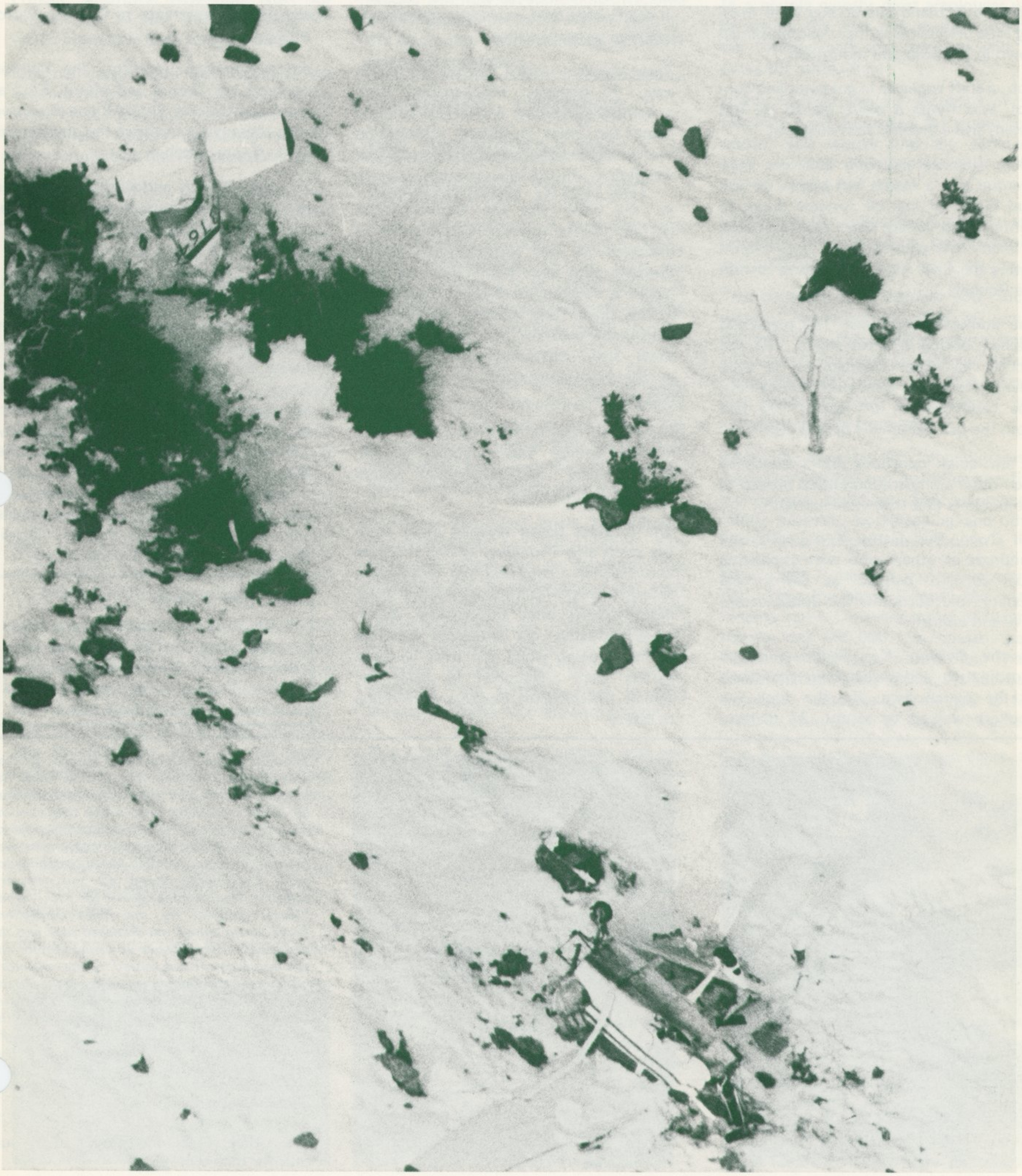
MARTIN MARIETTA
news
DENVER DIVISION

NUMBER 14/1976



Plane crash shows division concern

Concern: A word easily used and one that perhaps has lost some of its meaning as used by many people today.

But *concern* took on its true meaning a few weeks ago at the division when it was reported Bob and Sue Booker were missing on a private plane flight and presumed down in the Colorado mountains.

Bob, a staff engineer in guidance and control, was flying a plane owned by Bill Owen, also a division staff engineer.

When Bill learned Bob and Sue were overdue and a search had begun, he and Bud Gates of inertial systems drove to Center, Colo. where Ken Leach, a veteran of many lost plane searches, was coordinating the Civil Air Patrol efforts to find the Bookers.

The Bookers were down. The plane had crashed during a snow storm. The tail section had been clipped off as they flew low over the trees near Poncha Pass. The cabin section fell about 100 feet from the tail and landed upside down.

A few quick questions and a check of each other's physical condition proved to the Bookers that they were all right.

Bill Owen, Bud Gates, Ken Leach, and hundreds of others who were expressing true concern—defined as worry and anxiety—did not know the Bookers were alive and unhurt.

At the division, Ken Sedlmayr began coordinating and dispatching volunteers to the search area. By the time the Bookers walked to safety, 37 division employees had been involved in the search effort with the support of the division.

Meanwhile, Gates and others had begun going from ranch to ranch, cabin to cabin in the Poncha Pass area asking if residents had seen or heard a plane.

Three answers helped narrow the search area. A highway maintenance man, a commercial pilot, and a retired light plane test pilot furnished information that identified the plane, the direction it was flying, and the time it was over head.

At the crash site the Bookers were putting to use survival skills learned as members of the National Ski Patrol. Sleeping bags kept them warm as they began to fashion snow shoes from parts of the plane. Bad weather the first few days kept them in the plane and kept them from stamping out a message in the knee-deep snow in which they had crashed.

In the air, Leach, who operates a crop dusting service, was directing a well-planned and well-coordinated search criss-crossing the area.

The Bookers began walking away from the crash site Thursday. Friday morning they reached a road and met two men in a four-wheel drive vehicle. At the exact moment they met the vehicle, search planes spotted the wreckage and the vehicle moving along the road. Ground parties were dispatched to meet the vehicle in which the Bookers were riding to safety.

The happy ending was also the end immediate concern. But concern fo downed pilots is not over at the division.

R. E. Weber, director of professional and industrial relations, is heading an effort to add division assistance to Civil Air Patrol activity.

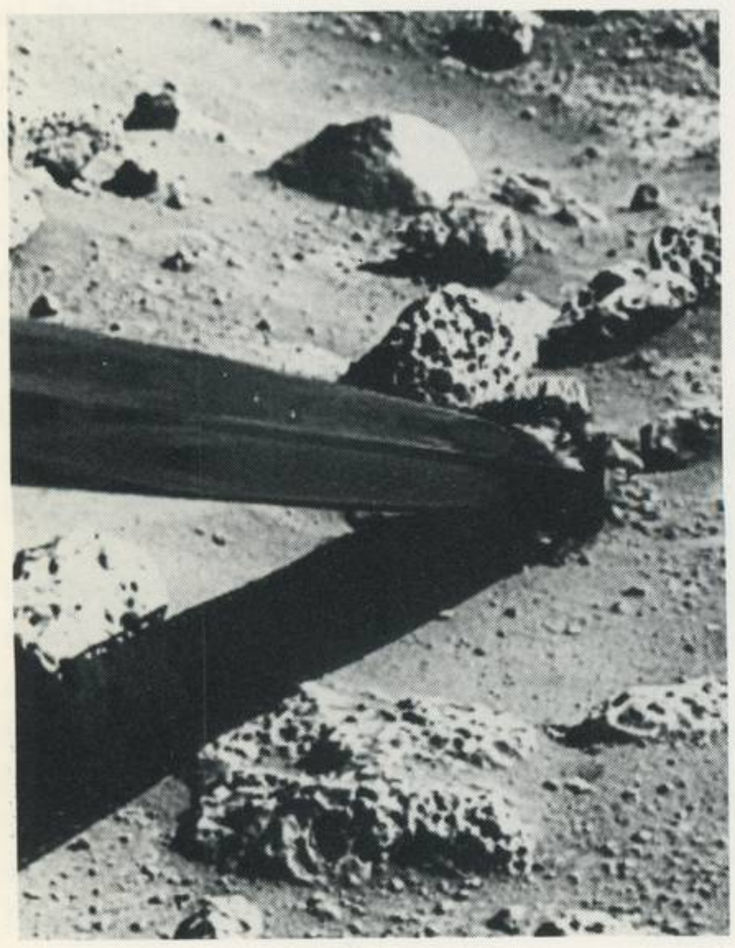
At a luncheon recently, the division honored Ken Leach and Merrill Entz as representatives of the CAP and discussed with them ways in which the division can aid in future searches.

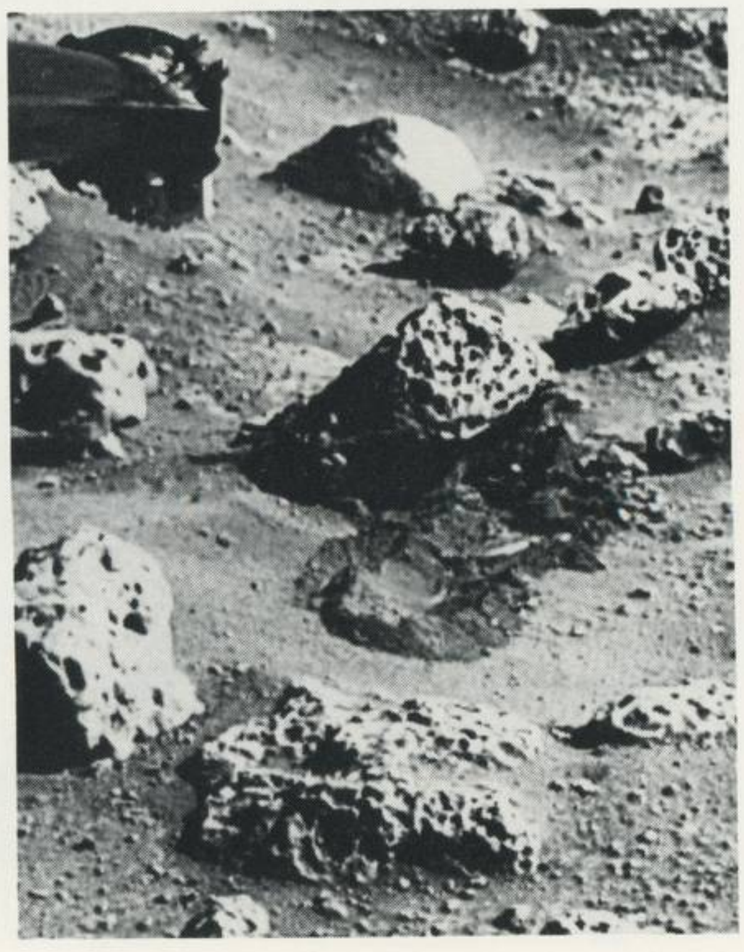
For now, Booker and all those who aided in the search are back at work, including the 37 employees on Ken Sedlmayr's volunteer list.

Those employees were Bud Gates, Vic Kuchler, Norm Osborne, Fred Greeb, Bob Fuhrman, John Tietz, Bill Owen, Dave Crosson, Tom Bezdek, Dick Wilson, Larry Baker, Chuck Fogg, Joe Wathen, Frank Muller, Doug Griffith, Dale Mikelson, Bill Bostrom, Mike Mann, Ed Dorroh, Sid Wright, Bob Ingoldby, John Wilson, Bill O'Connor, John Janelle, Mark Hintze, Jim Spaulding, Bo Chambers, Roland Hulstrom, Carter Lo Jack Eastman, Fred Steffens, Dale Shields, John Schlemmer, Bill Phillips, Charlie Brown, Jim Kidd, and George Kenry.

On the cover

Photo of Booker crash site was taken by *Mountain Mail* photographer after Bob and Sue Booker had walked to safety. Trees at upper left were the one that clipped tail from plane.





Viking's soil sampler collector arm has successfully pushed a rock on the surface of Mars. The irregular-shaped rock was pushed several inches by lander's collector arm, which displaced the rock to the left of its original position, leaving it cocked slightly upward. Photographs and other information verified the successfull rock push. Left photo shows the soil sampler's collector head pushing against the rock, named "Mister Badger" by the flight controllers. Right photo shows the displaced rock and the depression from whence it came. Part of the soil displacement was caused by the collector's backhoe. A soil sample was taken from the site and delivered to Viking's organic chemistry instrument for a series of analyses during the next few weeks. The sample is being sought from beneath a rock because scientists believe that, if there are life forms on Mars, they m seek rocks as shelter from the Sun's inte ultraviolet radiation.

See article: Mars conjunction with Sun calls for data storage.

Solar boiler tests in France are successful

Twisting and turning through narrow village streets in France, the division's five megawatt thermal cavity receiver steam generator (known as the solar boiler) made its way to the Laboratoire de l'Energie Solaire of the Centre National de la Recherche Scientifique (CNRS) where it underwent its first test with the real Sun. The tests were successful.

"The trip may have been the most difficult part of the test," Floyd A. Blake, program manager for the division's solar energy projects, said. "In one tunnel, for example, the clearance was just two inches. Some corners were so sharp, the driver had to negotiate them as you and I would maneuver to get into a tight parking space."

David G. Smeal was the project logistics manager who was responsible for the trip —not only in France, but also in the U. S.

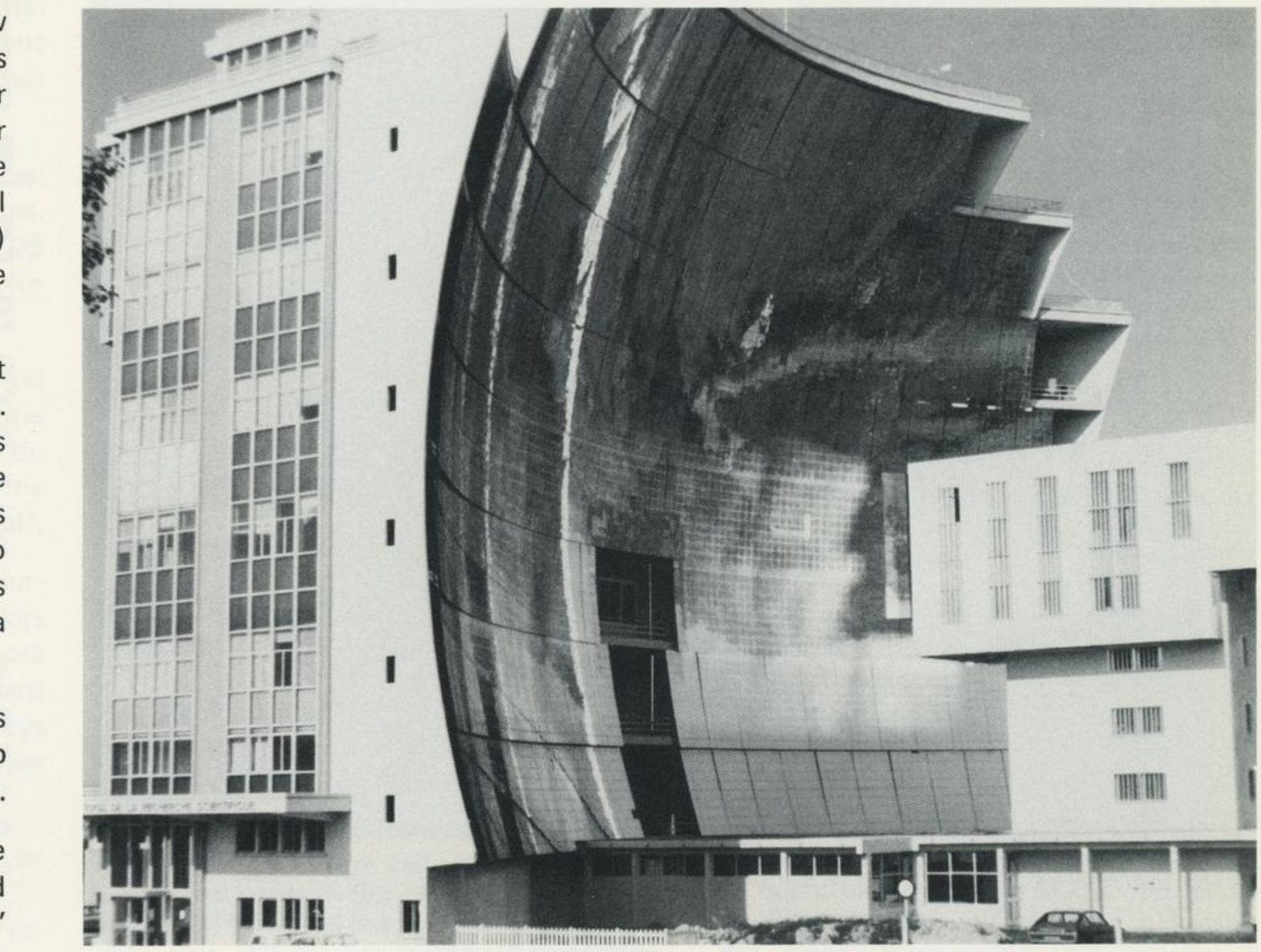
"Dave traveled the whole route," Blake said, "and his decisions were tough and critical to the success of the tests."

Why take the solar boiler to France?

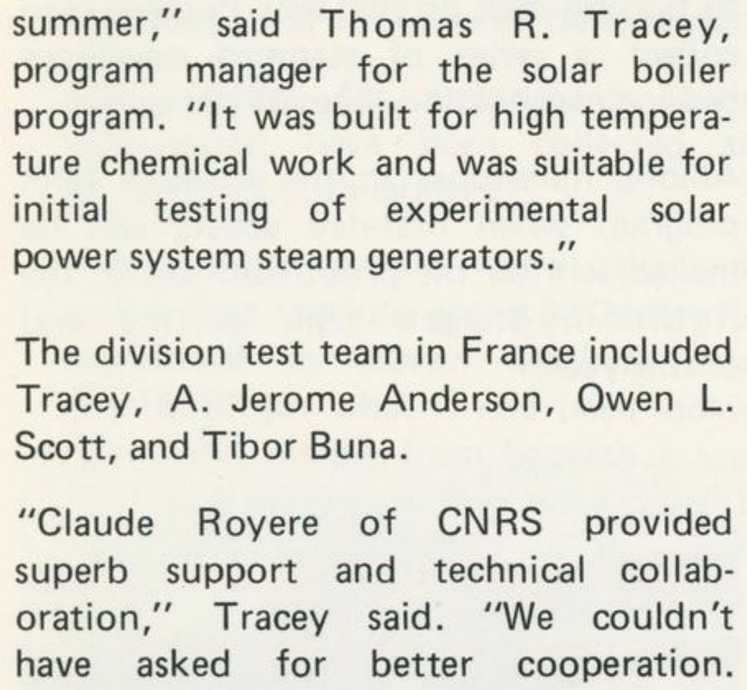
"The CNRS had the only installation in the world with a solar energy system ready test of the boiler available this summer," said Thomas R. Tracey, program manager for the solar boiler program. "It was built for high temperature chemical work and was suitable for initial testing of experimental solar power system steam generators."

The division test team in France included Tracey, A. Jerome Anderson, Owen L. Scott, and Tibor Buna.

"Claude Royere of CNRS provided superb support and technical collaboration," Tracey said. "We couldn't have asked for better cooperation. The staff at CNRS was hardworking and contributed greatly to the success of the tests."



Centre National de la Recherche Scientifique (CNRS) was headquarters for solar boiler test in France.



Solar boiler was installed in CNRS test area for first checking with real Sun.

The successful tests at CNRS verified the design and demonstrated the operational procedures of a large scale solar steam generator for the first time.

The boiler is on its way back. The division will make some modifications before the boiler moves to Albuquerque, N. M. for testing at Sandia Laboratory facilities for the Energy Research and Development Administration (ERDA).

In France, steam was generated 33 days in the 45 successive calendar day test period. Operating time on Sun exceeded 161 hours, with 105 plus hours at rated pressure and 71 plus hours at rated superheat temperature.

The test in France set the stage for subsequent testing of larger steam generators like the five megawatt models now being built, one of them designed by the division.

"While the test team in France performed expertly," Tracy said, "we cannot forget the work done at Denver before the boiler was ready for test.

"At Denver, James G. Halford was the designer of the equipment module and David R. Rich got all the equipment together for the equipment module. Fabrication of the receiver, equipment module, and control console was done by the division's engineering propulsion laboratory with Charles A. Hall and W. Lee McKenna leading the effort.

"As an example of the expert work they did," Tracey said, "the equipment module and the boiler were put together in France without cutting a single piece of pipe. Both were fabricated in Denver, shipped to France, and fit perfectly."

Walkers, drivers think snow, ice

Now's the time to think about how you are going to react when the first real snow comes down and settles on roadways and walkways.

Snow, ice, and short days come each winter, and drivers and walkers have to make the same adjustments each winter.

Adjust your driving and walking habits. Be cautious and assume that everyone else is going to make a mistake—and you must avoid the driver or walker who does make a slip.

High density, high rate recorders are good business for division

Tape recorder design, development, and fabrication are becoming a good and growing business for the division.

But don't run off to your nearest sound store to buy a pocket tape recorder bearing the Martin Marietta label. You won't find one.

The recorders Reid H. Clausen and his electronics department people are producing won't fit in your pocket nor will they record the latest hit by your favorite singer.

What they do is pack the growing volume of data coming from Earth satellites onto less tape more rapidly, reducing storage space and retrieving more data in a shorter time.

The high density, high rate recorders are from 20 to 150 times faster than normal digital tape recorders and pack 20 to 30 times more information onto each inch of tape.

"We don't build the basic recorder," Clausen said, "but it is our technology that is used in encoding and decoding circuits that make the recorders function at the rate and density now required for data retrieval, storage, and recall."

A new contract being negotiated will bring business this year to more than $4 million, with the potential of another $2 million in the proposal phase.

"I'm optimistic about the opportunities we have," Clausen said. "I believe we can sell $10 million worth of our equipment each year for the next several years."

Clausen also sees the recorder business opening the way for the division to compete for contracts for complete data processing stations, including the computers, the computer controls, as well as the recorders.

Current customers include the Jet Propulsion Laboratory, NASA's Goddard center, General Electric, and the Department of Defense.

The newest contract is for equipment for the Goddard Space Tracking Data Network and will be used first with SEASAT, a new ocean survey satellite. The division is also working on another part of SEASAT—the power converter for the synthetic aperture radar. It is the transmission rate of data from the radar that created the requirement for the division's new technology tape recorder.

Drawers in tape recorder contain division's hardware for high density, high rate digital data recorder.

With the higher density, higher rate requirements has also come stiffer reliability requirements. The permissible error rate for the equipment is one error per million bits (one error per each million single digits recorded). Any problem meeting the error rate requirement?

"So far, our error rate has been between one error per 10 million and one error per 100 million," Clausen reports.

Division joins German firm in Spacelab work

The team of Messerschmitt-Boelkow-Blohm (MBB), Munich, Germany, and Martin Marietta has been selected to provide the high rate multiplexer and high rate demultiplexer system for the European Spacelab.

The hardware is to be part of the Spacelab command and data management subsystem.

The multiplexer will be capable of accepting digital data inputs from up to 16 experiments and the onboard tape recorders and combining them into a single bit stream with a data rate up to 50 megabits per second for transmission to the ground receiving station. On the ground, the high rate demultiplexer will decode the data and reproduce the original data inputs for the experimenters.

MMB will be responsible for the multiplexer hardware. The Denver division will be responsible for the demultiplexer under a subcontract to MBB.

Initial value of the division contract is $840,000.

Burt Imber will be project manager for the division and Gene Goodwin will be chief engineer. A peak manpower level of about 15 people is anticipated during the course of the 15-month program in Denver.

Spacelab is an undertaking of the European Space Agency and a consortium of European companies. It will provide a shirt-sleeve environment for the conduct of experiments in the Space Shuttle orbiter starting in the early 1980s.

Viking project director to speak

James S. Martin Jr., NASA project director for Viking, will speak at a joint meeting of the American Institute of Aeronautics and Astronautics and the American Astronomical Society in Denver Nov. 17.

The evening meeting will be held at the Marriott Hotel, I-25 and Hampden. Cocktails are at 6:30, dinner at 7:30 and the program will begin about 8:30. Tickets are $8.50 each.

Denver division employees are invited to attend. Tickets are limited and will be sold on a first-come first-served basis. Tickets are available from Bill Congdon, administration building, ext. 2680; Tom Flaherty, engineering building, ext. 5206; Dick Parker, RDL, ext. 4757; and Joe Spencer, SSB, ext. 2108.

Martin, who has directed the Viking project since 1968, will speak on the successful landings on Mars and relate some of the scientific findings the landings have produced.

Mars conjunction with Sun calls for data storage

Astrologers may interpret the conjunction of Mars and the Sun as an event that portends either good or bad things for people on Earth.

The Viking project doesn't have a resident astrologer to make such predictions. Project scientists view the Nov. 25 conjunction as just another event for which plans have been long standing.

Communication with both landers will become difficult as Mars slides along the edges of the Sun and hides from Earth. Signals are already degrading and the data transmission rate has been cut in half.

Earth-bound activity will be reduced during the conjuction period, but the landers will not get a rest. Each will store more than 30 million bits of data in its onboard tape recorder. It will take about two days to transmit all the data to Earth when conjuntion ends.

The meteorology instruments will be operating on both landers; lander 2's seismometer will be checking for Marsquakes; both landers will be storing engineering data; lander 1 will take and store four pictures while lander 2 will have two photos to send back; biology experiments—labeled release and gas exchange—will continue on both landers.

Soil samples for experiments during conjunction have been collected and are onboard both landers.

Before these samples were taken, the rock rollers working group B. Gentry Lee mentioned in *Martin Marietta News* (13/1976) got what it had been looking for—a soil sample from beneath a rock. Two rock nudges, as they were called by Rex W. Sjostrom, chief of the lander performance and analysis group, have been made by lander 2's soil sampler arm.

Samples taken under the rocks, however, so far have not produced a confirmation of the existence of organic matter. The soil did produce some of the same biological results.

Reduced ground activity will continue for the remainder of 1976 with heavy science collection resuming in January with three months of scientific effort already planned.

The people who have been working around the clock to assure Viking mission success will now get some time off. Some of the division people who have been on the west coast will be returning to Denver and new assignments.

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Deadlines, changes are announced for scholarship program

Sons and daughters of employees who plan to apply for Martin Marietta Foundation scholarships should take the American College Test (ACT) battery or the College Entrance Examination Board Scholastic Aptitude Test (SAT) no later than December.

To ensure that test results are forwarded to the Martin Marietta Foundation committee, applicants should indicate the program code number 2801 on the ACT registration form and the code number 0091 on the SAT registration form.

A change has been made in eligibility requirements for applicants. The employee whose son or daughter is an applicant for a scholarship now must have been employed by Martin Marietta for at least two years as of January 1 of the award year and be on the active payroll at the time of the award. Formerly, the employee had to have at least five years with the corporation.

In a major change, applications now will be evaluated and selection made by a committee of three persons not associated with Martin Marietta. The committee will be selected by trustees of the Martin Marietta Corporation Foundation from the academic and business communities.

All applications, supporting evidence, and correspondence will be sent directly to the committee.

Application forms and further information about the scholarship program may be obtained from the division's training and development office, RDL-414.

At Michoud, information and forms may be obtained from Ray Lacombe, personnel and industrial relations, column EC40 on the first floor of building 101.

The Economic Facts

Company pays income tax, too

In a couple months most employees will be taking the first cut at their income tax returns—and the company will be doing the same thing.

If you looked over the shoulders of the financial staff preparing the company's return, you would find the company pays many of the same kinds of taxes you do—and a few more.

Companies pay property tax on land and buildings, sales tax on the products sold, and inventory tax.

The company also matches your social security contribution with an equal payment to the federal government, and contributes taxes to state and federal unemployment funds. All these taxes are deducted from the revenue the company took in from sales.

Then the expenses of doing business—paying employees and providing benefits, maintaining buildings and equipment, selling products, bookkeeping, and other costs—are deducted from revenues.

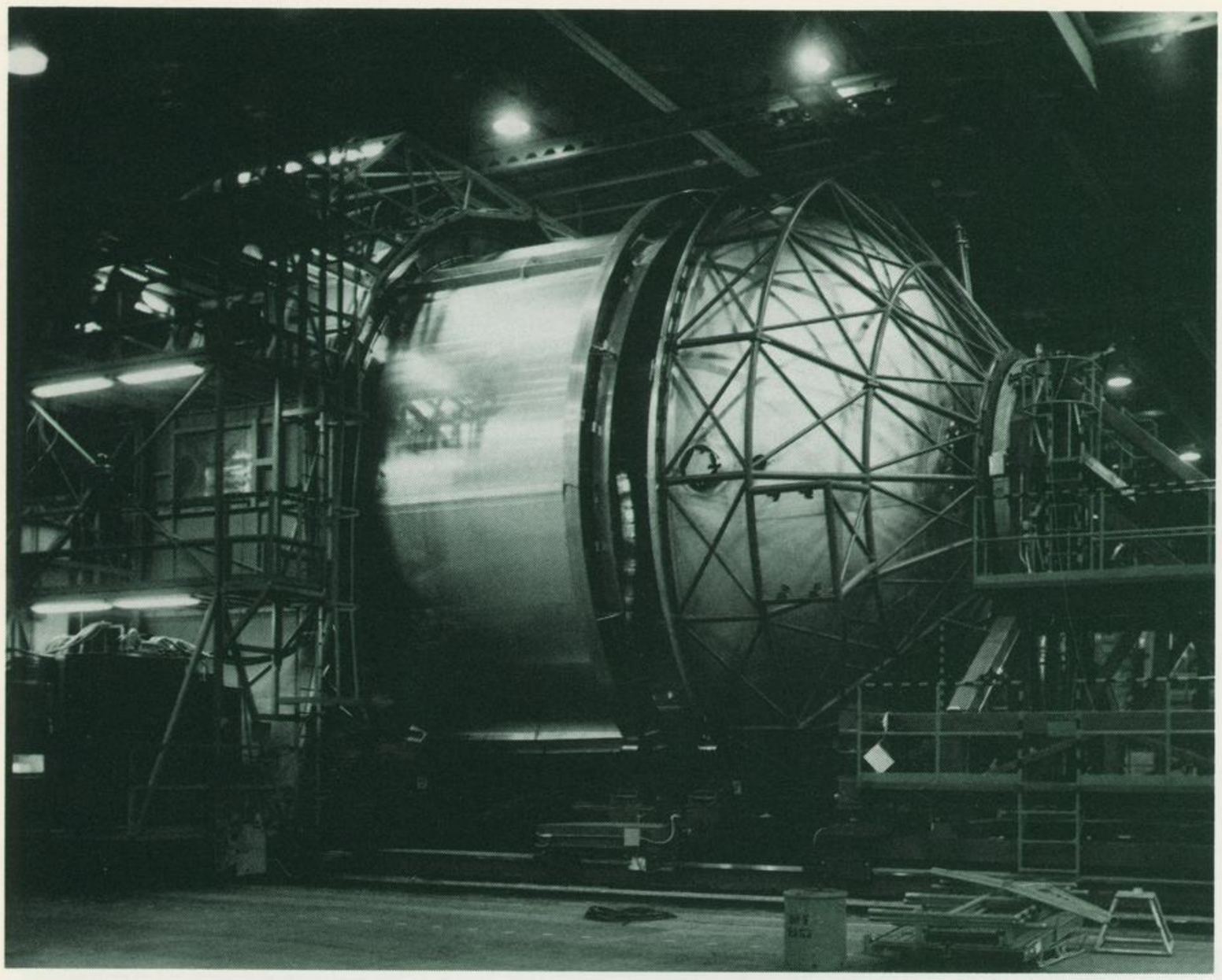
What's left is taxable income on which the company pays federal and state income taxes. On every dollar of taxable income over $50,000, the company pays 48 cents in federal income tax. That's almost half of every dollar. In addition, Colorado corporate income tax is five cents on every dollar of taxable income.

The dollars left after income taxes are paid are profit. Some profit dollars go to shareholders as dividends to encourage them to keep the stock they already have and to buy more in the future. The rest of the profit dollars are retained by the company to improve or add to buildings, equipment, and tools so production can increase.

If you are a typical worker, about $40,000 from this retained profit, from sales of stock to stockholders, and from borrowing has been invested to provide your job. So the amount of profit left after taxes has a direct effect on your job security and the company's ability to provide more jobs.

Taxes and profit. The right balance can make a big difference to you.

MARTIN MARIETTA
news
MICHOUD OPERATIONS



The liquid hydrogen tank for the main propulsion test article begins to take shape at Michoud as the first barrel is put in place for trimming and welding to the dome. The dome is held in place in the dome adapter on the major LH_2 tank weld fixture. Pieces shown will become the aft end of the first external tank to be assembled.

Michoud cited for United Way efforts

A special citation has been presented to employees of Michoud operations by the Greater New Orleans United Way, recognizing a pledge increase of 15 percent over last year.

In the campaign, which ended Oct. 4, 99 percent of the employees signed payroll deduction pledges for the United Way.

Department coordinators for this year's campaign were Dawn Leggio, finance; Karen Sanches, contracts; Pat Kolberg, planning and computer service; Mike O'Hern, engineering; Mike Brannen, production operations; Lina Coleman, product assurance; Vern Brett, materiel; and Ray Lacombe, personnel and industrial relations.

Wayne Wright, minority subcontract specialist in the Michoud operations materiel department, is serving as a loaned executive for the 1976 Greater New Orleans United Way campaign.

Wright has been with Martin Marietta since 1974.

In Michoud

Call C. H. Fleisher at 3710 with suggestions or information for articles for the Martin Marietta News.

Traffic manager at forum on moving

Michoud Operations traffic manager William A. Douglass was a guest panelist at the 9th Forum on Moving.

Douglass spoke on, "What the Corporation Expects For It's Moving Dollar," touching on the lack of communication between moving companies and the need for faster handling and settlement of damage claims. "Relocation of families is difficult enough without the added burden of goods damaged in transit and drawn out claims settlement," said Douglass.

While sifting through the many requests from other companies for the Corporation's Household Goods Moving Booklet, Douglas observed, "After talking with professionals from all areas of the moving business, Martin Marietta's moving policy continues to rank as one of the more liberal in the industry".

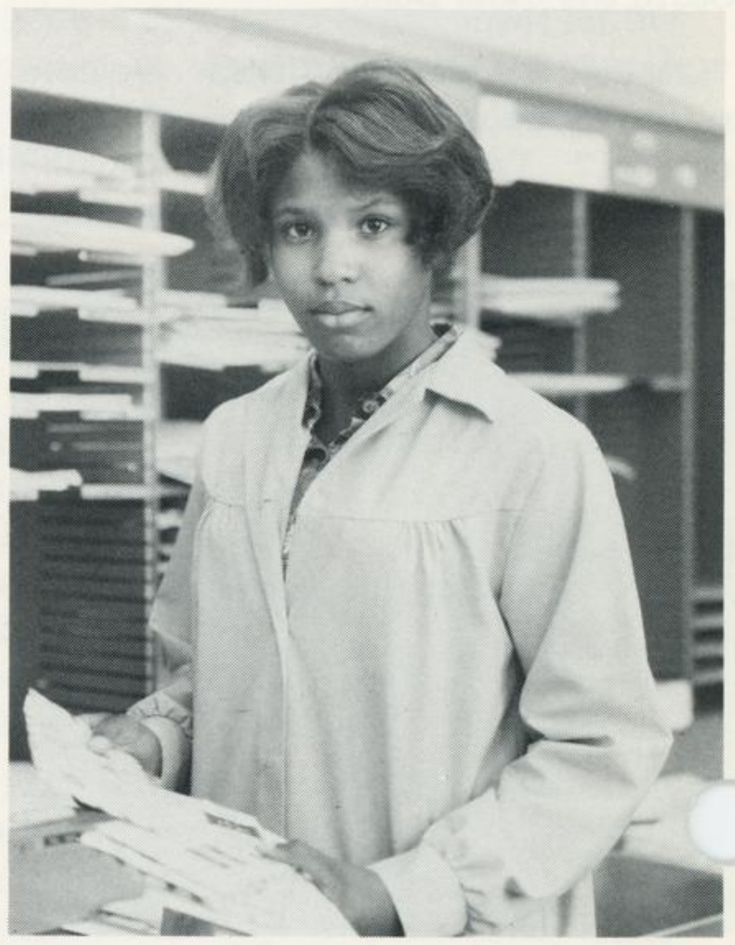
Stamp collectors show interest in Shuttle milestones

Stamp collectors throughout the world are recognizing there are many important steps along the way to the launch of Space Shuttle. And this recognition has resulted in many requests from first-day cover collectors.

Typical of the requests is one asking that envelopes supplied be mailed "on the date of any important test" of the external tank along with "the names of men involved and a short description of the test."

The first-day cover is a specialized area of stamp collecting. The collector sends uncancelled stamped self-addressed envelopes to a place where a noteworthy or historical event is to occur with the request that the envelopes be returned to him by mail on that day. Purpose is to collect a series of stamped envelopes bearing cancellation dates of the events.

Among milestones in the external tank program when first-day covers will be mailed will be the proof/leak test of the liquid hydrogen tank at the end of this year;



Debbie Lodge, correspondence control, handles first-day covers for stamp collectors.