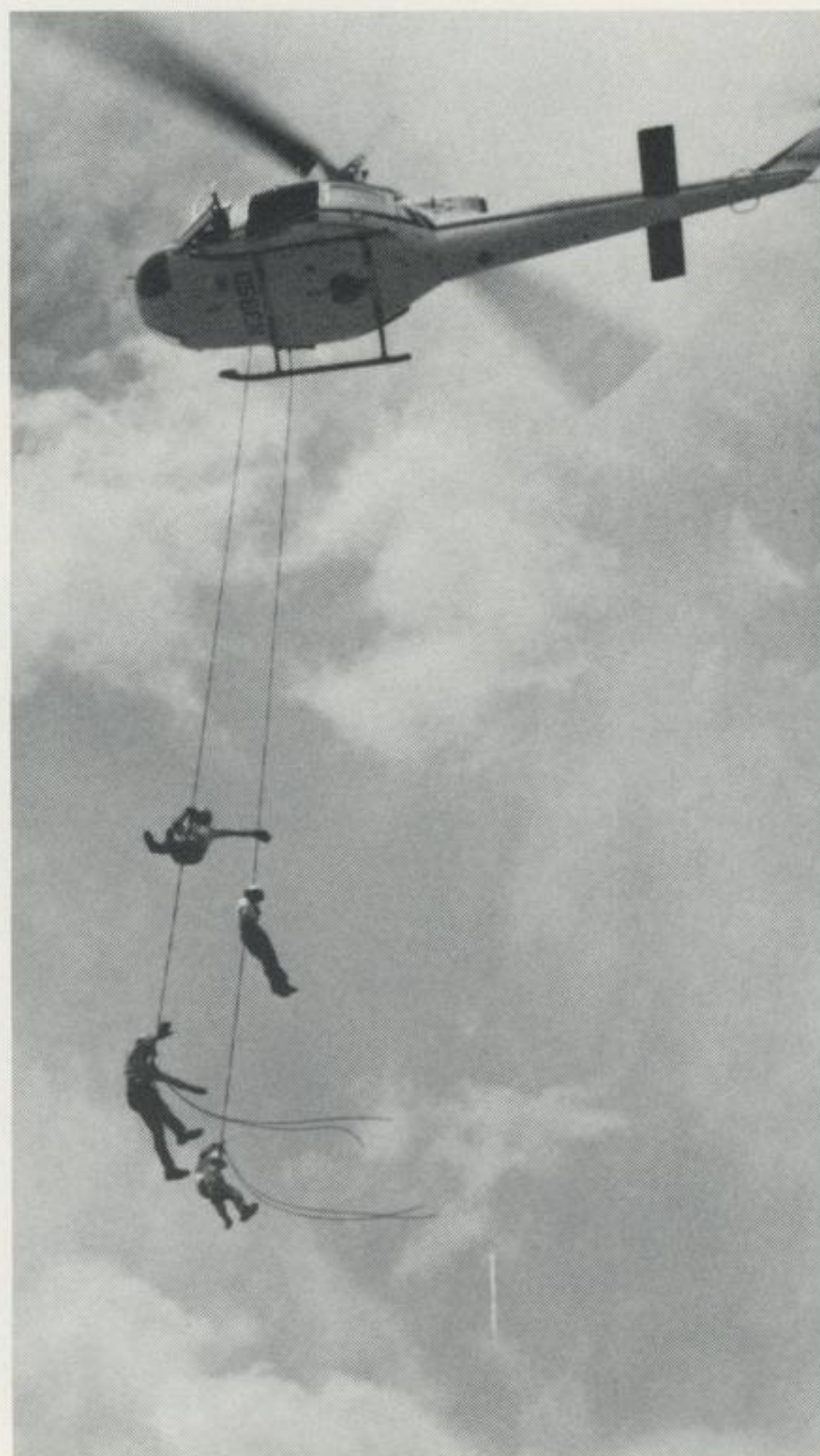
"We have been able to help move solar thermal technology and hardware out of the experimental stage and into practical commercial use," Hawkins said. "Denver Aerospace is involved in the development and installation of the heliostats for the nation's first and world's largest commercial solar thermal central receiver power plant near Barstow, California."

With a potential electrical energy output of 10 megawatts, the Barstow facility has been designed to supply enough energy for 2500 homes by 1982.

In addition, Denver Aerospace has built and brought online a 350-kilowatt photovoltaic power plant near Riyadh, Saudi Arabia—the world's largest solar photovoltaic power plant. At that facility, silicon solar cells arranged in 160 photovoltaic concentrating arrays directly convert sunlight into electrical energy.

## On the cover

Receiver and heliostats are shown at the 500-kilowatt solar thermal power plant in Almeria, Spain, that was dedicated last month. Solar energy systems built the 93 heliostats the system uses, as well as the computer control system.



## Firemen train for high-rise fires, rescue efforts

Jumping out of a fifth floor window, or off the skids of a helicopter hovering 85 feet above the ground is not the usual daily activity for plant protection personnel here. But if the need arises, at least eight employees will be prepared.

Using mountain climbing gear, the eight spent 16 hours learning techniques for fire fighting and rescue operations in high-rise emergencies. The course was conducted by the Jefferson County Sheriff's department at the Arvada Fire Training Center.

Those participating in the training were Lt. Ted W. Housely, Sgt. S. A. Norman, Sgt. William Banish, Cpl. Fred Erickson, Cpl. Frank Penn, Paramedic Marc Arment, Paramedic Rick A. Genochio, and Paramedic Steven Kief.

Sergeant Norman, who has been named fire training officer here, said the high-rise training is just part of the on-going training employees receive to better protect employees and property here. Physical fitness programs, driver education, laying hose, and use of all equipment are also part of the training.

## Mobile blood unit here in November

The Belle Bonfils mobile blood unit will make second visit this year November 3 and 4. The blood donated is credited to an account that assures the availability of blood for employees, retired employees, and their families.

Requests to withdraw blood are processed by the Denver Aerospace medical department.

Employees interested in donating should contact Leroy Hollins, Ext. 6605 or Ext. 6750, or pick up a card at the medical department. About 150 donors are scheduled each day of the mobile unit visit.

Since the unit is scheduled only during the first shift, second and third shift employees may go to the Belle Bonfils Memorial Blood Center, 4200 E. Ninth Ave. Information on other center locations is available from Hollins. Blood donated at these centers may be designated for the Martin Marietta account.

## Engineer wins Acapulco trip

James Skelton, a systems safety engineer in quality, has won the third—and final—three-day all-expense paid trip for two to Acapulco in "The Name Game" drawings.

He became eligible for the drawing when a candidate he referred was hired.

Two hundred twenty employees were eligible for the drawing—113 of them in Denver and 107 at offsite locations.

*Rappelling to the ground or to the top of a high-rise building from a hovering helicopter was technique learned by eight plant protection personnel recently at the Arvada Fire Training Center. Four employees are shown descending from the helicopter. The photo was taken by Paramedic Marc Arment, who was waiting for the next training flight.*

### MARTIN MARIETTA NEWS

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DENVER AEROSPACE  
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October 23, 1981



# MX test program facilities are nearing completion

With the beginning of the development flight test program for MX less than two years away, construction of facilities for the assembly and flight tests is well under way at Vandenberg Air Force Base.

The program will consist of 20 missile launches, with the first scheduled for January 1983.

Test operations at Vandenberg include processing large components received from various manufacturers across the nation. Components include solid rocket motors, the launch canister, major transportation and handling equipment, and launcher assemblies.

Facilities being constructed and their status:

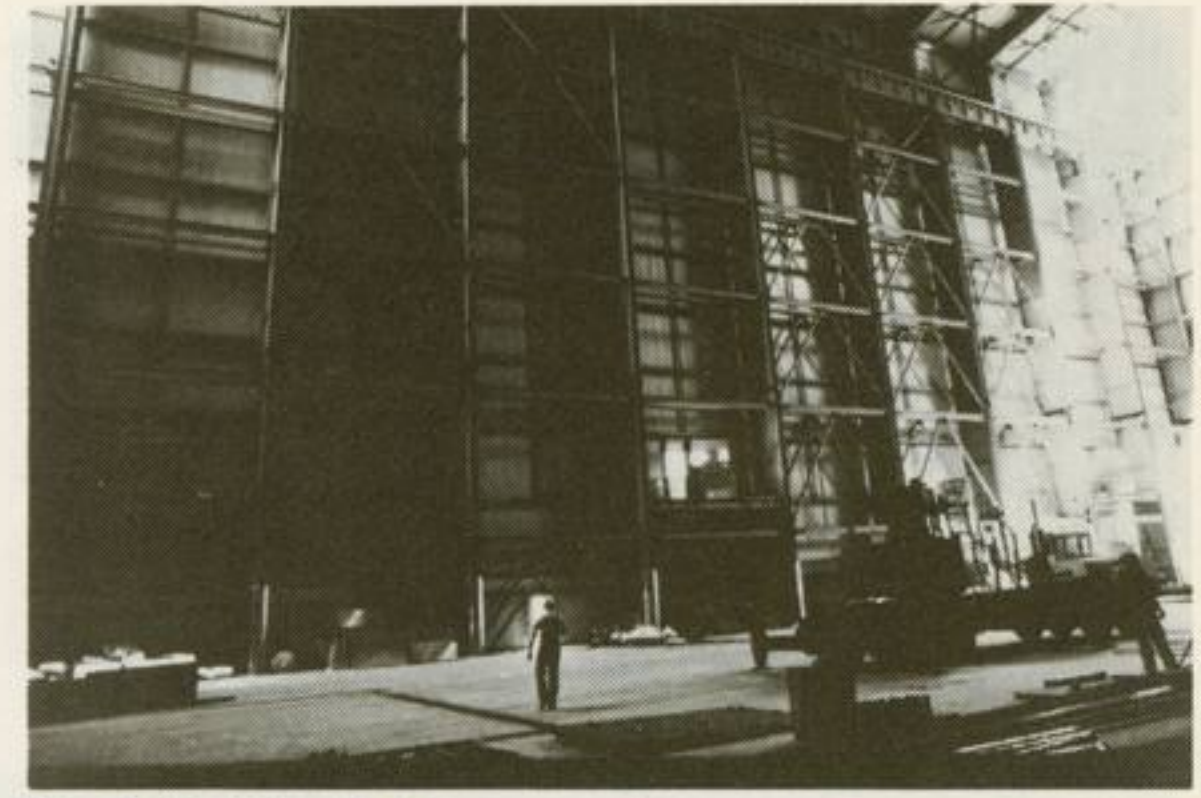
- Integrated test facility: Nearing completion. Weapon system installation activity to start this month.
- Missile assembly building: To be turned over to Denver Aerospace in December 1981.
- Mechanical maintenance facility: To be turned over to Denver Aerospace this month.
- Stage four installation and checkout facility: 65 percent complete.
- Stage processing facility A: 75 percent complete.
- Stage processing facility B: 65 percent complete.
- Rail transfer facility: 99 percent complete.
- Test stand: 45 percent complete.
- Payload assembly facility: 95 percent complete.

Assistance to the U.S. Air Force in planning, conducting, and evaluating the flight test program is one of the areas in which Denver Aerospace is playing a major role in the MX program. Others are engineering design requirements for the missile and its basing; logistical planning required to build and operate the system; design and fabrication of missile transport and assembly equipment; assembly of the test missiles at the test site; design of test missile instrumentation and flight safety equipment; and participation in the development of the MX launch system, now undergoing redefinition for static loading.

Full-scale development of MX began in September 1979 and will extend through the mid-1980s. The goal is to have the first MX missiles deployed by 1986, and the entire system in place by 1989.



The top photos show the outside and inside of the missile assembly building under construction at Vandenberg Air Force Base. At right is the integration test facility for the MX.



## Counseling sessions to be November 3

Representatives from the major private and public colleges and universities in Denver, Boulder, and Ft. Collins will be here Tuesday, November 3 to counsel employees planning to continue their education.

The counseling sessions will be held in the second floor cafeteria in the engineering building from 2:00 pm to 4:00 pm. No appointments are necessary with the representatives.

The counselors will represent the business, engineering, and computer science programs at their schools.

As employees plan continuing education programs, Edward F. Dash of training, education, and employee development has offered some advice to the employees.

"Balancing a full-time job with formal classes can test the talents of any employee," he said. "Employees should consider their needs and the potential benefits to the organization and company."

First step in the planning process is a development discussion with the supervisor, project leader, manager, or director. The training, education, and employee development office can assist in this first step.

Following this meeting, employees should write a clear and specific reason for class attendance, stating the skills needed and how the class or program can meet those needs. This statement can become a part of the Application for Study Under Company Auspices required for each term the employee wishes to attend school.

The application is to be submitted to the training, education, and employee development office at least two weeks before classes are to begin. The employee will receive a copy of the application when it is approved.

Questions on the counseling sessions, planning continuing education, and applying for tuition reimbursement will be answered by Dash, Eng. 231, Ext. 4548.

## Employees move to new facilities

The addition to the electronic manufacturing facility (EMF) has been completed and employees are beginning to move into the space. The 65,000-square-foot addition has manufacturing facilities on the first floor and office and laboratory space on the second floor.

Among functions to be housed in the EMF addition are the failure analysis laboratory, metrology laboratory, electronic processes development laboratory, electronic packaging, parts evaluation, and electronic receiving and inspection.

A modular office complex also is being constructed in front of the GPL, with engineering mechanics personnel set to move in late October.

Earlier this month, central procurement was moved from West Point to Cinderella City.

## JA companies formed for fall semester

Three Junior Achievement companies sponsored by Martin Marietta have begun operation for the fall school semester.

Galaxy will manufacture and distribute tow straps and fireplace match holders. Employee advisers are Robert Hansen, Larry Root, Robert Zehnle, and Leonard Franzblau.

Christmas cards, either personalized or plain, and Rubic's Cubes will be marketed by Santa's Workshop. Advisers for the company are Richard Walkup, Pamela Coffey, and Kevin James.

Galaxy and Santa's Workshop are sponsored by Denver Aerospace.

Sure Fire, a company sponsored by Martin Marietta Data Systems, will produce pine cone fire starters. Its advisers are Mary Buchberger, Pamela Rechel, Marie Rodriguez, and Dennis Kolemmainen.



## Air Force takes over Shuttle support facility

The U.S. Air Force has assumed control of the first Space Shuttle support facility on the west coast from the U.S. Army Corps of Engineers.

The launch control center (LCC) at space launch complex 6 at Vandenberg Air Force Base was turned over in recent ceremonies. It is one of many ground support facilities needed to monitor processing elements of the Space Shuttle vehicle and prepare it for launch.

The LCC is a two-story blockhouse left over from the manned orbiting laboratory program of the late 1960s. It was redesigned and modified to support Vandenberg Shuttle launches. Construction on the 25,000-square-foot building began in May 1980 and cost approximately \$5.7 million. Nine thousand square feet were added to the original building.

The LCC provides a protected and controlled environment for technical personnel and equipment that direct, control, and support Shuttle activities at the launch pad. It also is used for processing operations involving the external tank and solid rocket boosters, and serves as a central control station for the South Vandenberg complex.

The firing room that is part of the control center has 15 computer consoles that are identical and interchangeable with the checkout, control, and monitoring (CCMS) equipment at Kennedy Space Center.

## Orientation continues for new employees

The second and third sessions in the new orientation program for professional employees hired since January 1, 1980 will be held October 24 and October 31 at Heritage High School.

The sessions will be held from 8:00 am to noon and from 1:00 pm to 5:00 pm in the school's auditorium. Registration for the sessions is through department supervisors. Participants will be paid for the half-day sessions, and may select which session to attend.

The program supplements existing orientation sessions held by personnel, security, home departments, and projects.

The program, headlined by C. B. Hurtt, Denver Aerospace president, combines live and audio visual presentations covering Martin Marietta and Denver Aerospace history, culture, structure, operations, and future plans.

Participants will receive a booklet containing printed copies of charts, graphs, photographs, and other material used in the presentation. The booklet is for the individual's reference library.



Gen. Robert T. Marsh, right, commander of the U.S. Air Force Systems Command, assisted by Lt. Gen. Richard C. Henry, commander of the System Command's Space Division, cuts the ribbon symbolically accepting for the U.S. Air Force the Space Shuttle launch control center at Vandenberg Air Force Base from the U.S. Army Corps of Engineers.

## Evening education classes are full

More than 3200 registrations were received for the 61 course offerings in the evening education program that runs through December 18. The courses are being taught in 72 classes.

Some classes that were oversubscribed will be offered again in the spring term that begins January 25.

Classes are being held at the main plant, DSC, West Point, and in the Goodard Middle School in Littleton.

## Recreation

Information on all clubs and activities may be obtained from the recreation office, Eng. 124, Ext. 6750.

**Archery:** The Red Rocks Bowmen archery club has reorganized. New officers are David Brenneman, president; Edmond Lemoine, vice president; Aubrey Pharo, vice president; Duane Vandeventer, secretary-treasurer. The next general membership meeting is October 28, 5:15 pm, DSC 200K.

**Photography:** A six-hour seminar in basic photography is being sponsored by the Platte Canyon photography club. The sessions will be held October 28 and 29 from 5:00 pm to 8:00 pm. Registration fee is \$10. For location and registration information, call Thomas Lise, Ext. 6604. Class is limited to 20.

**Chess:** The Chess club will hold a year-end gala tournament for members and dependents Tuesday, November 3 at 6:30 pm in the first floor cafeteria in the engineering building. For information, call Richard Pickerell, Ext. 6909.

## Coordinators named for United Way

Twenty employees have been named department or project coordinators for the Mile High United Way campaign here. The campaign will run through November 12.

Coordinators are:

Electronic manufacturing, John Leonard; strategic systems business operations, Kay Herder; business management, Jennifer Milillio; business development, Leonard Taigman; executive offices, Irene Woodzell; personnel staffing and compensation, Sharon Palmer; personnel administration, Mary Stirling;

Quality, Beverly Thompson; solar systems, Leon Taylor; software, Geneva Purdy; manufacturing, Betty Purkey; space and electronics systems, Donna Peterson; mechanics, Clark Denny; strategic systems management, Howard Delcher;

Strategic systems technical operations, Nadine Holder; space launch systems, William Leckemby; technical operations administration, Jeremiah Turco; security, Janna Winkle; electronics, R. W. Hall; and test, Horace Clair.

## Icelandic group visits Michoud

A group of Icelandic businessmen visited the Michoud division October 9 to learn more about work with quality circles—or systems refinement teams as they are called at Michoud.

The group was led by Dr. Ingjaldur Hannibalsson, director of technical services for island's Federation of Icelandic Industries. The 23 businessmen represented a variety of industries, from seaweed processing and biscuit baking to zipper making.

The businessmen came to New Orleans after visiting companies in Boston and Foxborough, Massachusetts, and New York.

"We wanted to visit some top U.S. firms that are using innovative management techniques and employee programs," Dr. Hannibalsson said. "I expect the first quality circles in Iceland will be formed because of our visit here."

## New directors are named at Michoud

Joseph C. Spencer has been named director of program development and Richard R. Foll is new director of engineering at the Michoud division.

Spencer, a 21-year employee of Martin Marietta, was director of program development for strategic systems division in Denver. He also served as director for program development for the space and electronics systems division, and as deputy director of NASA program requirements. He has served at Corporate headquarters as manager of research and development marketing and at Orlando Aerospace as senior engineer on the Sprint missile program.

Foll has held a number of engineering positions with Martin Marietta, working on Titan space launch vehicles, Skylab space station, and the Space Shuttle external tank. He joined Martin Marietta in 1957, and reports to Allan M. Norton, Michoud division vice president for development.