MARTIN MARIETTA
news
DENVER DIVISION

NUMBER 2/1979

SCATHA launch is success

SCATHA launch is success; spacecraft in orbit

SCATHA, a unique experimental electronics satellite built for the U.S. Air Force by the Denver Division, was successfully launched into Earth orbit at 4:42 p.m. (EST) January 30 from Cape Canaveral.

The spacecraft was boosted into final orbit February 2 after being within one degree of the desired attitude before engine firing.

SCATHA is an acronym for Spacecraft Charging at High Altitudes. Orbiting satellites pass through the Earth's magnetic field and attract charged particles trapped there. The electrical charging can cause satellite components to malfunction.

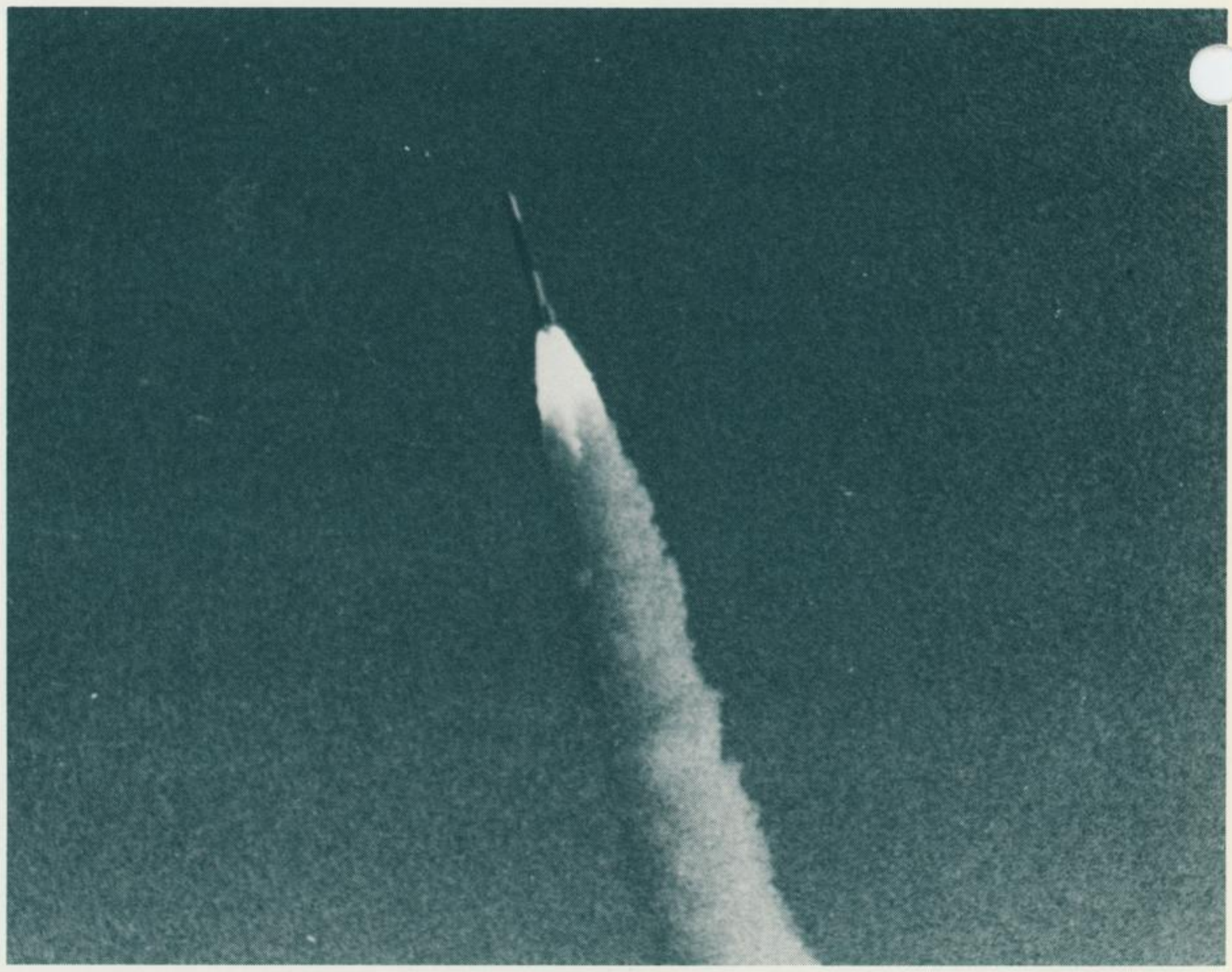
Twelve major experiments aboard SCATHA will analyze the magnetic and electrical fields in the spacecraft vicinity; measure the voltage buildup on spacecraft surfaces; identify the type, quantity, and electrical energy of particles encountered by the satellite; and provide a means for artificial control of spacecraft charging. The data gathered will be used to specify test and design requirements for future satellites.

The division, under contract to the Air Force Space and Missile Systems Organization, designed and assembled the satellite, installed the experiments, and tested the satellite systems. The division also built the electrical power subsystem, the communication and command subsystem, and the attitude control subsystem.

Donald E. Hobbs is SCATHA program manager and James D. Porter is chief of mission operations.

The satellite weighs 1452 pounds, is six feet high and six feet in diameter. It is constructed of fiberglass epoxy, magnesium, titanium, and aluminum honeycomb. Electrical power is provided by solar cells mounted around the satellite body, augmented by three batteries.

SCATHA's orbit is 17,261 miles at the low point and 26,859 miles at the high point. Five ground stations will track SCATHA and relay information to the Air Force satellite control facility in Sunnyvale, CA. Denver Division personnel will serve as technical advisers to the Air Force during the one-year mission.



SCATHA soars across the Florida sky on its way into orbit.

Employees plan Quality conference

The second annual Rocky Mountain Quality Technical Conference will be held in Denver April 20.

Larry Derouin, quality engineer in the division's electronic manufacturing facility (EMF), is chairman of the planning committee for the one-day session to be held at the Ramada Inn West.

The conference is sponsored by the Denver and the Northern Colorado sections of the American Society of Quality Control. George W. McGee, division director of quality and safety, is chairman of the Denver section.

George Munger and Linda Stroschsin are members of the conference program committee.

The conference theme is **Quality—The Competitive Edge.** The planning committee expects 300 persons from seven states to attend.

Pride in buildings program underway

A program aimed at improving the appearance as well as the usefulness of Denver Division buildings is underway. Called "Pride in Buildings," the program is a cooperative effort between those working in the buildings and those responsible for maintaining them.

Teams with representatives from management and facilities and maintenance services will periodically tour assigned buildings to talk with those working there and to look at conditions. Others may be added to the team by either management or the facilities and maintenance representative.

During the tour, the team will concentrate on reviewing housekeeping and safety, sanitation, needed repairs, and storage of paper and materials.

Anthony V. Mendez, general foreman in charge of painting and janitorial service, recently completed the first of the tours as a member of the team assigned to the engineering building.

"We found a number of areas needing attention, both by building tenants and by facilities and maintenance people," he said. "Some, like improper use of extension cords, were safety hazards and others were housekeeping. We also discovered leaking windows, malfunctioning heating equipment, and areas needing paint.

"We aren't checking-up on people, nor are we out to punish anyone," Mendez said. "We want to find problems and correct them. If employees don't have proper electrical service, we want to make some changes. If employees don't have proper storage for paper or books, we want to assist them."

While the team will initiate action to correct deficiencies, requests for additio facilities such as telephones, furnitur and additional space will continue to be handled on Request for Jobs forms to be completed by the using organization and processed according to procedures.

Library announces new NASA information retrieval service

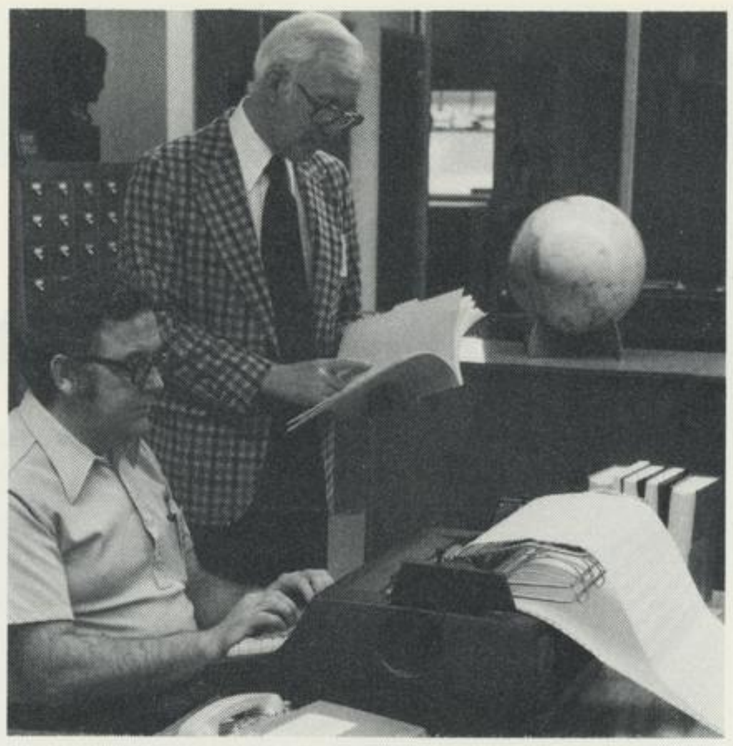
Results of NASA aeronautics and space research may be quickly and conveniently obtained by Denver Division employees through a new NASA/RECON information retrieval service provided by the division's library.

Librarian Jay McKee said NASA/RECON is a computerized real-time, online system that can conduct searches of a data base containing more than one million documents. The system has three parts: A communication network, an information storage facility, and a programmed computer system with a central computer at NASA Scientific and Technical Information Facility, Linthicum, MD.

"NASA has sponsored and performed research in a variety of subject areas," said McKee. "This data base should be considered when starting any new project."

NASA/RECON is initiated when a library user completes a request form giving the librarian a description of needed information. The description may be in narrative form, a list of subject terms, or any known element of the problem such as author, report number, contract number, or corporate source.

Using this descriptive information, the librarian develops a search strategy and then queries the system. The computer responds, citing pertinent reports. An immediate printout may be obtained or, for a large volume of references, an off-line print will be prepared at NASA and mailed.



Division librarian Jay McKee (standing) and Mel Coffman, engineering literature searcher, perform a data search through the information retrieval system computer terminal.

Principal sources are Scientific and Technical Aerospace Reports (STAR) and International Aerospace Abstracts (IAA). Additional records are contributed by other sources including Computer Program Abstracts (CPA), the NASA Library Network (NALNET), and the Aerospace Safety Research and Development Institute (ASRDI).

The library also has approval from the Department of Energy to access its online retrieval system. Service will begin when DOE expands its telecommunication facilities at Oak Ridge, TN.

The DOE data includes publications from the Department of Energy and earlier agencies, the Energy Research and Development Administration, and the Atomic Energy Commission. Subject matter covers energy conservation; solar, geothermal, fossil, and nuclear energy; fusion and reactor technology; hydrogen and synthetic fuels; and energy policy and management.

NASA documents cover a wide variety of published and unpublished materials including NASA technical reports and special publications; NASA-owned patents and patent monographs; conference proceedings; scientific meeting papers; translations, reports from other U.S. Government agencies and their contractors; domestic and foreign corporations; universities; research organizations; dissertations; theses; and project records.

Those wishing to use this service should contact Jay McKee, librarian, engineering building module 226, extension 5512 or 5602.

First Titan—IUS adapter shipped

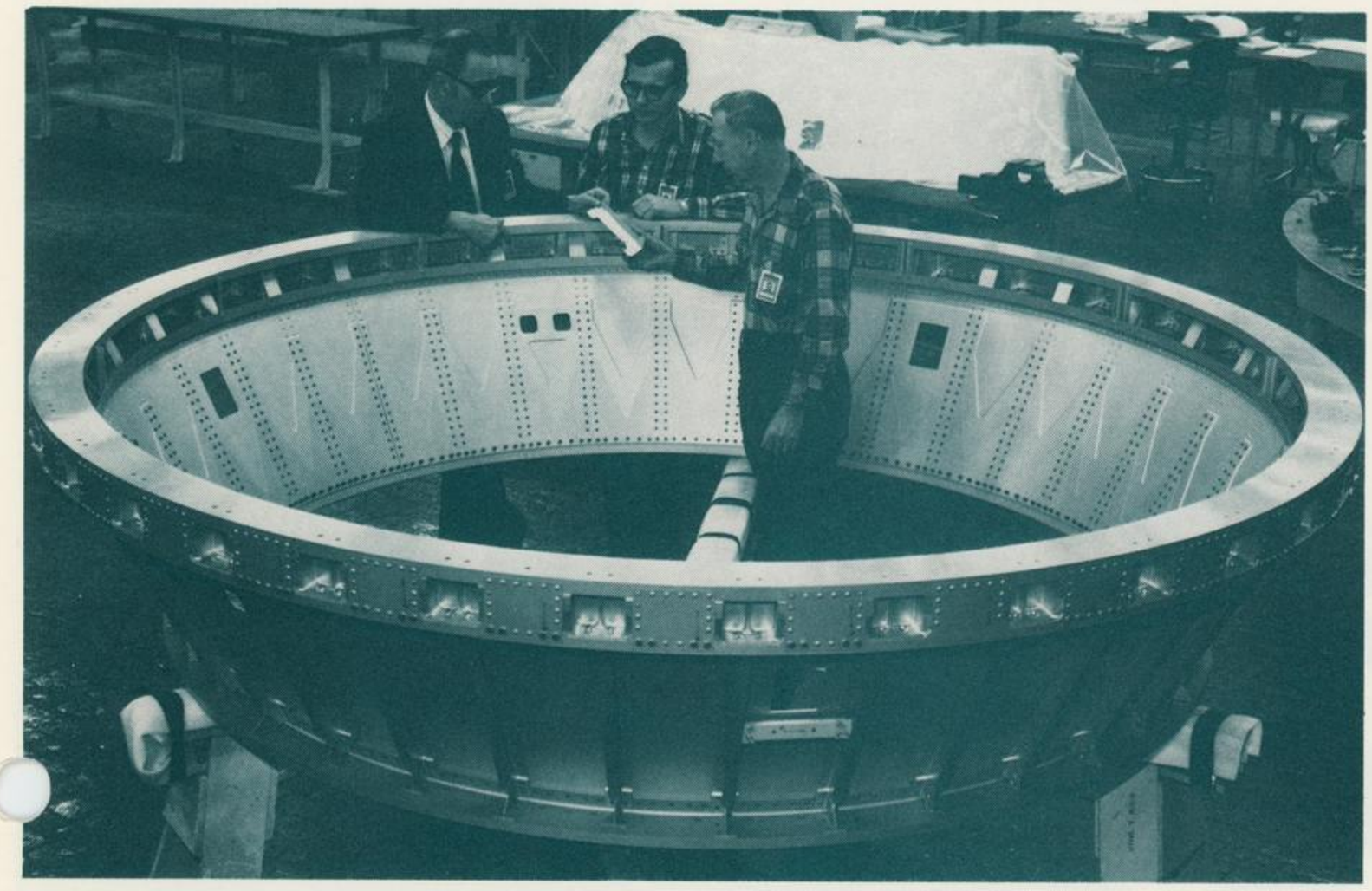
The first Titan-to-Interim Upper Stage adapter left the division's second floor factory assembly area on schedule the last week of January.

C. E. Carnahan, vice president for space launch systems, who was there when the adapter was completed, said, "This adapter is an example of outstanding workmanship."

The adapter is being shipped to Tullahoma, TN where it will be tested with the Boeing IUS and the McDonnell Douglas payload fairing. The unit provides the interface between the new Titan III 34D and the IUS. The first 34D is scheduled for completion and shipment to Cape Canaveral later this year.

Shipment of the adapter met the original delivery commitment established more than two years ago. Carnahan, commenting on the on-time delivery, said, "It helps to have the experienced and dedicated people we have on a precision job like this."

Key people in the completion of the adapter were Walt Caughran, foreman; John Wesolek, quality inspector; Ted Mossman, assistant foreman; Hershel Trook, missile mechanic; Karen Boyd, quality inspector; Jim Keyser, expediter; Ray Smith, missile mechanic; and Jon McKenzie, manufacturing engineer.



The first Titan-to-IUS adapter is checked by C. E. Carnhan, space launch systems vice president; and missile mechanics Ray Smith and Hershel Trook. The unit was recently shipped to Tennessee for extensive testing.

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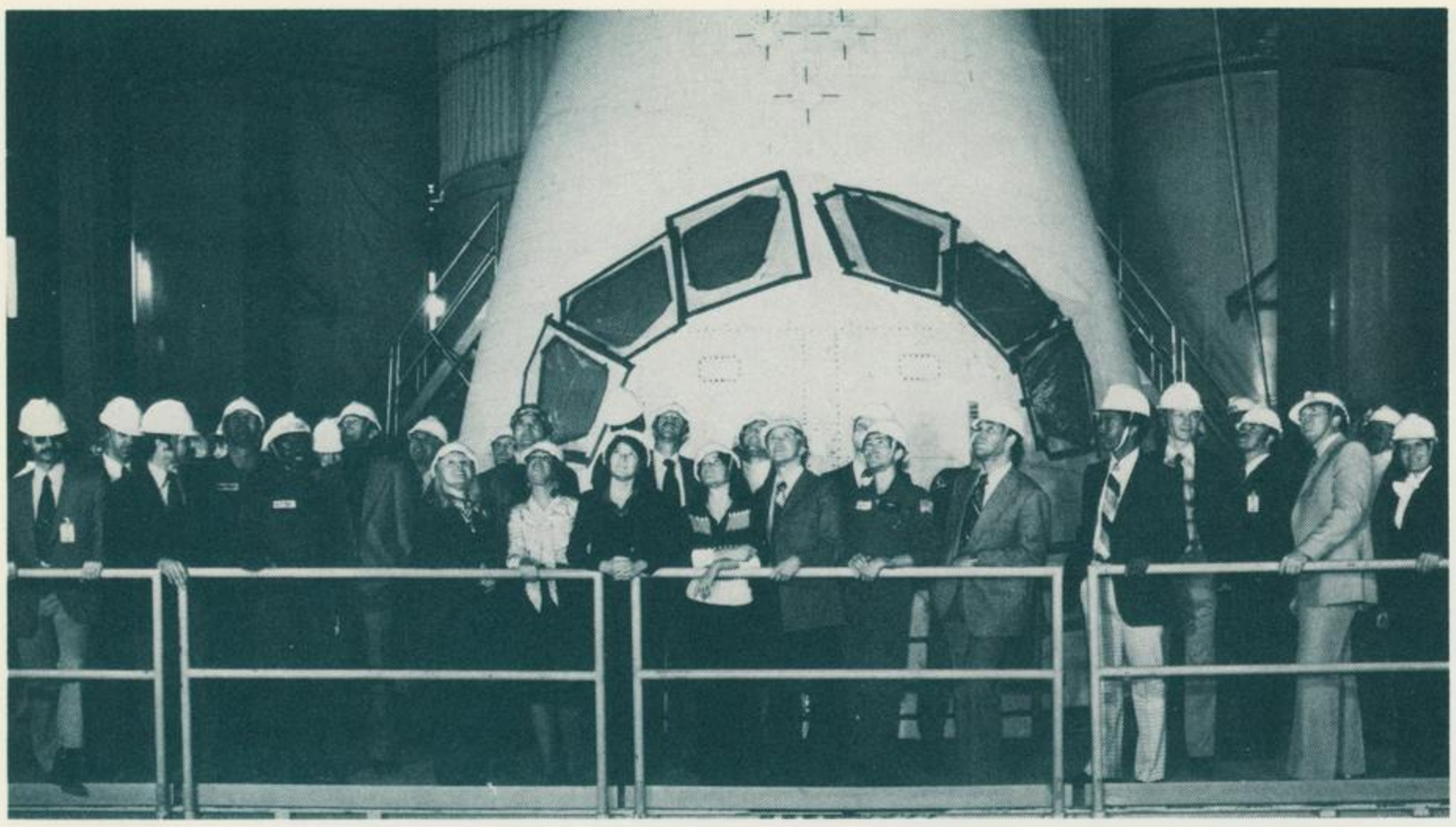


The 35 new astronaut candidates selected by NASA in 1978 got their first look at a complete space shuttle during a recent training visit to the Marshall Space Flight Center in Huntsville, AL. They are standing on a steel bridge several hundred feet up inside the Marshall center's dynamic test building where the shuttle is being tested. Behind them is the cockpit area and nose of the orbiter Enterprise. *The large tubular structures in the background are the shuttle's external propellant tank built by the Denver Division's Michoud operations, and the booster rockets.*

Division earns 'excellent' rating for socioeconomic subcontract programs

The Denver Division has earned an excellent rating for its socioeconomic subcontract programs during the government's 1978 fiscal year that ended September 30, 1978.

The rating was announced by Col. Gerhard L. Schopen, the Air Force Plant Representative.

In his letter, Colonel Schopen said, "The steady upward trend in both small and minority business percentage ratios is indicative of an aggressive socioeconomic program. . . . you have already met President Carter's goal to double minority awards in two years."

John F. Koshak, the division's socioeconomic program administrator, said credit for the success of the program should go primarily to the buyers in the materiel department who have "put forth special effort to make the program work.

"For example," he said, "we have recently presented a cash performance award to James F. Hagan for his outstanding work. From January 1977 to June 1978, he awarded 109 contracts to minority businesses, accounting for 38 percent of the division's total minority awards."

Three other buyers also received cash awards for accomplishments in their sections. They are George Kelly, George Scheirman, and Beverly Green.

Koshak was cited in the evaluation of the division's program for his activity in the community to obtain and qualify additional small and minority business sources. He recently was elected president of the Regional Minority Purchasing Council. The council has 30 members representing the major corporations in the Denver metropolitan area.

Martin Marietta quarterly, annual earnings reach record levels

Martin Marietta Corporation has reported record sales and earnings for the fourth quarter of 1978 and the full year.

For the year, the Corporation earned $136,003,000, or $5.54 per share, as against $102,110,000, or $4.29 per share, in the preceeding year. Assuming full dilution, 1978 per share earnings were $5.31, up from $4.03 on the same basis in 1977. Sales increased from $1,439,761,000 in 1977 to $1,758,297,000.

Fourth quarter net earnings were $36,630,000, or $1.44 a share fully diluted, up from $21,483,000 or 85 cents on the comparable basis in the 1977 period. Sales in the 1978 final quarter were $507,184,000, compared with $391,771,000 in the fourth quarter a year earlier.

J. Donald Rauth, chairman and chief executive of Martin Marietta, said "The year's excellent performance was expected, but our fourth quarter results were better than we anticipated—an entirely welcome development.

"Our results throughout were marked by strong momentum. This continued, obviously, into the fourth quarter with good effect in some areas of the business, notably cement and aggregates, where we expected seasonal slowdowns in construction markets. The seasonal slowdown did occur in eastern and northernmost operating areas, but our southeastern and western markets for cement and aggregates—crushed stone, sand, and gravel—stayed very strong later than usual.

"As expected, Martin Marietta Aluminum provided the largest proportional increase in our earnings, but four of our five operating companies had their best years.

"It is fair, even conservative in my view, to say that Martin Marietta's prospects for the future are impressive. We expect our 1979 results to show further improvement, given a reasonably healthy economy."

Reports due from former officers

Former employees of the Department of Defense, NASA, and former military officers required to report NASA and defense-related employment must do so by February 15. The report covers the federal fiscal year October 1, 1977 to September 30, 1978.

Forms and information for filing are available at:
Denver: R. E. Burnett, module 125, engineering building.
Cape Canaveral: Richard a Freeman, MRL building.
Michoud: Raymond J. LaCombe, Column EC40, first floor building 101.
Vandenberg: Donald N. Loats, room 86, building 840l.

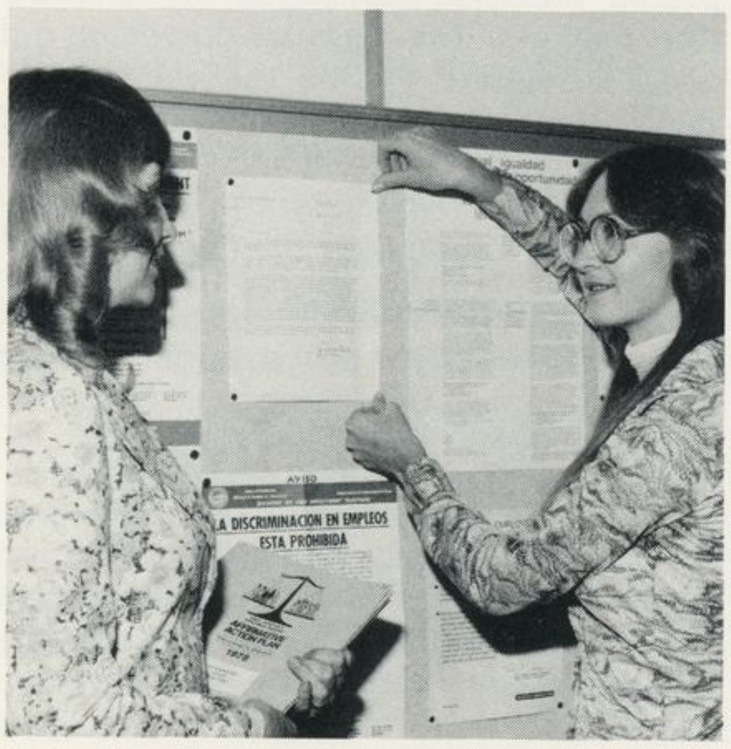
Mary Miller has received the AFPRO excellence award. She is division secretary for the Air Force Plant Representative office industrial materiel management division. The award is recognition for her work from July through December of 1978.

At Vandenberg

Vandenberg employee cited by Air Force

Kathy Day, librarian for the Vandenberg operations space shuttle data depository, has been recognized for outstanding contributions to the Air Force equal employment opportunity program. Before joining Martin Marietta, she worked for the Air Force on its affirmative action plan.

Ms. Day received a certificate and a letter of commendation from the director of civilian personnel at USAF headquarters, as well as letters of commendation from Brig. Gen. Thomas G. Darling, USAF deputy chief of staff for personnel at Strategic Air Command headquarters; and from Col. Robert L. Ruck, base commander of Vandenberg Air Force Base.



Kathy Day, right, recently cited for equal employment opportunity work, takes a few minutes from her library duties to post a bulletin board notice. Louise Ward, left, EEO program representative for Vandenberg operations, looks on.

In celebration of his retirement after 26 years with Martin Marietta, John Kotowkski, senior field engineer for the ground support system at Vandenberg operations, presents a corsage to his wife, Jerry. Kotowkski, who began his career in Baltimore, has worked on the entire Titan family of launch vehicles as well as on the space shuttle external tank.

A $3000 Martin Marietta Corporation grant was recently presented in Lompoc District Hospital. Otha L. Jones, left, director of Vandenberg operations, presented the check and was briefed on the use of a 1976 Martin Marietta gift to the hospital—a cardiac monitor. Talking with Jones are Frank M. Signorelli, a member of the hospital board, and Dr. Barry J. Coughlin, a specialist in internal medicine.

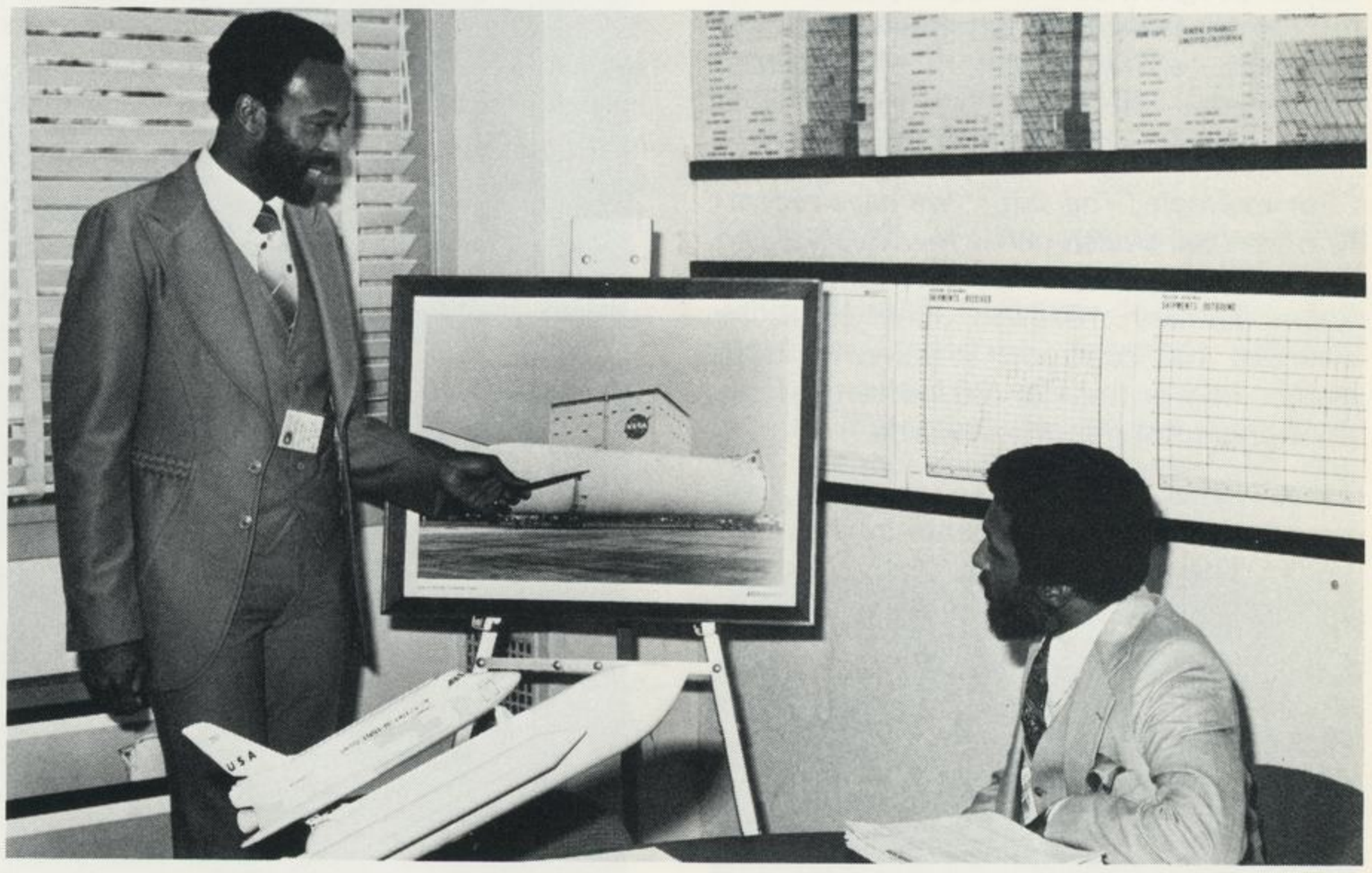
At Michoud

Michoud awards AVCO contract for intertanks

Michoud operations has awarded AVCO Corporation, Nashville, TN, a $9 million contract to build an additional ten intertanks for the external tank.

The contract includes options to build the full 27 intertanks required for the second increment of external tank production that will get underway late this year.

This is the largest single subcontract for airborne hardware on the external tank program. AVCO also produced the intertank for the first phase of the external tank program, which included three test and six flight tanks.



Dewitt Patton, intertank program manager for AVCO describes the intertank to William T. Brown, intertank buyer at Michoud operations.

AVCO will build ten additional intertanks with options for a total of 27 under terms of a contract just awarded.

Michoud expansion includes environmental controls

Expansion at Michoud operations is moving at a brisk pace. A five-year program, running through 1985, now totals nearly $100 million.

To date $40 million has been spent or committed for expansion, according to Ken Worthington, chief of facilities planning for Michoud.

One of the major projects is the high bay addition to be completed in mid-1980. The building, which will join the basic manufacturing building to the vertical assembly building (VAB), will contain five environmentally controlled silos for thermal protection system (TPS) application to liquid oxygen tanks and intertank assemblies. The 48,000 sq. ft. addition will cost $13 million.

Also underway are two new facilities within the basic manufacturing building to be used for ablator and foam insulation application to small components and to large areas of the external tanks.

"Cleanliness is important, but controlled environment is essential," Worthington said.

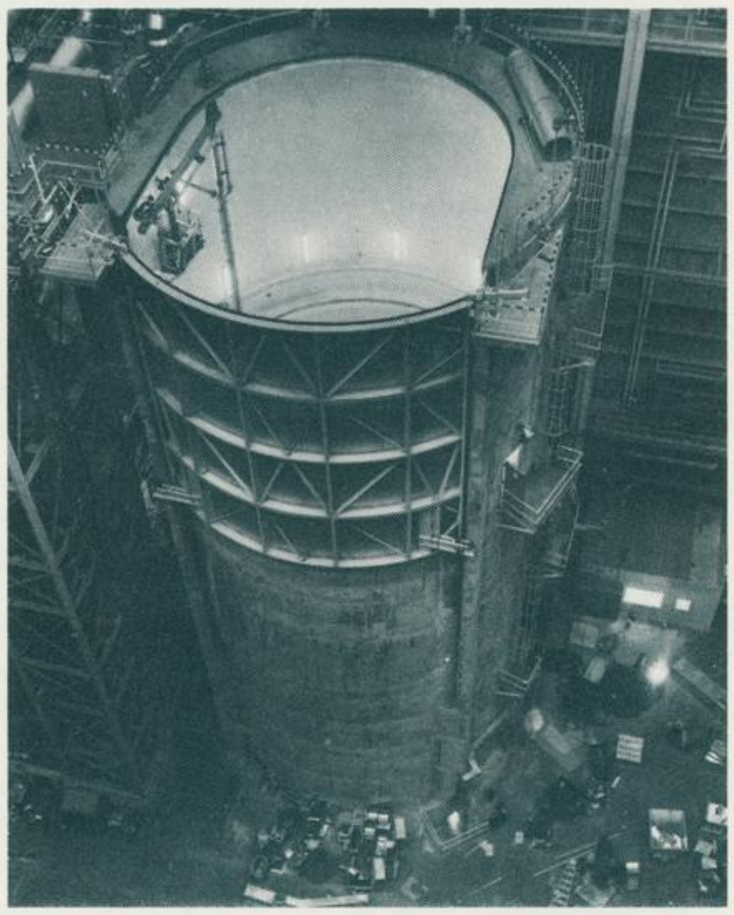
TPS ablator material is sprayed on and cured at room temperature for one day, then for two days at 150 degrees. Both facilities are scheduled for completion in 1980. Each addition will run $900,000.

Already implemented is the first of three phases of a new building to apply TPS ablator to the liquid hydrogen tank. Upon completion in 1982, the building will contain three cells. Two will be used for ablator application, the third for external cleaning and paint priming. Projected cost is $10 million.

An additional energy related project is the industrial wastewater treatment facility which will recycle contaminated water after use in the VAB. Worthington reports more than 450,000 gallons of water are used to clean one external tank.

Since projected goals for external tank production is 60 per year, the Michoud facility when completed will be recycling 27 million gallons of water annually.

The wastewater treatment facility will remove chemical solutions from demineralized water which has been used for external and internal surface treatment of the hydrogen and oxygen tanks. The tanks are treated in a special cell in the VAB which can best be described as a giant dishwasher with rotating spray probes.



External tanks are treated in this special cell in the VAB. This cell, which can best be described as a giant dishwasher, sprays cleaning chemicals inside and outside the tanks.

The water used will go through a treatment tank and be returned to a holding tank for reuse.

Also related to conserving resources is a planned facility for disposal of TPS waste materials by incineration and the use of heat.

"The heat will be used to generate steam which is vital in heating and general environmental control operations in the VAB and throughout the entire Michoud building. It's just not acceptable anymore to burn something and throw it away," Worthington insists. "We're trying to use our resources well and set an example for industry in general."

Additional plans call for expansion of Michoud's tank farm to hold chemicals and water. The containers should be ready for storage in 1981 at a cost of $2.5 million.

There will also be a $2 million giant storage facility for completed external tanks. The building will house tanks waiting to be shipped to launch sites on the east and west coasts.

"We always work five years ahead," Worthington said. "We've already begun identifying some projects for 1985."

Final phase of ground vibration tests underway

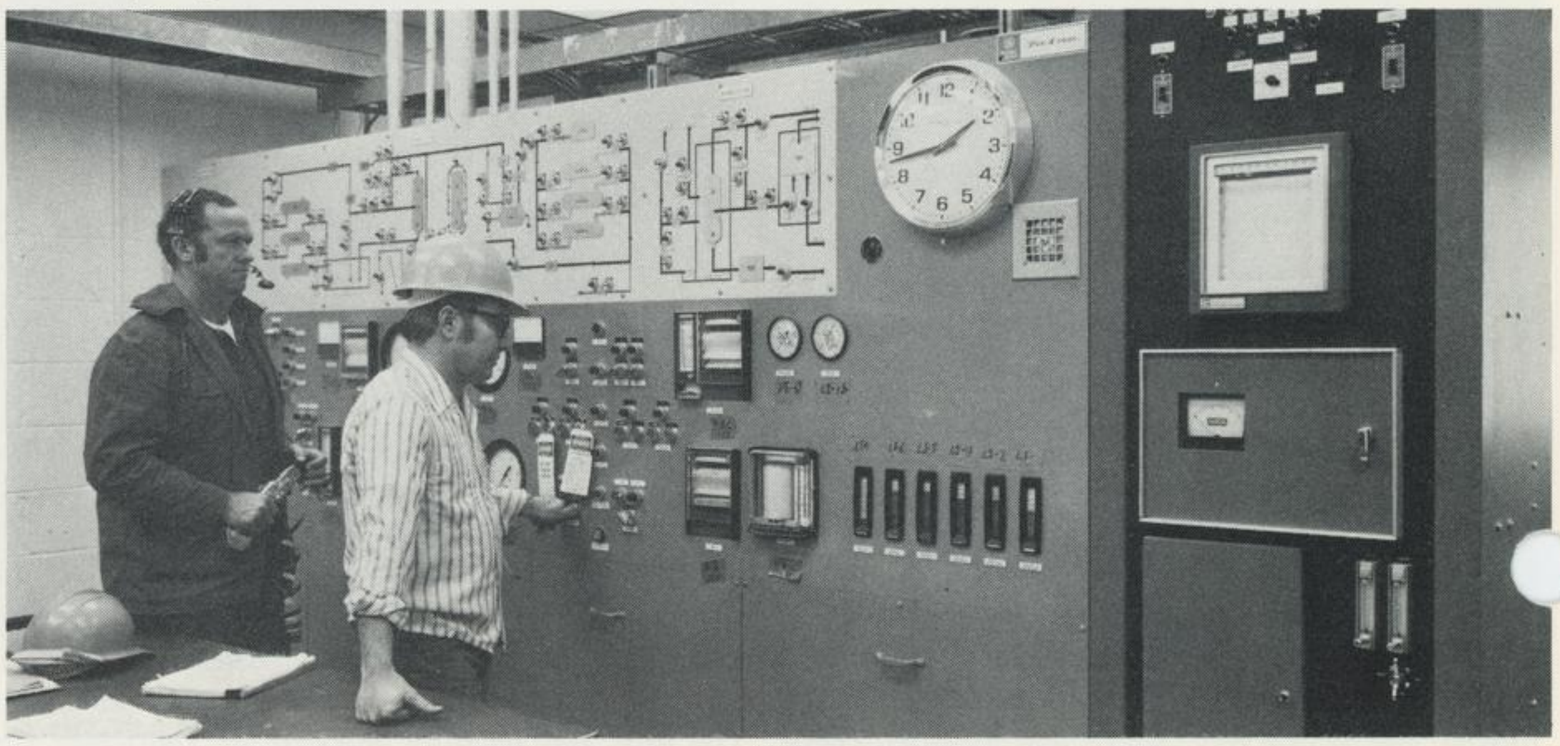
The final phase of ground vibration tests on the space shuttle launch vehicle are underway at the George C. Marshall Space Flight Center, Huntsville, AL.

This phase, which will last until Marc will test the launch vehicle in that portion of the launch just prior to solid rocket booster separation.

Booster separation will occur during shuttle flights at about 27-miles altitude.

Initial vibration tests began in May 1978, using only the external tank and orbiter, to simulate the higher altitude portion of a shuttle launch when only the three main engines are thrusting.

Michoud operations has approximately 90 engineers and technicians in Huntsville supporting the tests. William F. Barrett is test director for Martin Marietta.



This control room monitors and controls the huge cleaning cell in the VAB at Michoud.