

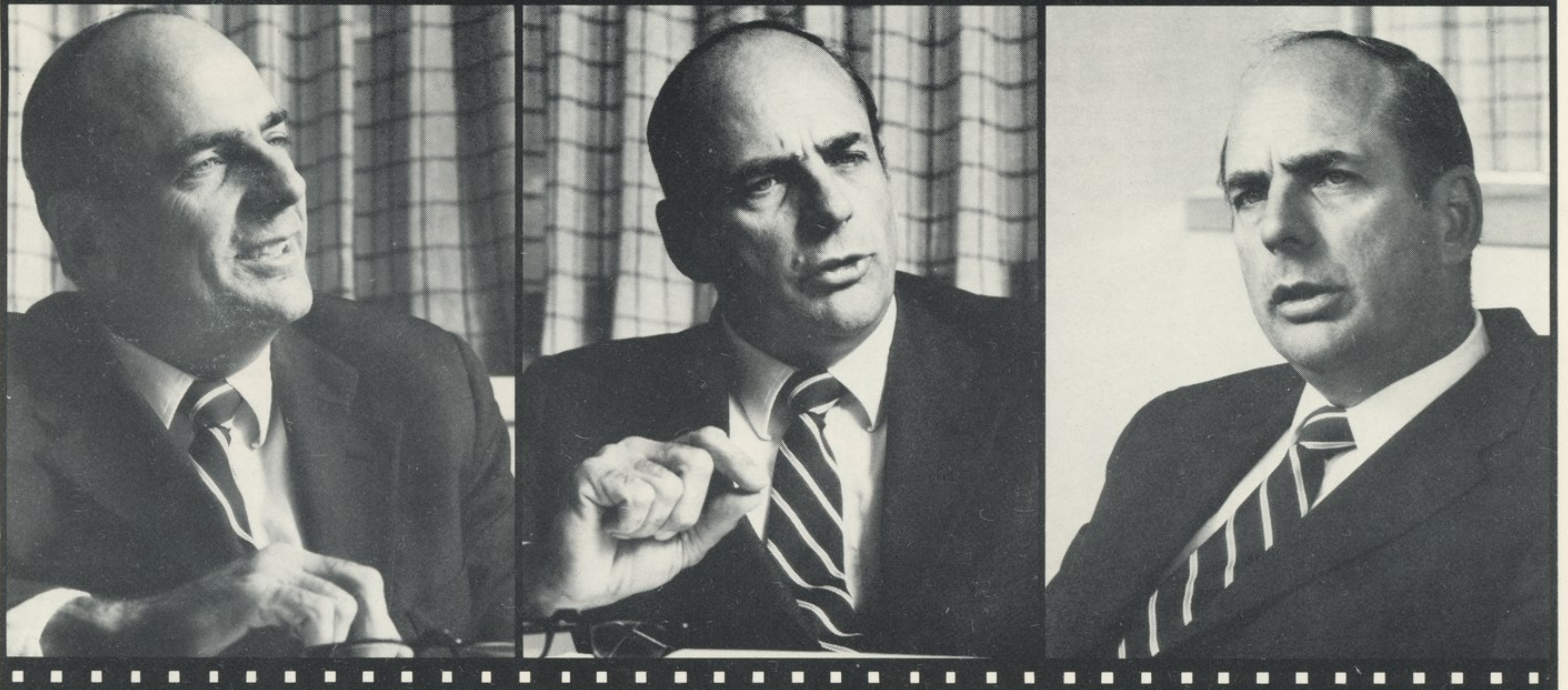
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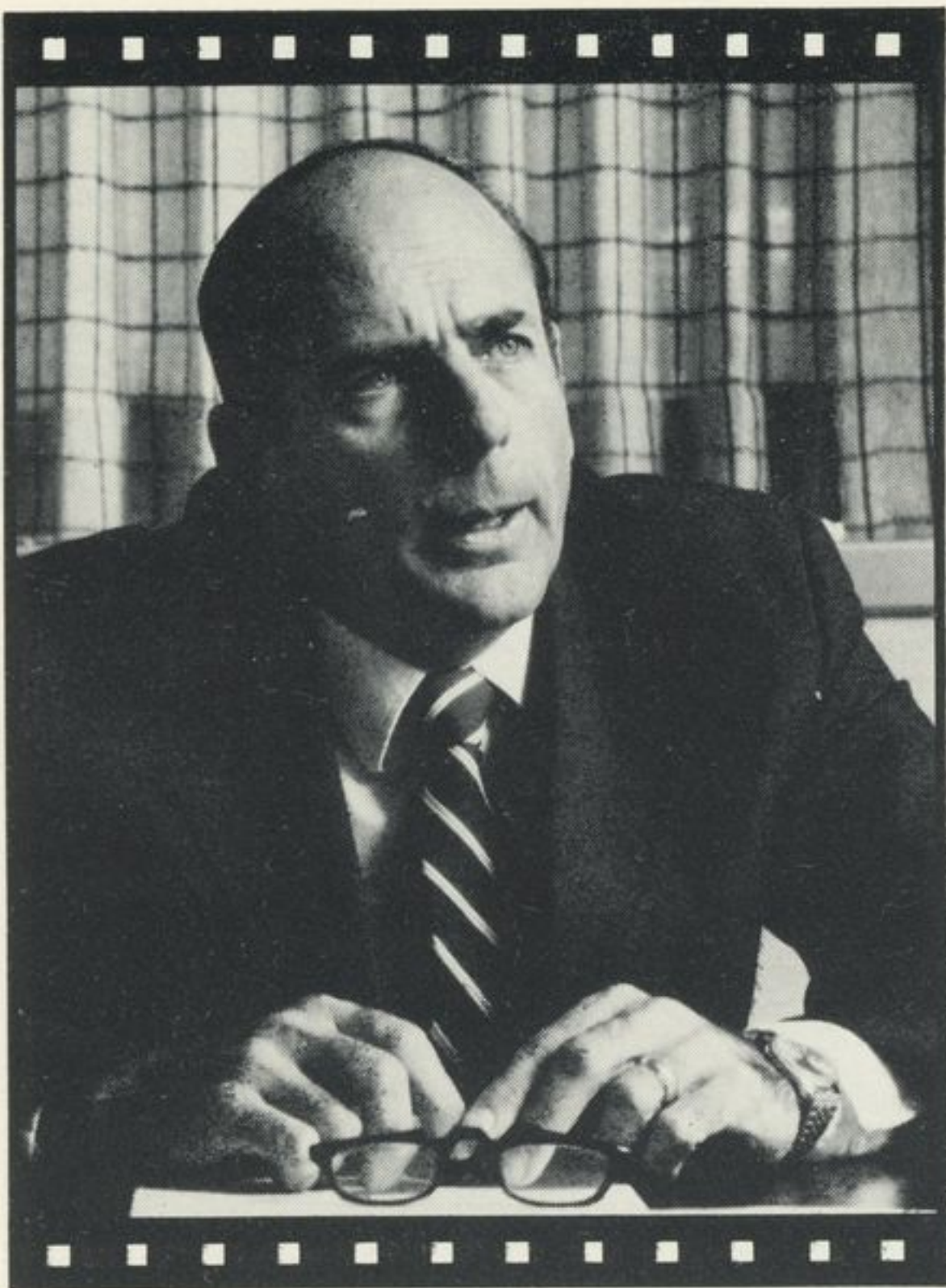
1983: A look back

1984: A look ahead

We generated a new record for business orders in 1983, topping the old one by more than 50 percent. By any standard, that makes 1983 a spectacular year.

— Norman R. Augustine, president





Future of Denver Aerospace

'Lean, efficient, productive, and quick on our feet'

(Editor's Note: In a candid interview, Norman R. Augustine, president of Denver Aerospace, gave *Martin Marietta News* his views on our 1983 accomplishments and what the future holds.)

NEWS: Let's get right to the point. Denver Aerospace lost a few significant new business opportunities this year, particularly the Shuttle Processing and SPADOC contracts. Those disappointments appear to have some of our people concerned about the future. Any reason to worry?

AUGUSTINE: I see no reason to be worried, but we can never be complacent — particularly in a very competitive marketplace built on staying in the forefront of state-of-the-art technology. Actually, in almost every respect, we have had the best year ever in our history.

One of our more important accomplishments was the amount of new business we acquired. We generated a new record for business orders in 1983, topping the old record by more than 50 percent. By any standard, that makes 1983 a spectacular year. As long as we have competitors it will be difficult to have a 100 percent perfect year in new business. But, Denver Aerospace people have traditionally exhibited a dedication that makes us unwilling to settle for anything less than perfection. The losses you mentioned are indeed major disappointments. We must learn from them and get on with the job of turning such opportunities in the future into wins, as we have done in many other instances this past year.

From a statistical viewpoint, we set new records in 1983 for sales, orders, profits, and backlog. We acquired more than \$2.2 billion in orders, reduced overhead by about 22 percent to make us more competitive, and achieved average award fees of 91 percent. Our backlog stands at \$2.7 billion, which far exceeds industry averages in terms of months of business on order.

NEWS: Any other indicators that 1984 and the years ahead will be just as impressive?

AUGUSTINE: There are many, but one particularly important indicator of the future health of our company is the scores we receive on our independent research and development work — our

IRAD projects. Those scores from government evaluators often forecast a company's future health in technological areas. In 1983, we earned IRAD scores of 8.11 (out of a possible 10), which not only put us in the top 10 percentile of companies in the country, but permitted us to be given some additional money by the government to do further research and development.

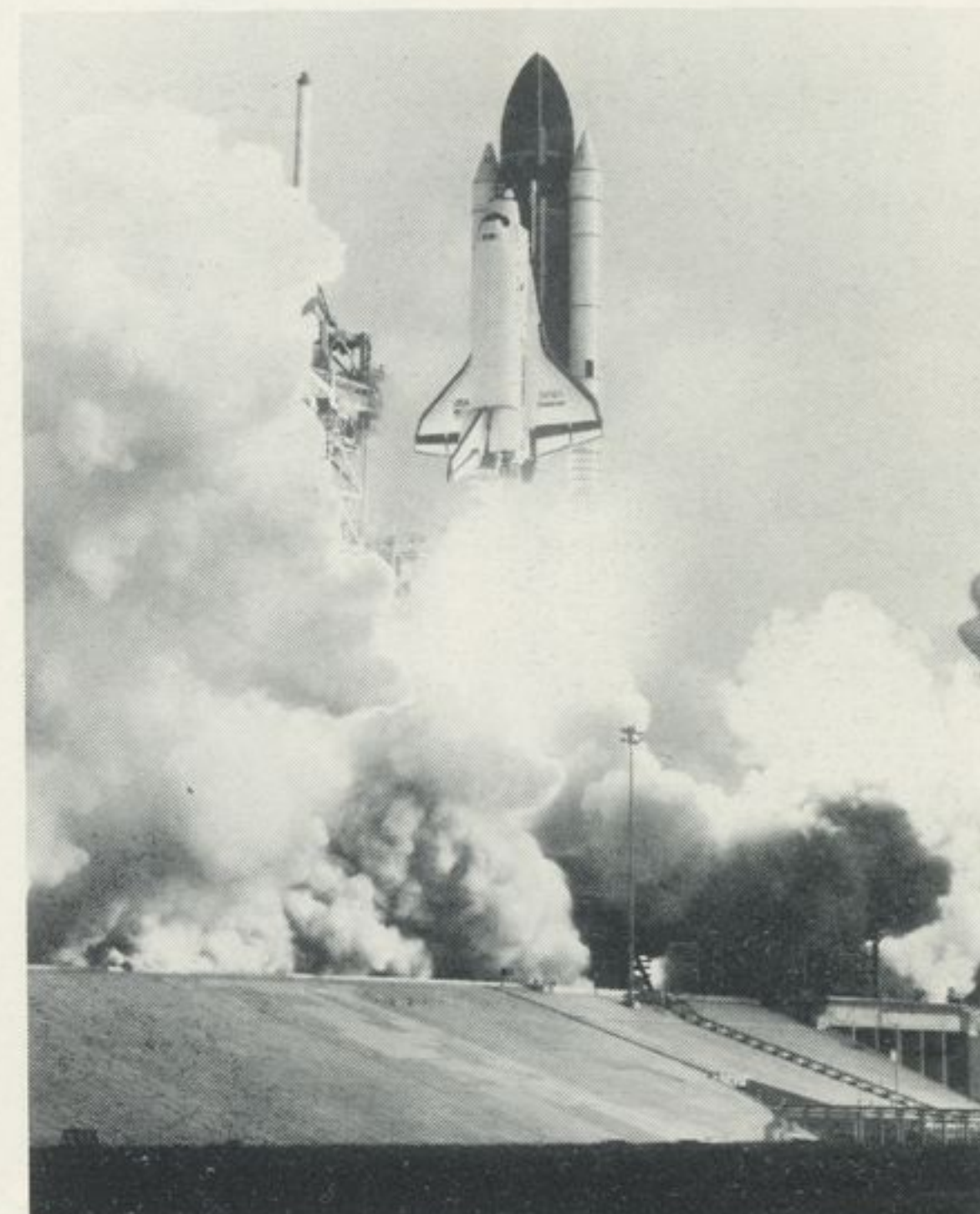
NEWS: What does that mean for our employment base in the coming year?

AUGUSTINE: The biggest challenge we will face will be hiring substantial numbers of new employees — people of a quality that matches the team we currently have in place. Employment at our facilities outside Denver will remain relatively stable next year, whereas our employment in Denver itself will increase rather substantially. The increase will be particularly noticeable in areas such as software, systems, and electronics.

Recently, we initiated a program to encourage each of our employees to help find capable, qualified, high integrity people to join our team. That program, called Project Referral, includes financial incentives to our people. Project Referral is an extremely effective way to recruit because we get candidates known to somebody we trust — our own employees.

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Space Shuttle.



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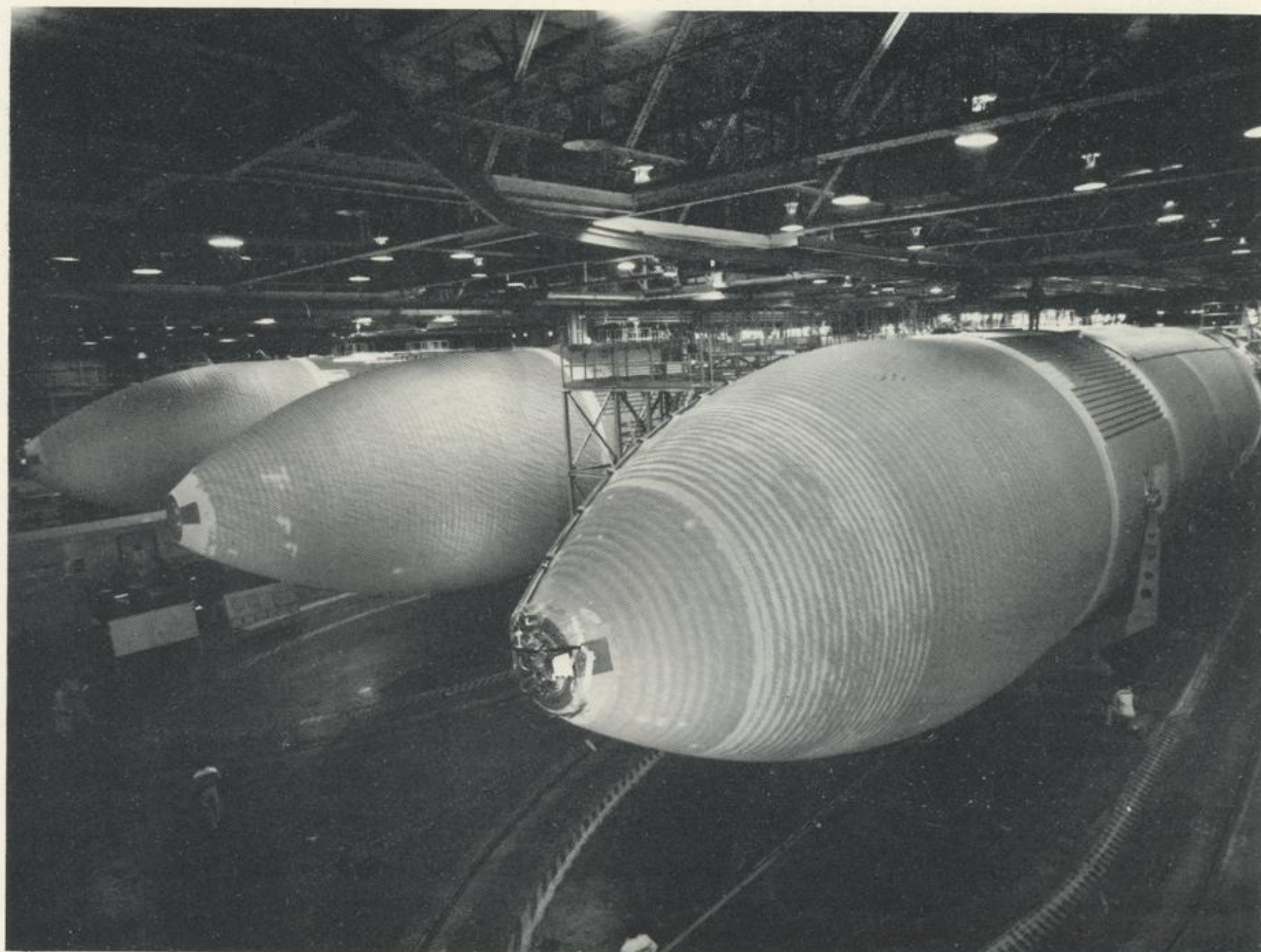
NEWS: Is the focus on software and systems engineering hiring to handle current business or new opportunities?

AUGUSTINE: Both. We find, for example, that software talent is in relatively short supply throughout the country. At the same time, software is of growing importance to our defense and space efforts. Also, much of our new business is command, control, and information systems. Our business is changing. A few years ago, we were to a considerable extent a structural and mechanical systems manufacturer and assembler. Today, we are becoming recognized as a superb information management company. That certainly doesn't mean we will stop being the former. The external tank, Titan, and other projects testify to the importance of mechanical systems, manufacturing, and assembly. However, the crest of the "wave of technology" is information management, and we are fortunate to be postured in such a strong position in that marketplace.

We are actually well into the information management revolution. Companies that did not see that change coming and position themselves to compete in that arena will suffer. Fortunately, we have a solid systems engineering capability that supports us strongly in the information management field, as well as in more traditional aerospace fields.

NEWS: What stands out most when you reflect on the year?

AUGUSTINE: That we have main-



Shuttle external tanks.

tained the dedication, integrity, and business ethics that always have characterized Denver Aerospace — the essence of our entire business. Beyond that, a series of three events stands out. During a 65-hour period last summer, we were involved in successful launches of a Space Shuttle from Kennedy Space Center, the first Titan 34D from Vandenberg, and the first test flight of the Peacekeeper intercontinental ballistic missile, also from Vandenberg. Over the years, Denver Aerospace normally has been involved in five to six major launch events a year, so three in three days made for a bit of excitement for all of us, and the outcome underlined once again our commitment to Mission Success. Next year, the pace will increase even more, with 20 launch events scheduled, placing even greater demands on our quest for perfection.

NEWS: NASA is gearing up to launch two monthly Shuttle flights by the end of the decade. Are we ready for that accelerated schedule?

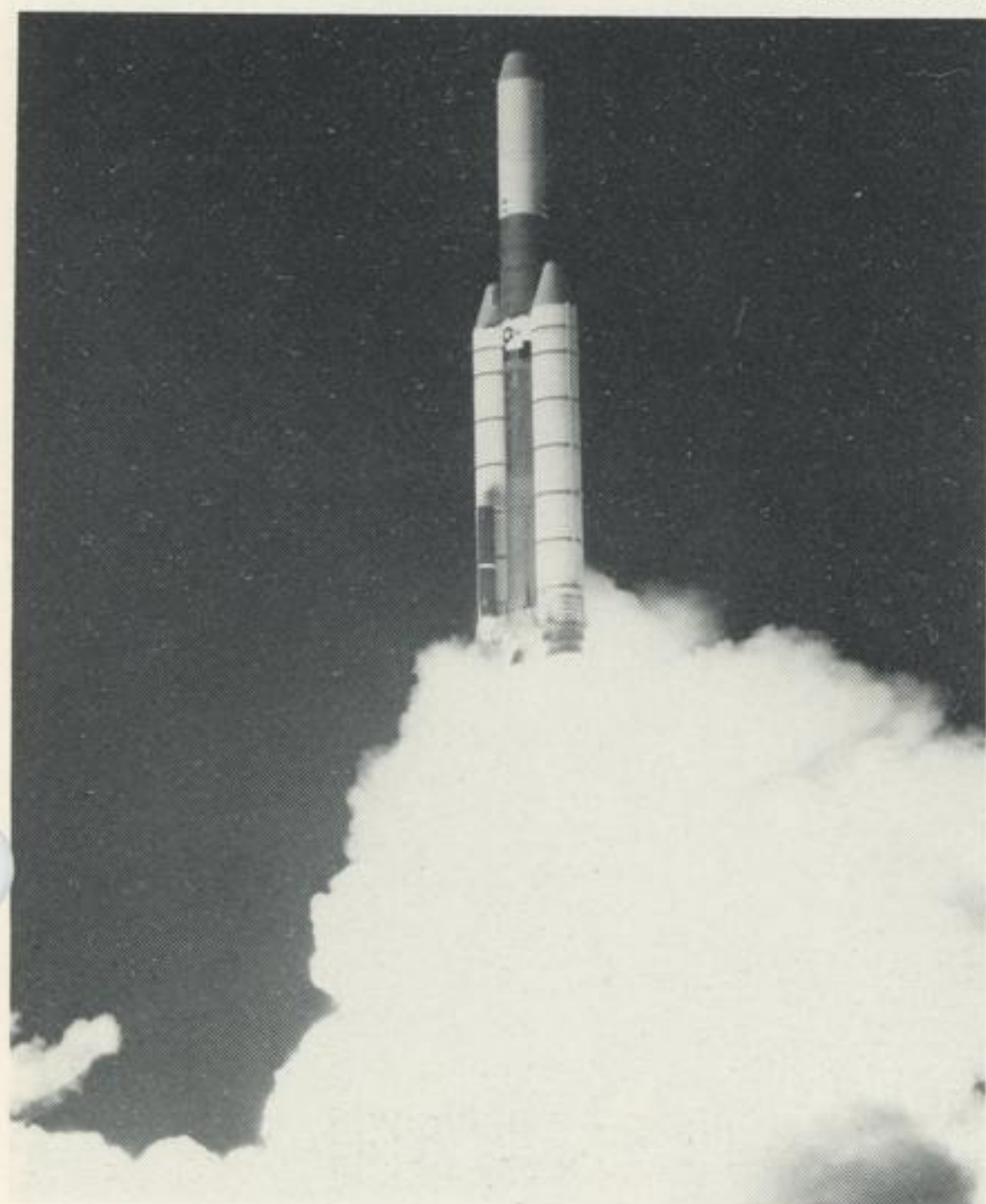
AUGUSTINE: Definitely. In fact, the National Research Council reviewed the various companies involved in the Shuttle program to assess their readiness to support a 24-launch per year schedule. Martin Marietta was singled out for its progress, and there were tangible accomplishments to support the praise we received.

The Michoud members of our team delivered seven external fuel tanks for the Shuttle last year, each ahead of schedule. We flew the first lightweight tank, cutting 10,000 pounds to permit heavier Shuttle payloads. In fact, Michoud met every prescribed schedule milestone last year. We also surpassed our goal of cutting production costs on the tanks, along with cutting the costs of processing them at the Kennedy Space Center. The administrator of NASA, James M. Beggs, formally commended us on those achievements. We brought on new facilities and tools at Michoud to meet the accelerated launch schedule. Our customer's confidence in us was evident also by the award of a new contract to build 26 additional tanks and buy materials for 21 more, along with a tooling contract that will enable us to further increase production rates.

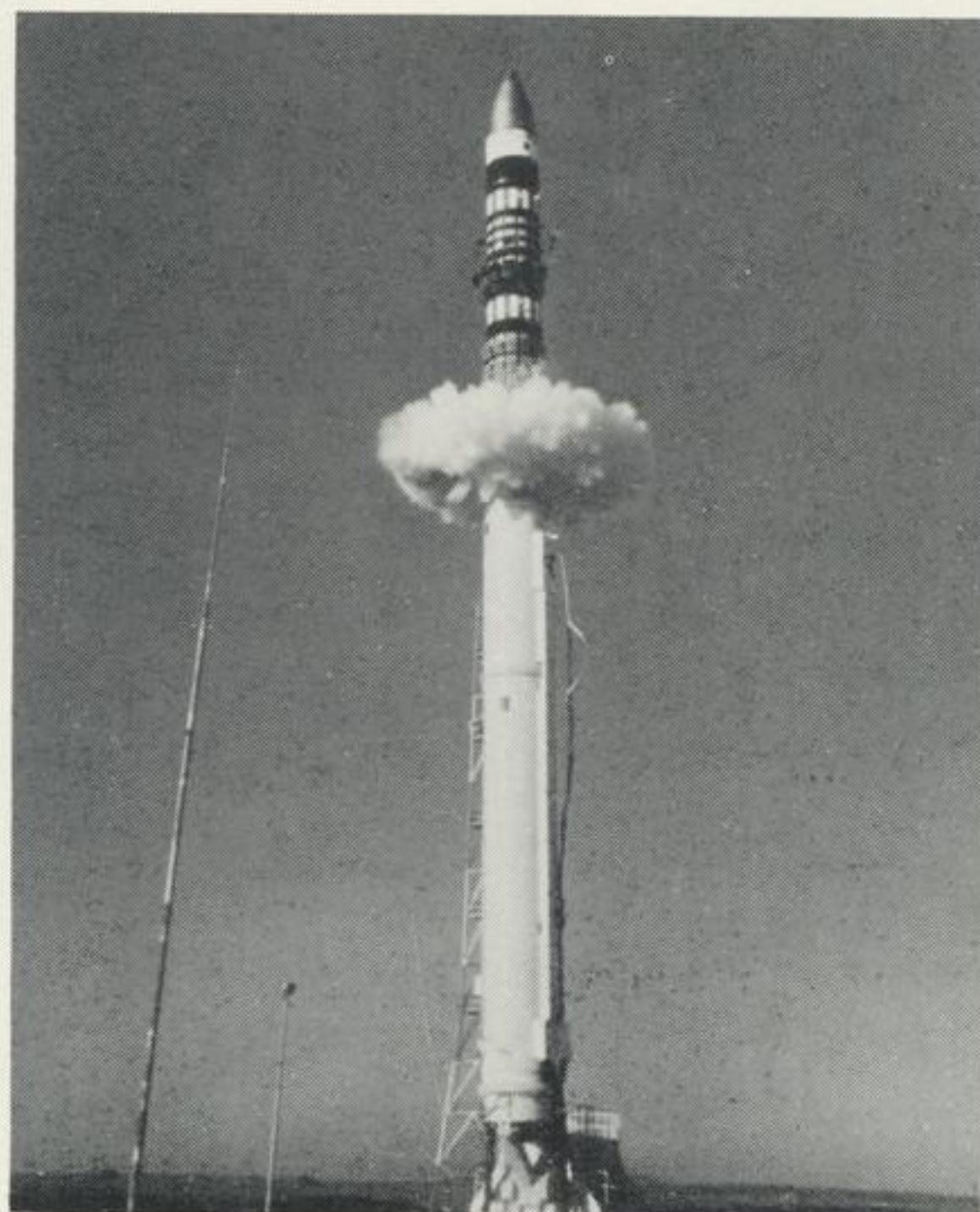
Also, we met our schedules on the other Shuttle systems we provide, for instance, the successful tests of our new, larger parachute for the solid rocket booster recovery systems.

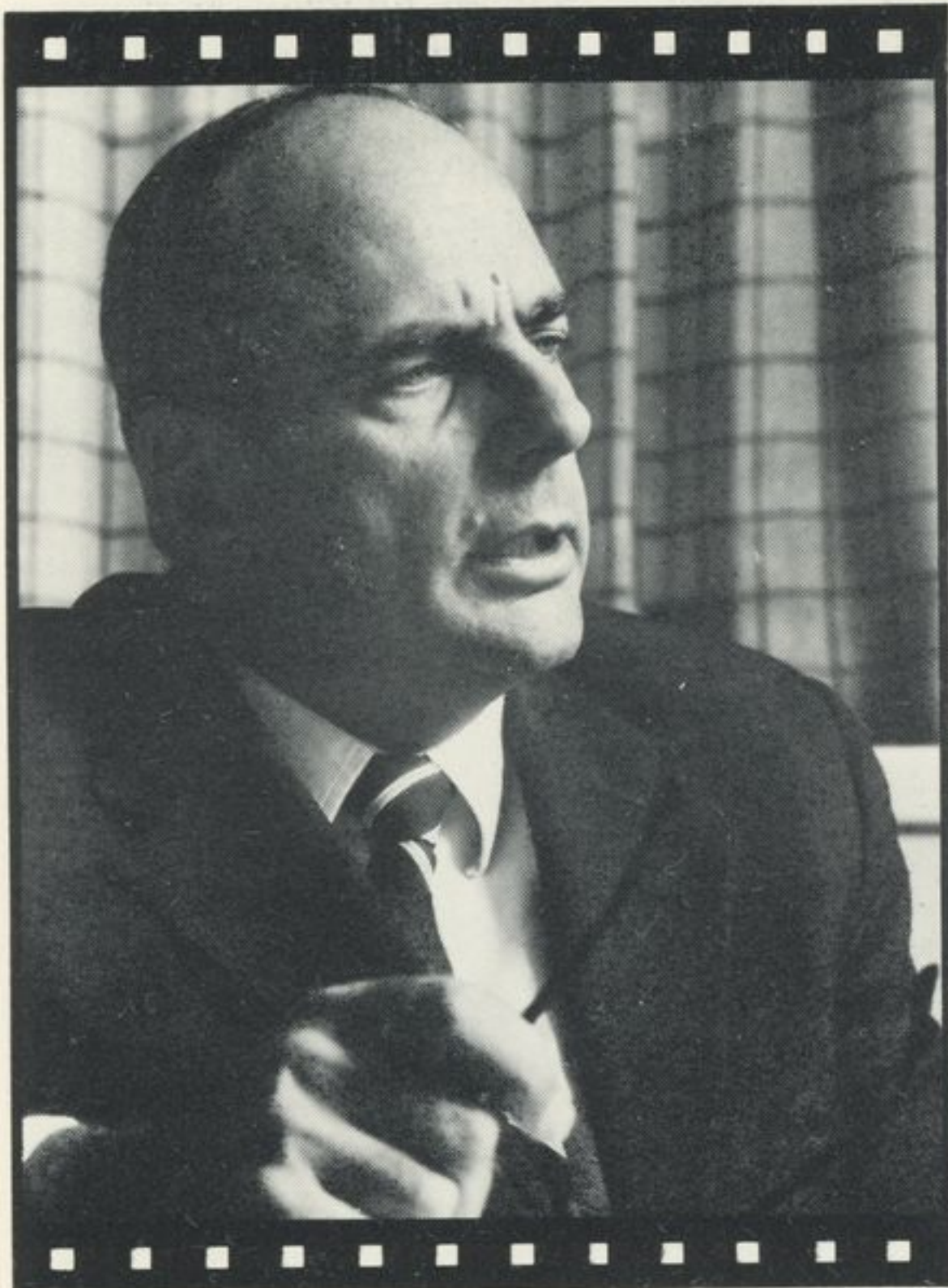
I also want to point to our successful accomplishments at Vandenberg Air Force Base, where we are responsible for integrating the construction of the

Titan 34D.



Peacekeeper.





(Peacekeeper test flights) were extremely important . . . anything short of the perfect success record we have had on the first two test flights could have placed that entire program in serious jeopardy.

West Coast Shuttle launch site. We are moving toward an October 1985 launch capability there, and a good measure of our success is the recent award fee we received from the Air Force. That award fee of more than 90 percent indicates our customer believes we are doing a good job. We have a strong team at Vandenberg, and we are meeting our commitments to the Air Force.

NEWS: Those fees seem to be an increasingly important indicator of our accomplishments.

AUGUSTINE: Quite true. One of the changing characteristics of our business is that the government is going more and more judgmental award fees, wherein it makes a qualitative assessment of how well its contractors are doing. A substantial part of the total fees we earned in 1983 on the approximately 450 contracts in which we currently are involved were, in fact, award fees. We have been averaging an overall 91 percent award fee on our projects, which is nothing short of spectacular in this business. Nonetheless, our goal continues to be 100 percent. In fact we have received a number of 100 percent awards, including a string of 13 consecutive such awards at Kennedy Space Center in our work for NASA.

NEWS: Why were the first Peacekeeper test flights so significant?

. . . the MMU and its missions are going to capture the public's imagination . . .

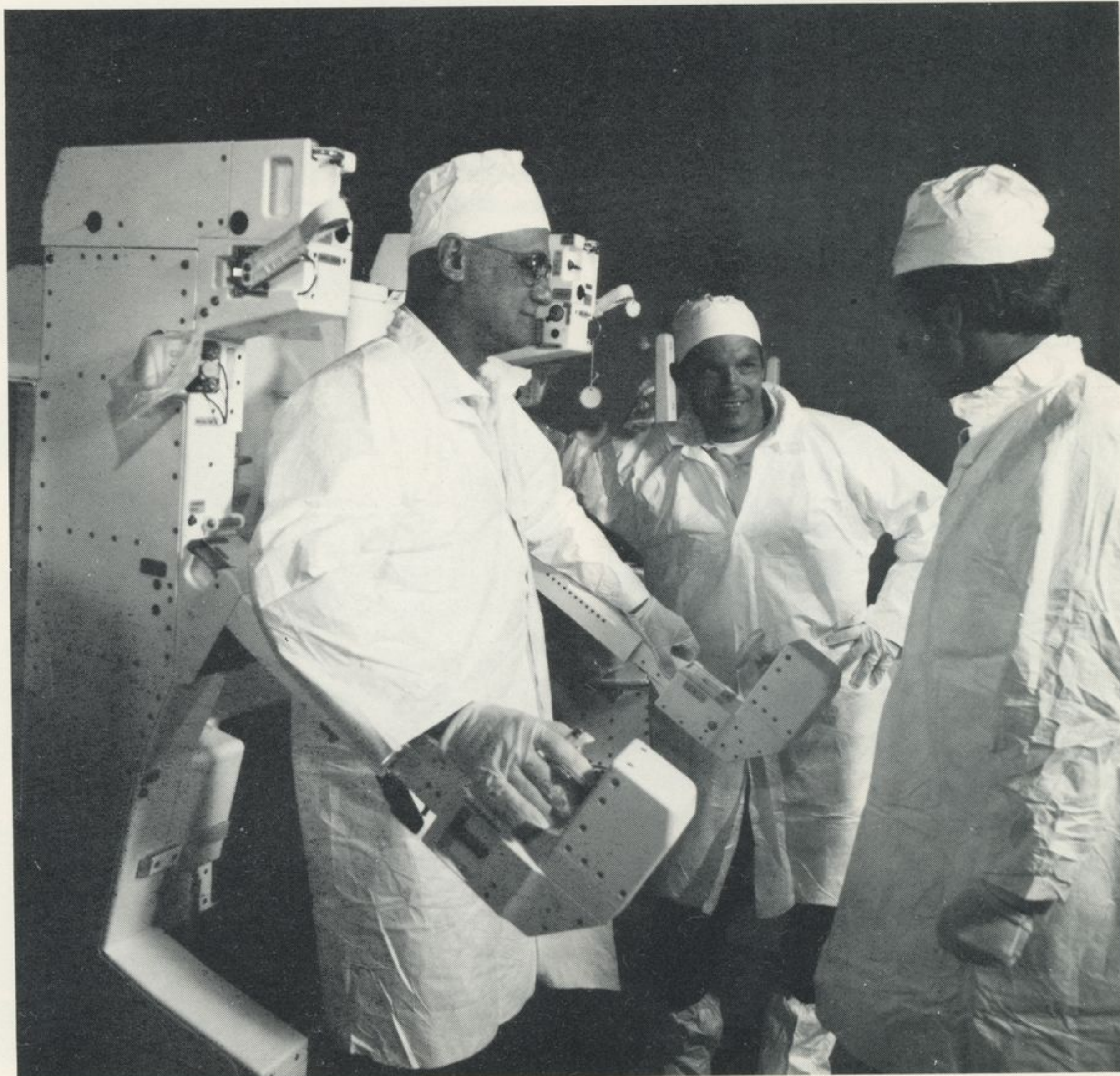
AUGUSTINE: They were extremely important to us for a number of reasons. First, they were important to the defense of the nation. Second, in the most recent Congressional voting, Peacekeeper funding was passed by five swing votes in the House of Representatives. I believe that anything short of the perfect success record we have had on the first two test flights to date could have placed that entire program in serious jeopardy.

That, more and more, is becoming a characteristic of our business. Programs that get into cost, performance, and schedule troubles are the ones most likely to be singled out for budget cutting or elimination.

NEWS: What were some of our other space-oriented accomplishments?

AUGUSTINE: Delivery of the first flight-ready manned maneuvering units (MMU) comes immediately to mind. They have undergone final testing and are being installed in the Space Shuttle Challenger as we talk today. These unique backpack propulsion devices will

Astronauts with Manned Maneuvering Unit ready for first flight.





Faint Object Spectrograph.

permit astronauts to perform a variety of extra-vehicular activities in space and will become important tools for them. The first flight test is scheduled for January 30, 1984, when procedures will be practiced for an even more dramatic mission in April. On that April mission, the MMU will be used by astronauts to assist in stabilizing the malfunctioning solar maximum observatory satellite, so it can be brought into the Shuttle payload bay for repairs and eventual reinsertion into orbit. I believe the MMU and its missions are going to capture the public's imagination to an extent exceeding anything since the first Shuttle launch.

NEWS: You must draw personal satisfaction to be playing a leading role in a company on the very cutting edge of space science and exploration of the universe.

AUGUSTINE: It really does give me a great feeling of personal satisfaction and pride to be a member of such a team. There are many projects that I find exciting. For instance, we delivered this past year the faint object spectrograph (FOS), one of the major instrument payloads in the space telescope due to be orbited in 1986. The FOS may unveil some of the deepest mysteries of our universe. It is so sensitive, it is likely it will be able to detect a single photon. That means we will be able to see at least seven times farther into the universe. We on Earth will be able to see light that began moving toward us not too long after the time scientists believe our universe was created.

We also delivered this past year three of the instruments for the Galileo spacecraft which will explore Jupiter in 1986 and study its clouds, atmospheric pressure, density, temperature, and its radiant energy levels. We also built the attitude control systems for the spacecraft.

We are involved in other space ventures as well, having built some sub-assemblies for a European spacecraft that will fly through the coma of Halley's comet on its return in 1986. Denver Aerospace also provided reaction control system tanks for European satellites and spacecraft.

Another space project with great current and future promise is the

tethered satellite program. We are building the deployment and recovery system that will be used initially for an Italian satellite that will conduct research in the Earth's upper atmosphere while being "trolled" from the Space Shuttle — almost like bait on a fishing line — on a tether that can be up to an incredible 62 miles long.

NEWS: What is Denver Aerospace's position in the move toward commercialization of space?

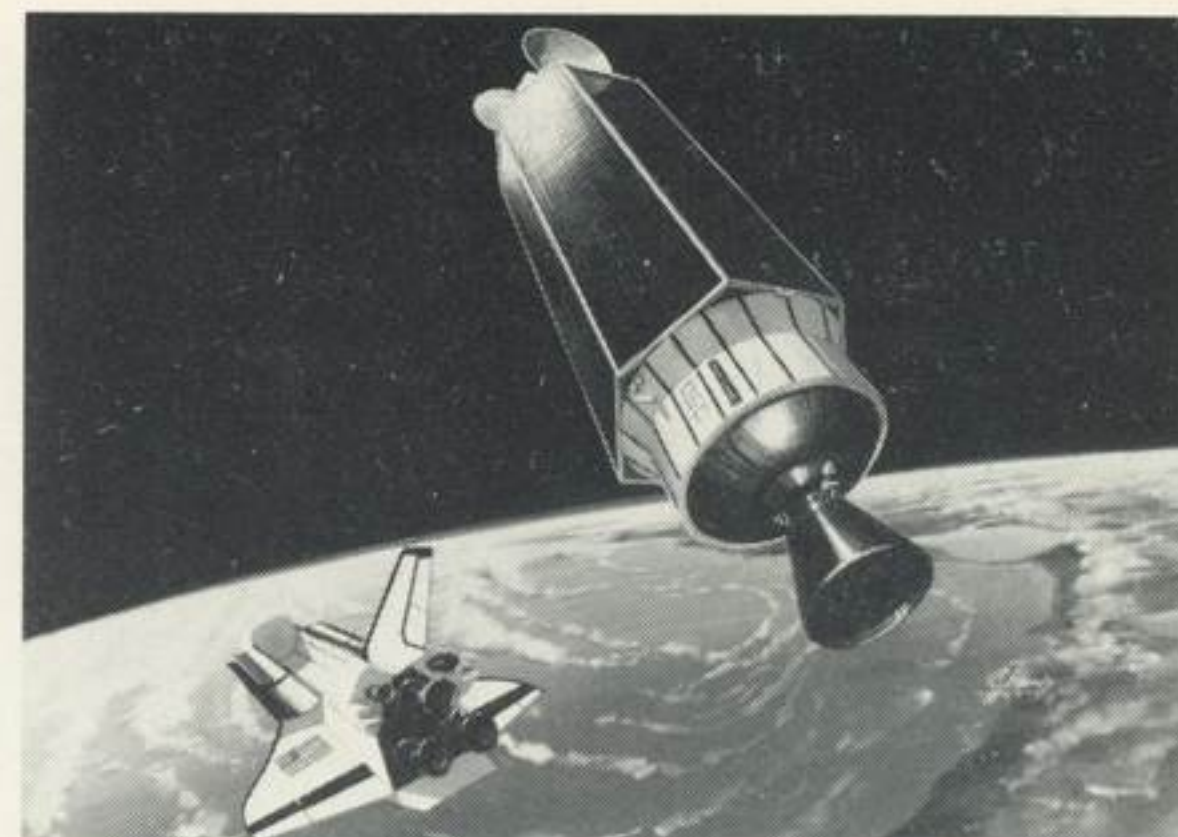
AUGUSTINE: Our goal is to play a major role. One of our initial penetrations is the transfer orbit stage (TOS), which will fill a gap in the market for a medium-sized payload carrier at relatively low cost. This is a pioneering opportunity for us, not only in the technical sense, but in a business sense as well. We will be working with Orbital Sciences Corporation, a recently formed enterprise, to pioneer the commercial use of space.

Our goal is to play a major role (in the commercialization of space).

NEWS: What are Titan's prospects as a commercial launch vehicle?

AUGUSTINE: Titans, including the newest member of the fleet — the 34D — have an enviable launch success record. Consequently, the Titan has considerable inherent potential as an expendable launch vehicle to companion the Space Shuttle in the commercial marketplace. The commercial market now centers on the Space Shuttle, in part, because it offers the advantages associated with reusability. At the same time, the Air Force is interested in a mixed fleet that exploits the benefits of Shuttle along with a limited number of expendable launch

Galileo probe instrument.



Transfer Orbit Stage.

vehicles to take advantage of their particular attributes.

We are supplying information to the Air Force in their evaluation of this position by providing cost and schedule data on the possibility of building additional Titans, just as we support NASA in examining the possibility of increased usage of the Shuttle.

NEWS: Would you review 1983 accomplishments in our defense-oriented business?

AUGUSTINE: First, I want to note that we are involved in many programs that very properly we aren't permitted to talk about for security reasons. The people working on those programs face many particularly difficult challenges in terms of both technical and business complexity. But, those people get very little public recognition for their accomplishments. Denver Aerospace people who work on classified programs should know that they are greatly appreciated by all of us, and that their work is of enormous importance, not only to Martin Marietta, but, even more important, to our country.

We have been averaging an overall 91 percent award fee on our projects, which is nothing short of spectacular in this business.

NEWS: The ASMPS contract appears to be one which might lead to future business opportunities because of its good performance.

AUGUSTINE: ASMPS, which means automated staff message processing system, could be a significant piece of our command and information system line in the next decade. It is, indeed, an important opportunity for us, not only because of the growth potential, but because it gives us an opportunity to show a relatively new customer, the Army, our capabilities.

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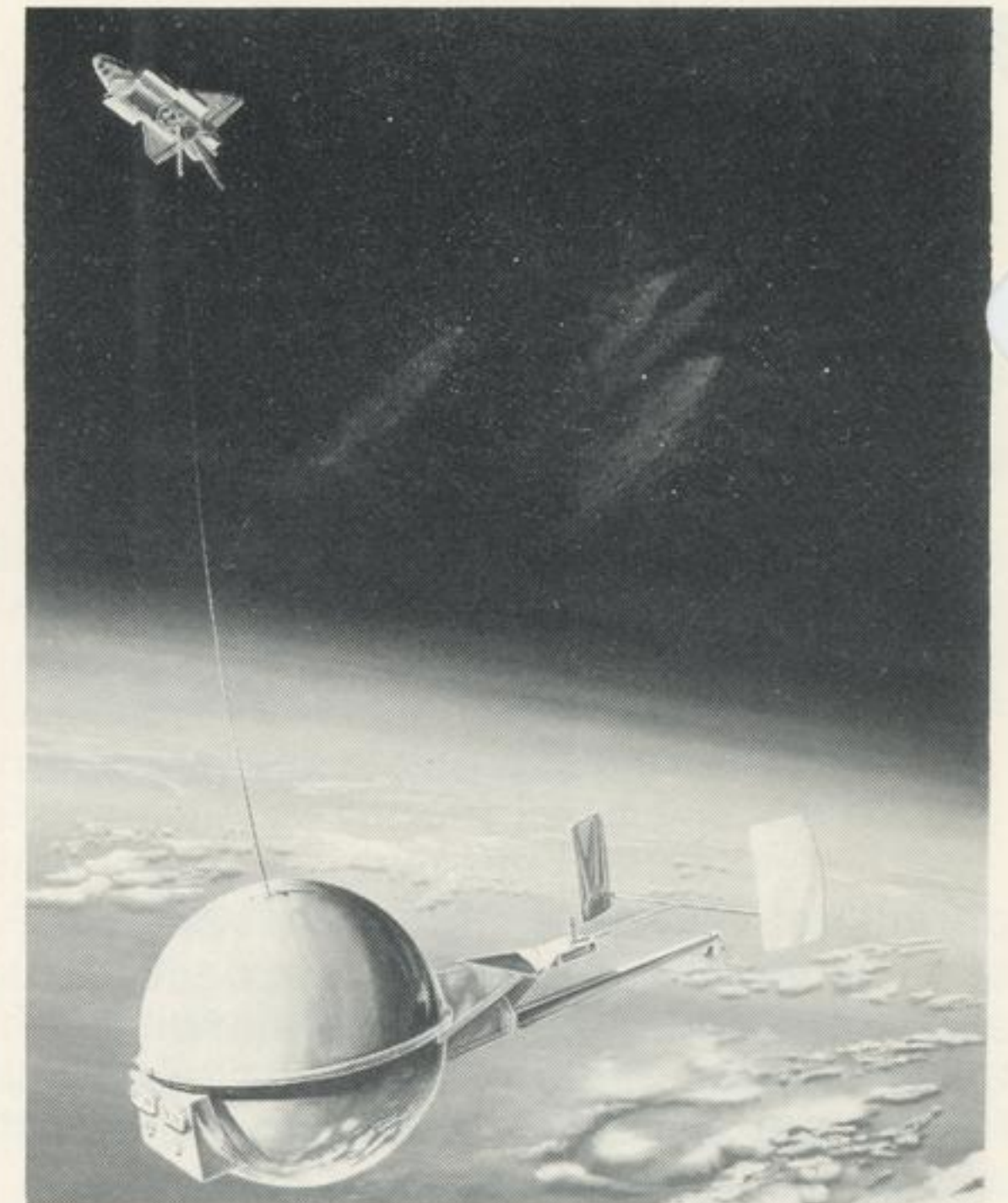
We built an ASMP facility, which the Army has been testing in Germany for itself and the Air Force, and the system has performed superbly. We believed we could have an even better product if we had a version that used one shelter instead of two, enabling the Army to reduce staffing by about 3000 people and vehicles by about 700. So great was our conviction that we built such a single shelter facility with our own money, and it now is being demonstrated around the country.

NEWS: What other defense-related contracts you can discuss in the perspective of 1983 accomplishments or new business?

AUGUSTINE: There is a long list. We continued, with high praise from our customer, work on the OASIS contract to modernize the command and control capabilities of the Air Force's Tactical Fusion Center for our combined forces in Europe. We also are continuing work on the design, development, and testing of van-enclosed, mobile electronic countermeasures training systems for the Strategic and Tactical Air Commands — our AN/MSR vans.

A number of new contracts enhanced our business. One is a study of the ground communications systems for a strategic constellation of satellites, called MILSTAR. Our people also will be designing a candidate replacement communications system for installation in NORAD's Cheyenne Mountain Complex near Colorado Springs. We are involved in the design, fabrication, and testing of components and assemblies to stabilize large, mechanically flexible systems in space. Another new contract will involve us in developing the PISCES multi-processor computer system for checkout, control, and monitoring of Space Shuttle launches from

Venus Radar Mapper.



Tethered Satellite.

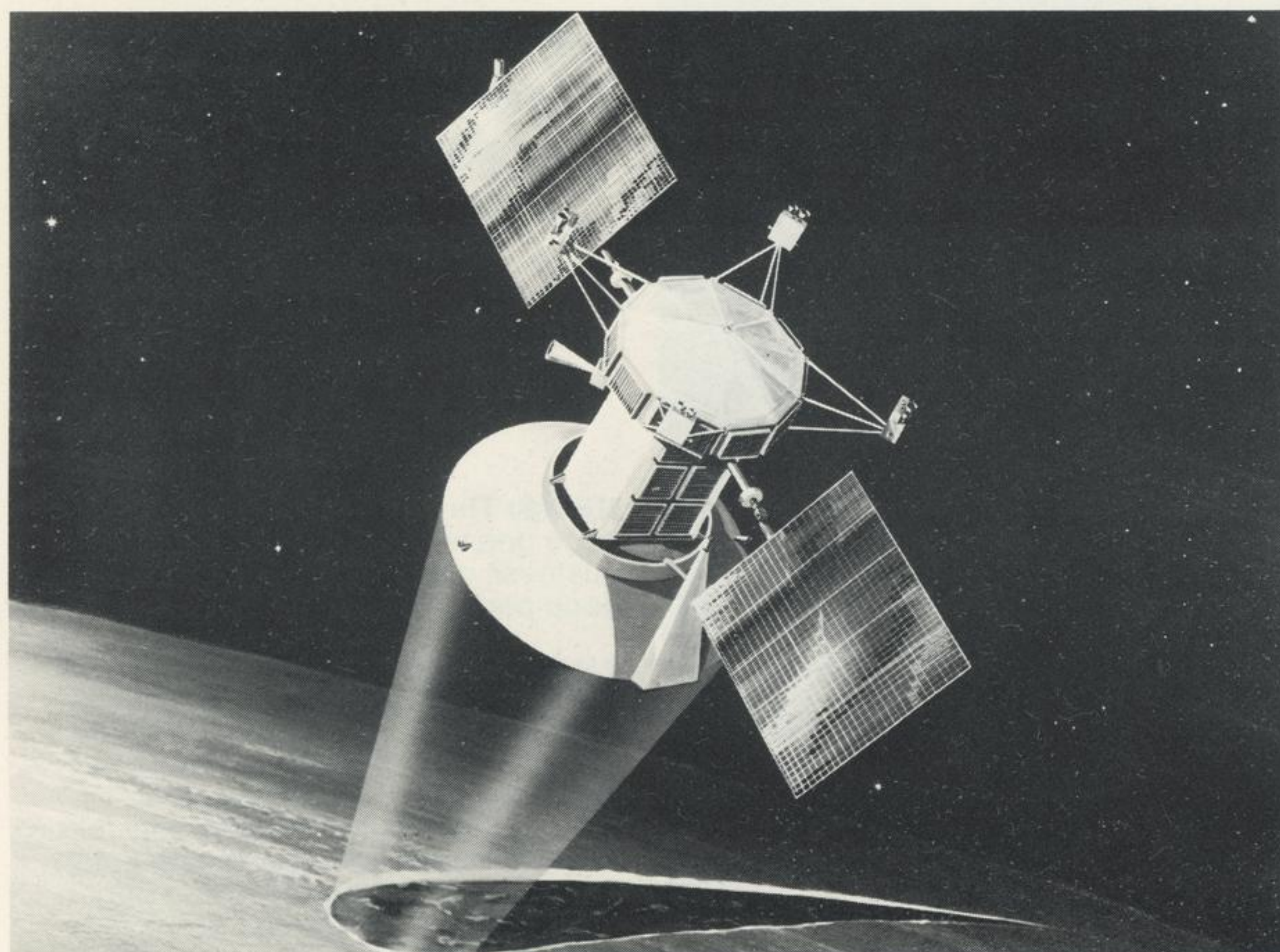
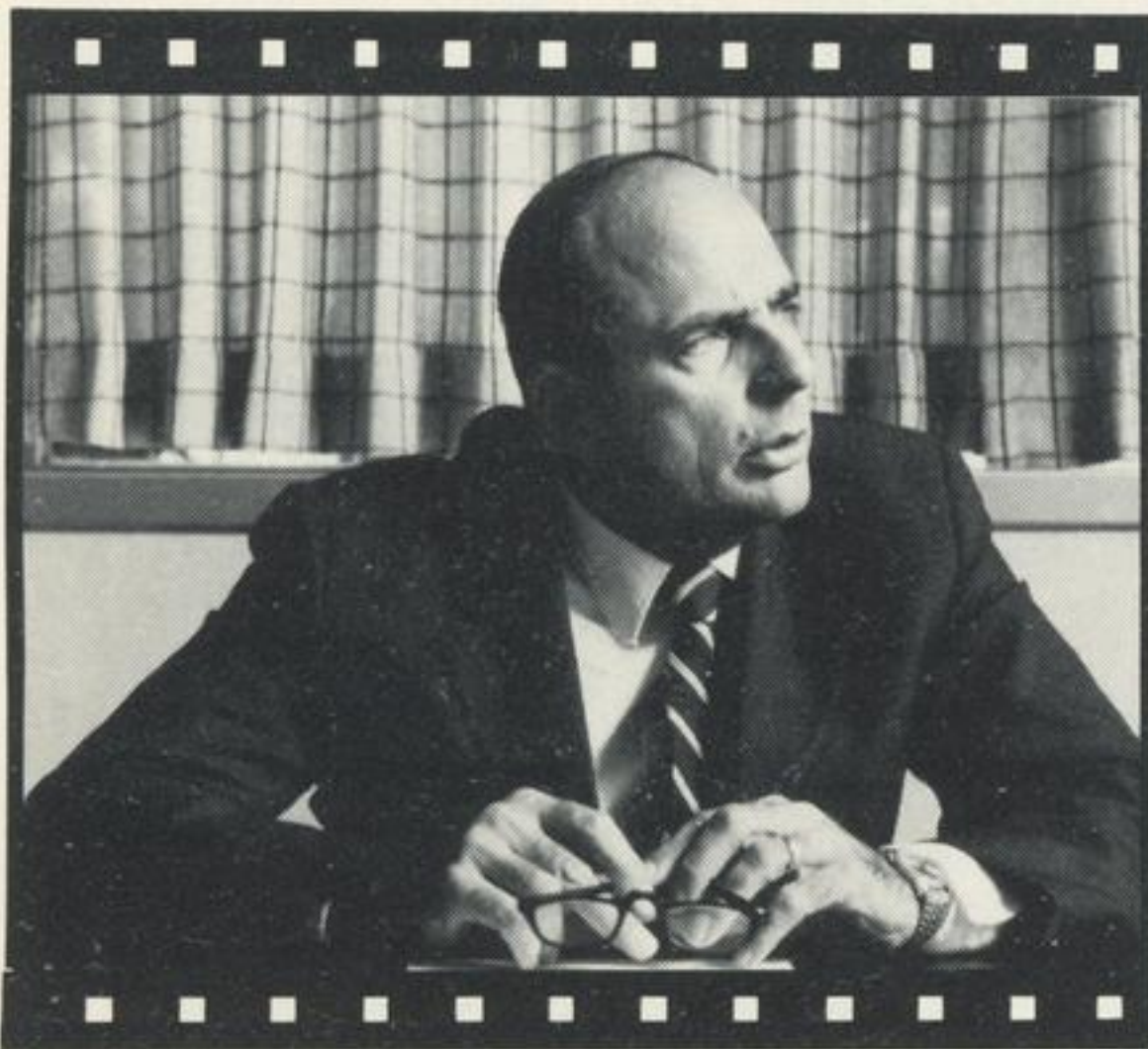
both coasts. We also won an additional contract to design a dynamic simulator for the acquisition, tracking, and pointing of a space-based laser system. We won a contract involving us in the operation and maintenance of the Development Optics Facility at Kirtland Air Force Base near Albuquerque, New Mexico. I really could go on and on. . .

NEWS: What about accomplishments and new business in the electronics area?

AUGUSTINE: There is a great variety of work going on, and we are pursuing a number of key technologies. These include artificial intelligence systems, hardened electronic circuits for space uses, extremely high-speed data processing, and the development of advanced software systems.

We are continuing work on orbital fluid management techniques, which I believe could have vast applications in space. We also funded a new propellant module that will be test-flown by the Space Shuttle in 1984. Additional technology contracts will have Denver Aerospace studying advanced power systems for spacecraft, including the design of a small nuclear reactor for spacecraft power. And, we won a contract to study power distribution techniques for a space-based radar system.

NEWS: Artificial intelligence systems appear to be an area in which we are very actively involved right now.



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DENVER AEROSPACE
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December 21, 1983

AUGUSTINE: Artificial intelligence systems represent a burgeoning field in the civilian, military, and space worlds, as applied to robotics as well as to knowledge-based systems. We are in an enviable position in the artificial intelligence field because of the excellent work performed by a relatively small group of greatly talented individuals, typical of those who comprise Denver Aerospace. We are becoming recognized as one of the centers of excellence in artificial intelligence. Two specific areas are development of an orbital maneuvering vehicle for use as a "space tug" and an orbital transfer vehicle to boost satellites to higher orbits.

NEWS: We would have to grow physically to keep step with all the growth prospects.

AUGUSTINE: Yes, and we will. The confidence we have in the future is supported by the fact that we will be making the largest corporate investment ever in Denver Aerospace next year, about \$60 million in facilities, compared to about \$4 million seven years ago. Eloquent testimony that we are fully recovered from the stress of the attempted takeover by Bendix a year ago. One of the particularly important facilities in which we will invest is an upgrading of our C³ (command control, and communications) lab. This will permit us to model and develop new command and control capabilities, giving us a facility that will be competitive with the largest established firms in the market.

Denver Aerospace has been chosen to be the center of excellence for software state-of-the-art advancement within Martin Marietta Corporation.

Also, Denver Aerospace has been chosen to be the center of excellence for software state-of-the-art advancement within Martin Marietta Corporation. We will be acquiring new facilities that will increase our productivity and give us the capability to compete for programs that have a large software content.

NEWS: Other promising new business prospects...?

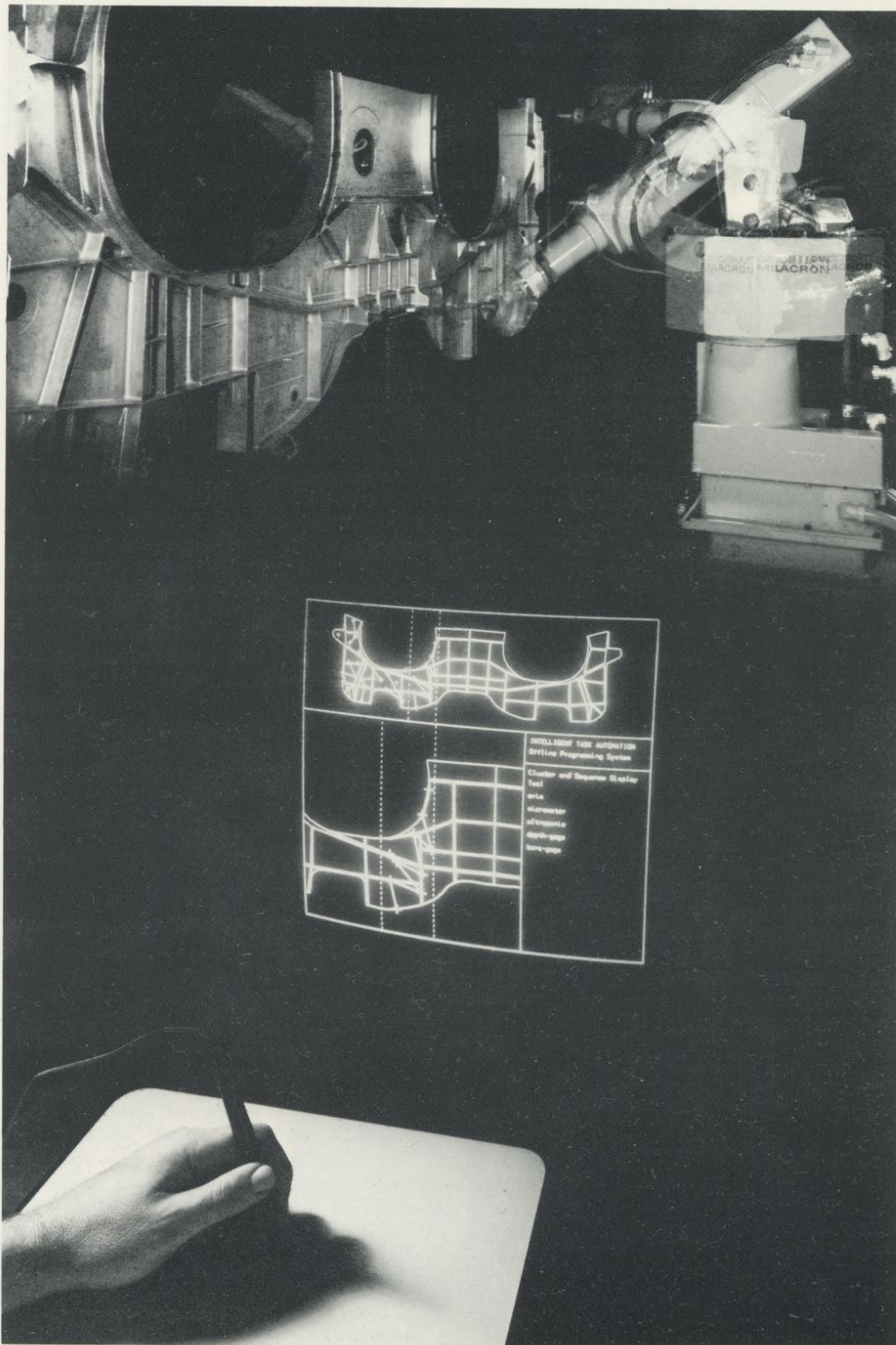
AUGUSTINE: Quite a few. No effort is more important to us than that which we are pursuing in support of the Federal Aviation Administration (FAA) to update and upgrade the nation's air traffic control system over the next decade to handle increased traffic in a safe, effective, and cost-efficient manner. We have been preparing for this

opportunity for three years, and although we face strong competition, our long experience in command and information systems, and the superb team we have put together, give us great confidence in playing a major role in executing the National Airspace Plan. We have even formed a new group to be located at Washington, D.C., reporting directly to the president of Aerospace, to put the proper emphasis we believe this program merits.

Another area of great potential is our continuing work on design and development of a small intercontinental ballistic missile, as recommended by a special government study group

The confidence we have in the future is supported by the fact that we will be making the largest corporate investment ever in Denver Aerospace next year. . . .

Robotics testing at Michoud.





AUGUSTINE: We are embarking on a new Commitment to Excellence program. Among the key ingredients in our ability to win new business is our continued impeccable performance on existing business, coupled with our operating efficiency. We are in an extremely strong position in meeting cost, performance, and schedule goals on our approximately 450 ongoing contracts. Productivity also is of the utmost importance in winning new business, and the government is placing increased emphasis on contractor efficiency. While overhead always has been a concern, we can be proud that we reduced our expenditures last year by some 22 percent. But, more belt-tightening and attention to cost efficiency is necessary if we are to beat our extremely able competitors in new business endeavors. Our future success depends on our being lean, efficient, productive, and quick on our feet.

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this past year. A proposal for design studies and testing of the hard mobile launcher for that system has been submitted, and we are testing designs in a special blast test chamber here in Denver. We just won a contract for concept studies of the weapon system and preliminary design of the missile. One of our strongest credentials has been our performance on the Peacekeeper program.

NEWS: To summarize, Denver Aerospace has had one of its best years ever. We earned significant new business and penetrated important high technology areas. We are making a major commitment to our future growth both in people and facilities. And, the future looks very bright.

AUGUSTINE: That is a good capsule of the year. But, I don't want to overlook the fact that we also made significant accomplishments on behalf of our employees. Our safety performance, for instance, was greatly improved in 1983. We exceeded our goals in Affirmative Action programs and got excellent reviews. Our training and development programs for employees have been very successful, and will be expanded to encompass more of our people. The bottom line is that we have an enormously talented and dedicated team of people throughout the locations where Denver Aerospace operates. Their records speak for themselves.

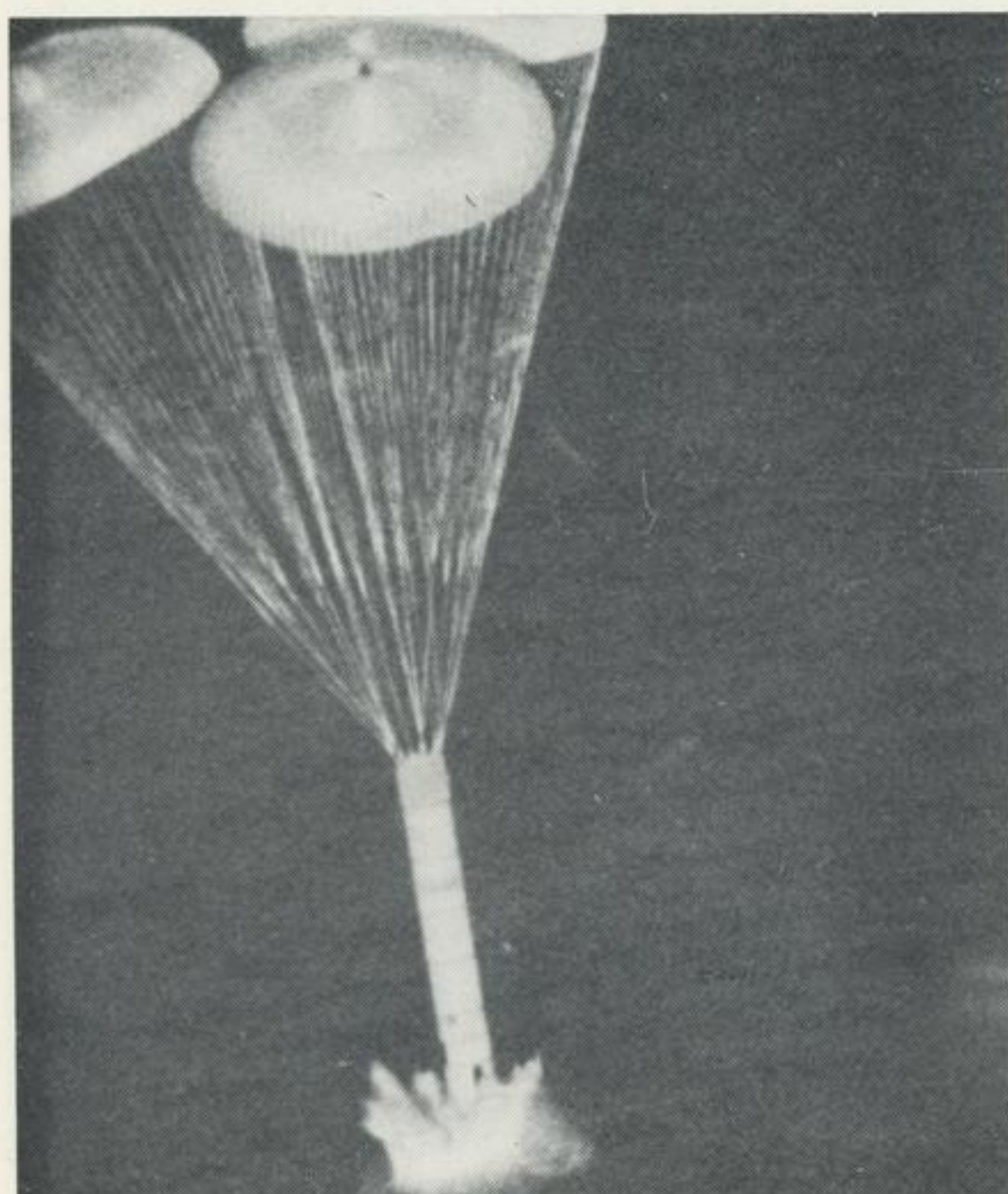
NEWS: A final question — the aerospace and defense industries have been placed under a high powered microscope to make sure we are living up to the standards Americans expect. We've all read media allegations of inefficiency and wasting taxpayer money. What steps is Martin Marietta taking to ensure we do not suffer the taint of sensationalism borne by some other companies?

Our future success depends on our being lean, efficient, productive, and quick on our feet.

NEWS: Thank you, Mr. Augustine. On behalf of all our employees, may we extend our wishes to you and your family for the happiest of holidays.

AUGUSTINE: Thank you, and I would like to extend my best wishes to all of our employees and their families. I hope the holidays will be pleasant and fulfilling for everyone in the Martin Marietta family. I also hope each of us can celebrate our successes and accomplishments this past year and return in January prepared for what promises to be an even more exciting and challenging year for Denver Aerospace in 1984.

Shuttle Rocket Booster Recovery Parachute.



Flight crew for the MMU's first mission in early 1984.

