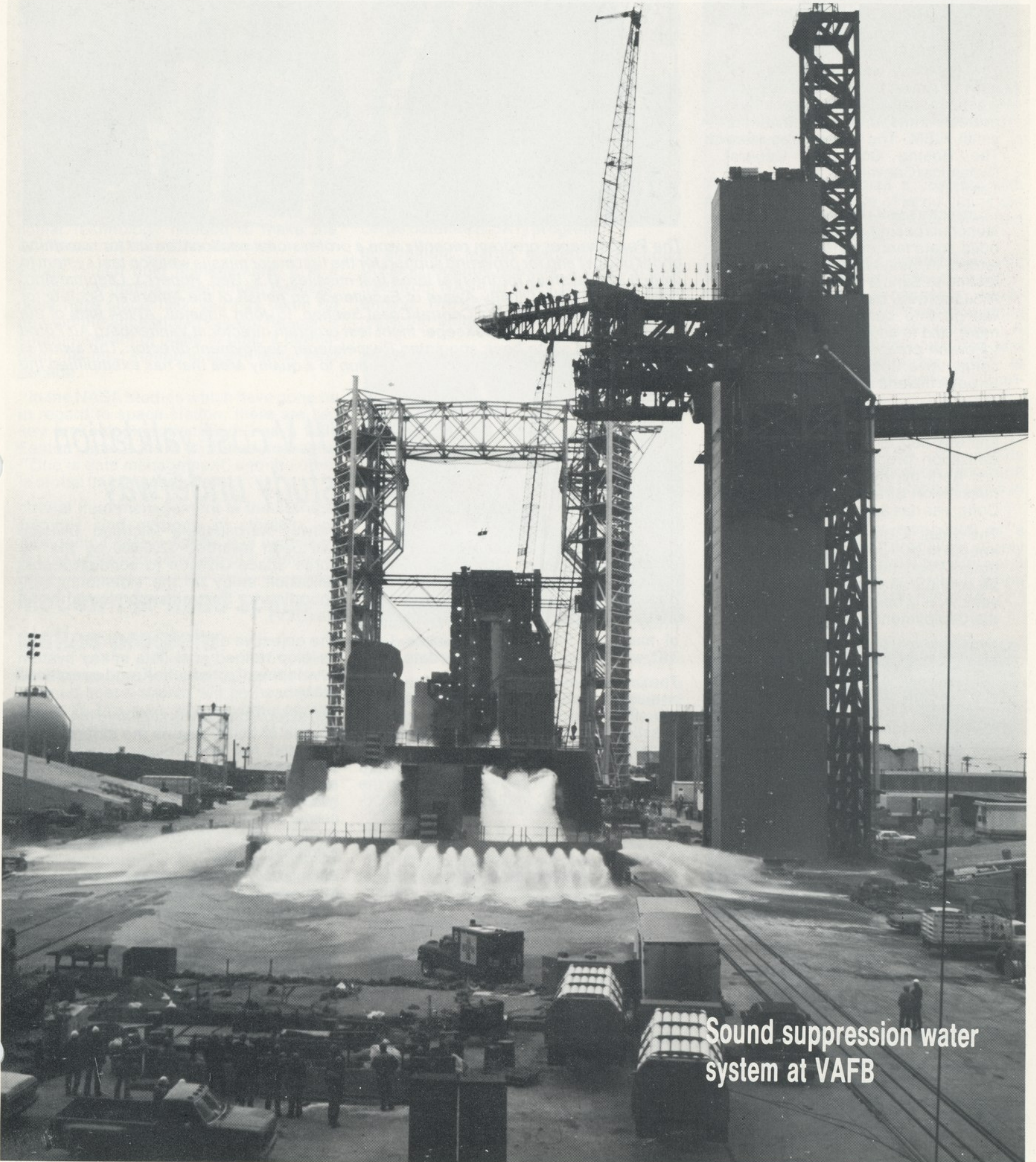


MARTIN MARIETTA

news

DENVER AEROSPACE

NUMBER 4/1984



Sound suppression water system at VAFB

STOP PRESS

\$5 million SICBM contract awarded

Denver Aerospace has just been awarded a \$5 million contract by the U.S. Air Force to design a hard mobile launcher for the new small intercontinental ballistic missile (SICBM).

The company was one of four receiving similar contracts to develop a concept definition for a vehicle to protect, transport and launch the small ICBM. The other three were The Boeing Company, General Dynamics/Convair, and Bell/Textron.

Contractors will define hard mobile launcher/basing concepts and build scale models that will be subjected to simulated nuclear blast testing at Sandia Laboratories near Albuquerque. Data from that phase will go into design and development, and to support proposals in a follow-on competition. The current competitive design phase will run through the end of 1984.

The latest contracts were the third in a series since the first of year, and are tied to the strategic modernization program recommended last April by the President's Commission on Strategic Forces which Congress has approved.

The small ICBM will be less than one sixth the weight of the 195,000-pound Peacekeeper ICBM and is to be configured with a single reentry vehicle. It is being developed for initial deployment in the early 1990s.

Next phase of the hard mobile launcher competition is full-scale development, scheduled tentatively to start late this year and to run for about two years. That phase will include design, fabrication and testing of a full-scale prototype.

The rationale behind awarding parallel definition contracts, according to a government news release, "include reducing the time required for concept definition, actively seeking innovation, and driving down the total cost. Contractors have been informed by the Air Force that when full-scale development and force structures are made in the latter part of this decade, the costs must be reasonable and affordable."

Corporation joint ventures with biotech firm

Martin Marietta Corporation, and Native Plants, Inc (NPI) have formed a research and development joint venture in genetic engineering and associated biotechnologies to develop improved plant varieties of commercial value.



The Peacekeeper program recently won a professional sectional award for remaining under budget and for providing support for the first major missile weapon test system to launch successfully for the first three test missiles. U.S. Rep. Robert J. Lagomarsino, right, presented a Quality Award of Excellence on behalf of the American Society for Quality Control, California Central Coast Section, to John Adamoli. At the time of the award, Adamoli was Peacekeeper flight test program director at Vandenberg Air Force Base. He has since been appointed Peacekeeper deployment director. The award is presented annually by the society's section to a quality area that has exemplified the highest quality standards.

A.F. orders 15th Titan 34D

Denver Aerospace has received an un-priced order from the U.S. Air Force to produce another Titan 34D expendable launch vehicle.

New work on the vehicle—the 15th to be ordered by the Air Force—began February 17, with delivery scheduled for August 1985.

Price of the vehicle, along with acquisition of materials for another possible Titan 34D, will be negotiated at a later date.

The order comes on the heels of the 25th anniversary of the first successful flight of the Titan I intercontinental ballistic missile (ICBM), February 6, 1959. It also is a time when the Titan II ICBM—for 20 years a major element of the nation's deterrent force—is being retired gradually from the U.S. inventory. Completion date is October 1987.

ULV cost validation study underway

Denver Aerospace's Michoud Division has been awarded \$200,000 by the Air Force Space Division to conduct a cost validation study on the sidemount configuration for the unmanned launch vehicle (ULV).

The objective of the six-month study is to develop refined cost data in key system development, production, and operations areas.

The sidemount ULV is similar to the Space Shuttle in that it retains the external fuel tank and two solid-rocket boosters. An unmanned cargo carrier, however, mounts to the side of the external tank where the orbiter is normally located. The carrier consists of an expendable payload module and a recoverable propulsion/avionics module.

The study is being conducted by Michoud's advanced programs group under the direction of J. Robert Tewell.

Martin Marietta declares dividend

Martin Marietta Corporation's Board of Directors has authorized a quarterly cash dividend of 33½ cents per share on its common stock, to be paid March 30 to holders of record at the close of business March 5.

The action continues the rate on Martin Marietta common, established in the fourth quarter of 1983, of \$1.34 on an annualized basis.

MARTIN MARIETTA NEWS Published by Public Relations MARTIN MARIETTA AEROSPACE

Call Ext. 5364 with information or suggestions for articles, or call one of the following coordinators.

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Lori A. Sharp 6605

Michoud Division: Evan D. McCollum 3788
Vandenberg Operations: Richard L. Kline 2202

DENVER AEROSPACE
P.O. Box 179—Denver, CO 80201

March 2, 1984

Retirees notch 2700-plus years of service

Some 118 recent Denver Aerospace retirees have an aggregate total of slightly more than 2700 years of service with the company.

They are (with length of service in parentheses by year and month):

William L. Miller (27/5), Stanford N. Pegg (26/5), Paul Ebertz (23/10), Albert J. Larkins (11/6), Robert A. Kinslow (26/3), Joseph E. Burghardt (40/0), Charles M. Morrow (11/10), Eugene H. Marino (25/10), William C. Austin (26/6), Herbert H. Hotchkiss (22/1), Doris H. Legrande (25/0), Paul N. Dailey (38/9), Anthony V. Mendez (26/11), Dorothea Gibson (21/10), Marian H. Bryant (25/11), Douglas Kellogg (38/5), Joseph E. Richards (5/6), Wallace H. Munson (23/10), George J. Schlicht (40/0), George W. McGee (26/9), Kenneth M. Bookhammer (37/5), David L. Lott (24/0), Francis Stoot (18/3), Frank N. Garcia (22/8), Maurice W. Knapp (24/5), Gus J. Kitches (23/3), and Dallas Clippinger (40/0).

Howard W. Keyser (32 years/4 months), John R. Fleming (25/4), Margaret Gallegos (18/3), George D. Blaine (25/4), Mary F. Horning (23/0), Charles F. Brown (22/9), Norman Chadbourne (36/0), Eugene A. Darrow (26/9), Stella Johnson (24/0), Alfonse Kubula (23/3), Michael Krotchko (32/4), Harry C. Miller (22/3), Leon A. Miller (36/5), Joe Miyamoto (20/6), Frank A. Muller (40/0), Peggy A. Nelson (21/11), Irvin Obermeyer (23/1), Josephine Rivera (21/9), Elsie L. Steakley (26/5), Mack Stephenson (5/3), Lavern Swart (25/9), Paul H. Tiede (40/0), Jack E. Wilson (27/7), Wilbur Altstetter (39/9), William Chenworth (40/0), M. Louise McFadden (34/0), Willard Phillips (21/0), and John C. Hupp (26/9).

Gerard A. Unrein (13 years/5 months), Robert A. Morre (25/11), Joseph F. Kruppa (7/5), Alvin L. Grabbe (24/8), Fred Amorose (37/4), Richard P. Fridge (24/8), George Duval (27/10), Marie A. Strumpf (24/2), Robert Franklin (13/5), John A. Stone (25/2), Dolores Baker (16/11), Radford Stedham (6/8), Robert D. Kelly (31/3), John T. Lohman (25/5), Harold McConahy (39/1), Lester G. Donkin (18/8), Glenn M. Tanner (5/6), H. Leon Ford (22/1), John H. Young (24/1), Charles K. Denman (24/9), Rea Magers (26/10), Charles F. Harris (23/0), Delbert L. Smith (24/5), Mary MacNeal (14/10), Edward Kalbfleisch (37/11), Vito R. Larison (24/8), John Webster (40/0), and Donald Roxby (36/0).

Norman Baker (25 years/11 months), James Knight (29/10), Harold Kasten (18/9), William Bollenback (5/10), Robert Barnett (17/2), Harold Seele (24/1), John Krall (37/4), Wayne Ward (24/1), Eva Tullis (5/11), Stanley Kassy (40/0), H. Jane Kadrie (26/0), Charles Gunnison (24/1), James Goodman (26/1), Leo Harmon (11/10), Thomas Rowat (6/8), Theodore Sinclair (6/1), Robert Kellenberger (6/9), John O'Reilly (26/9), Laverne Seitz (6/7), Robert Larsen (12/10), Bernard Grunloh (5/3), Aubrey Howell (30/6), William Gooden (6/3), Francis Foley (5/6), William Doan (7/5), D. G. Courtney, Jr (7/1), and Joseph Bering (7/9).

Joseph Bayer (7 years/2 months), Reese Wills, Sr (33/5), Ruth Drum (10/7), Henry Luterer (7/0), Stanley Patyrak (9/0), and Herman Jolly (9/1).

On the cover

Major systems testing on the Ground Support Systems (GSS) program is now underway at California's Vandenberg Air Force Base following successful completion of critical performance testing on the Space Shuttle launch pad sound-suppression water system. Those tests, early this year, rounded out the GSS task to redesign, reconstruct, and retest the sound-suppression water system. The tests demonstrated the ability to flow 700,000 gallons of water in less than a minute through a complex valve/piping system.

U.S./Italian tethered satellite being negotiated

U.S. and Italian officials in Rome are in the midst of negotiating agreement on full-scale development of the world's first reusable tethered orbital satellite system (TSS) for launch from the Space Shuttle in late 1987. The system is designed to last 5 years and 10 reuses.

Under the agreement, flight hardware to deploy and retrieve a satellite using a 60-mile-long tether is being developed by NASA. Denver Aerospace is designing and building the tether system under contract to NASA's Marshall Space Flight Center. The satellite will be provided by the Italian Council for National Research.

The TSS will "troll" an 1100-pound satellite from the orbiting Shuttle's cargo bay on a line 1/10-inch thick and reel it back for return to Earth and subsequent reuse. The satellite may be lowered into suborbital realms of the atmosphere—a region previously accessible only to sounding rockets on brief flights—or deployed away from the Earth and Shuttle orbiter.

Initial TSS test flight has been scheduled for the 81-E Shuttle flight of December 1987. That mission will conduct electrodynamic research by deploying the satellite approximately 12 miles outward from Earth on an electrically conductive tether. A planned second test flight will conduct atmospheric research 60 miles below the orbiter; a third will entail a more sophisticated repeat of the electrodynamic mission.

Design of the tethered satellite system has been in process at Martin Marietta since the late 1970s. The company was awarded the TSS contract and funding for initial development in December 1982. Funding for the second phase of work, which covers flight hardware development for the demonstration mission, was authorized this January. Current total contract value is \$22.35 million.

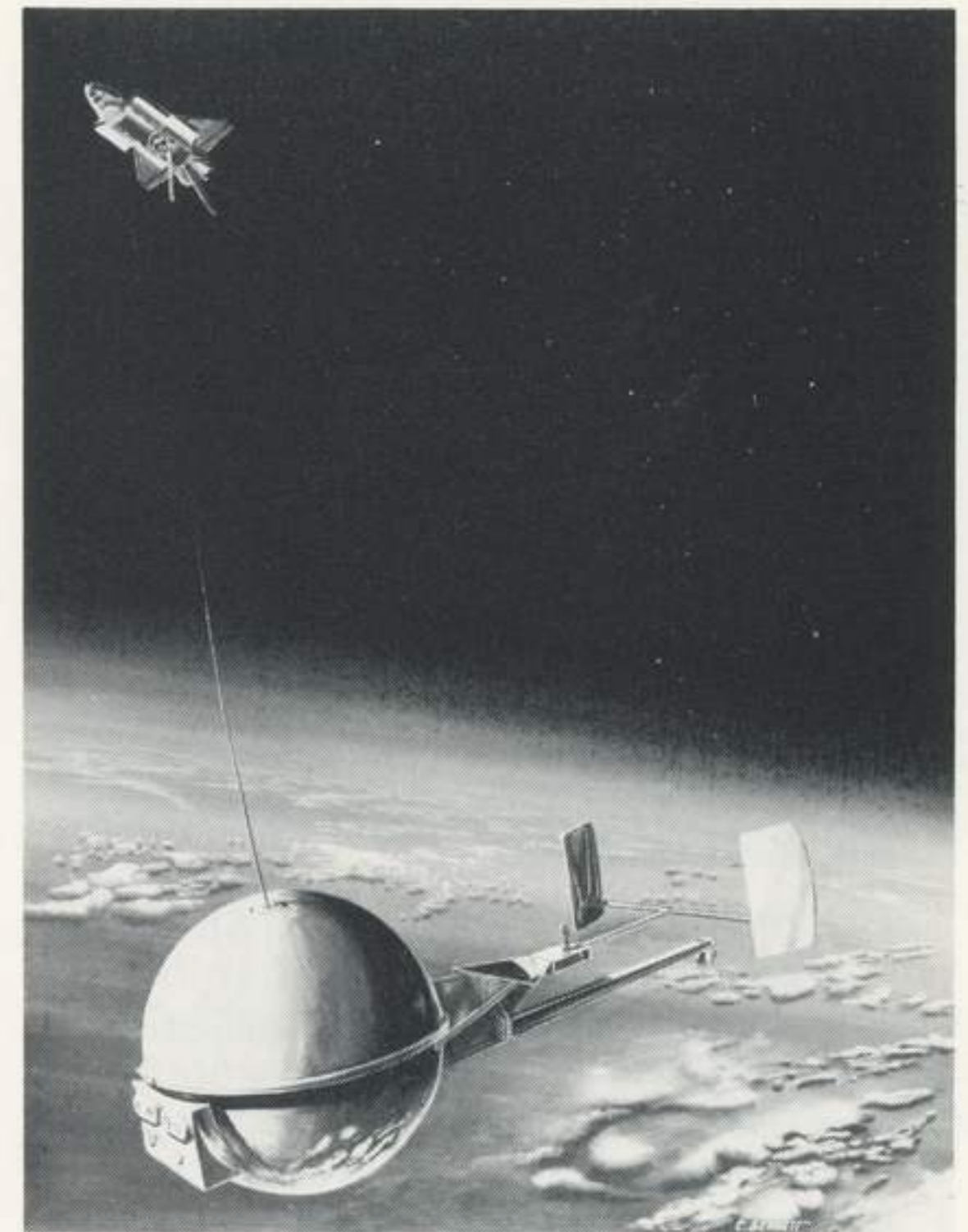
In addition to the five-foot diameter satellite, the TSS system includes:

- A telescoping 40-foot boom that raises the satellite clear of the orbiter's tail assembly for deployment;
- A reel mechanism—the heart of the system—comprising a tether supply reel, servo motor, length and feed-rate sensors, and line tension controls;
- A variety of tethers, both conductive and nonconductive, depending on the mission.

The system is controlled from a panel on the aft flight deck in the orbiter cabin.

The typical 36-hour mission of the system will enable long-duration investigation of Earth's upper atmosphere, crustal magnetic fields, geology, and plasma physics research of the ionosphere.

In addition to basic scientific research, the satellite is expected to have applications in locating mineral and petroleum resources.



Artist's concept of tethered satellite

Michoud gears for 24/year Shuttle launch schedule

During the next two years, the Michoud Division faces more than 50 tasks for NASA in expanding activities to keep pace with the anticipated launch rate of 24 Space Shuttles a year.

Those tasks are part of a \$22.6 million contract recently awarded Denver Aerospace by the space agency's Marshall Space Flight Center at Huntsville, AL.

The contract cites three major tasks to meet the 24-per-year schedule: developing computer data requirements, planning, and analyses.

The computer data requirement includes development and evaluation of business systems—such as schedules, cost-trade analyses, computer resource effects, and projected requirements for hardware and software.

Planning tasks include developing manufacturing plans, production standards, maintenance plans, safety manuals, factory flow plans, and supplier contingency plans to assess an estimated 40 subcontractors and suppliers critical to continued production.

Analyses will consider workstation capacity, evaluation of current and planned tooling, and necessary design work.

January PSP unit values announced

Unit values for the Performance Sharing Plan (PSP) as of January 31, 1984 were: Fund A (indexed equity): 2.2909507750; Fund B (fixed income): 1.8381261858; Fund C (Martin Marietta Stock Fund): 2.3073047776; Fund D (TRASOP): 0.9208426155.

TRASOP allocation = \$78.65 per account

Each eligible employee's account has received an allocation of \$78.65 from Martin Marietta Corporation under the Tax Reduction Act Stock Ownership Plan (TRASOP). Affected are accounts of active salaried employees with at least one year's service as of November 30, 1983.

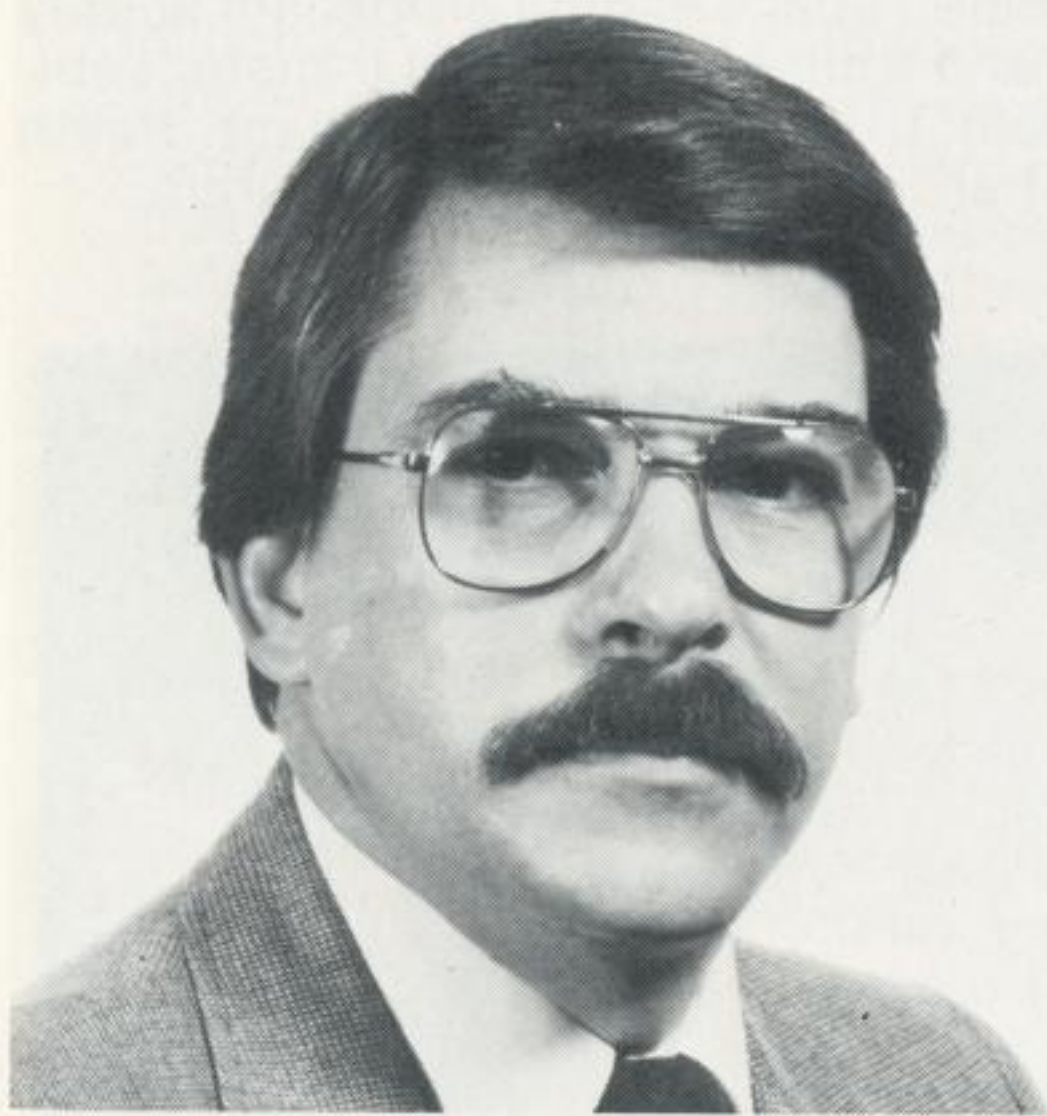
Meanwhile, once the Corporation has determined its tax liability, a Payroll-Based Stock Ownership Plan (PAYSOP) allocation will be made for all salaried employees with at least one year's service as of December 31, 1983 in late 1984.

TRAPSOPs differ from the other employee stock ownership plans in that they are funded with corporate tax credits based on annual capital investments. That method was authorized originally by the Tax Reduction Act of 1975.

PAYSOPs, however, are based solely on the annual payroll of participants, not the corporation's total payroll. That concept was initiated to expand advantages of employee stock ownership plans, and was authorized to replace TRASOPs under the 1981 Economic Recovery Tax Act.

Allocations remain in an individual's account until that person's employment ends. At that time, the employee receives a distribution of shares of Martin Marietta stock and is paid cash for any portion that is insufficient to buy a full share.

Questions should be directed to Employee Benefits, ext 4928 or 5609.



Donald H. Parsons, manager of program development in the Strategic and Launch Systems Division, recently won accolades from two professional organizations. The 23-year aerospace veteran was recently named to the Flushing, NY, Academy of Aeronautics advisory council, and he was chosen the American Astronomical Society's man of the month for January. His role with the advisory council will involve, among other duties, addressing and interviewing the student body periodically, "reflecting on my personal aerospace career experiences, and the exciting career opportunities available to them, especially at Martin Marietta."

PSP contributions matched dollar-for-dollar

Martin Marietta Corporation's 1983 performance has resulted in a 100% match to all salaried employee's basic contributions to the Performance Sharing Plan (PSP) for the year. That means that all active participants in the plan (as of December 31, 1983) received an allocation on January 1, 1984 to match dollar-for-dollar the amount they contributed during 1983 under the basic plan (up to the first 6% of salary).

The following table reflects monthly unit values (rounded to three decimal points) for the indexed, fixed income, and company stock funds since December 1982. Unit values change according to the investment performance of the funds. Fund A's unit value generally increased during 1983, reflecting the performance of the Standard & Poor's 500 composite average. Fund B's unit value is based on the declared interest rate of 12.20% for the Guaranteed Investment contract during 1983. Effective January 1, 1984, the declared annual interest rate for Fund B will be 11.75%. Contributions to the fund will earn 0.930% on a monthly basis. Fund C's unit value fluctuated during 1983, reflecting the market performance of the Corporation's common stock.

Month (End of Month)	Fund A Indexed Equity Fund	Fund B Fixed Income Fund	Fund C Company Stock Fund
December 1982	1.875	1.621	1.812
January 1983	1.939	1.636	1.747
February 1983	1.987	1.653	1.597
March 1983	2.060	1.669	1.990
April 1983	2.218	1.685	2.206
May 1983	2.202	1.701	2.296
June 1983	2.289	1.718	2.521
July 1983	2.218	1.735	2.579
August 1983	2.262	1.752	2.428
September 1983	2.293	1.769	2.584
October 1983	2.265	1.786	2.454
November 1983	2.318	1.803	2.324
December 1983	2.310	1.821	2.255

Yearend PSP values traced from Dec. 1978

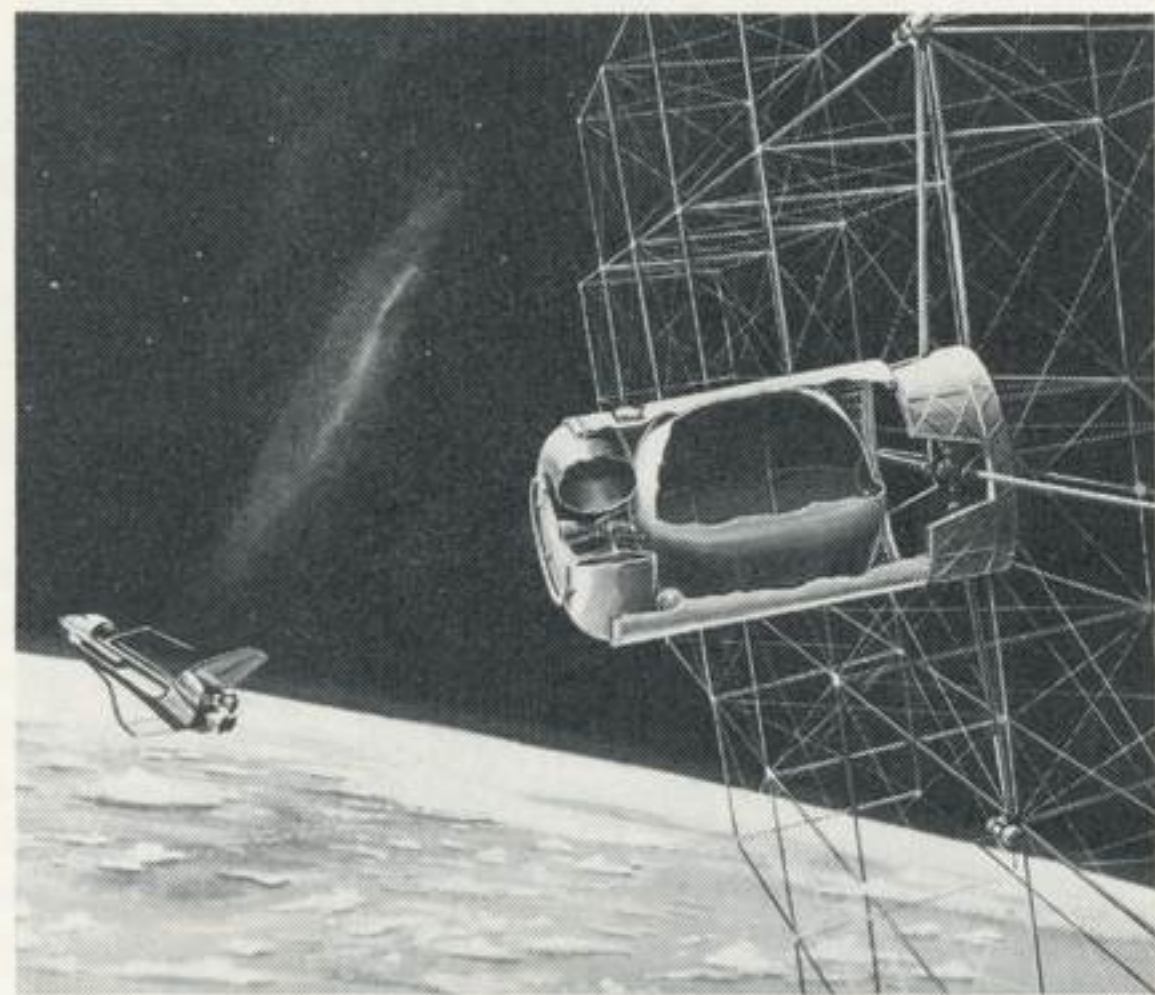
The following table shows the December unit values of the Corporation's Performance Sharing Plan (PSP) each year since the plan was initiated in April 1978. At that time, both Fund A and Fund B started at 1.000. Fund C, which did not start until June 1982, also began at 1.000.

Month (End of Month)	Fund A Indexed Equity Fund	Fund B Fixed Income Fund	Fund C Company Stock Fund
December 1978	1.024	1.059	—
December 1979	1.213	1.161	—
December 1980	1.599	1.285	—
December 1981	1.532	1.442	—
December 1982	1.875	1.621	1.812
December 1983	2.310	1.821	2.255

Harold L. Gariety, Quality Circles chief at Denver Aerospace, displays a readout of a computerized tool identification index system he has been developing since 1976. He pioneered the copyrighted system from conception to finished product, and then gained successful licensing to Stanley-Vidmar for world marketing. The system—which currently lists some 8000-plus individual items in 24 categories and will soon grow to about 14,000—standardizes the tools in a direct-readout numbering system and identifies those available in the industry. Gariety recently received a commendation for the system, used at Denver Aerospace, which is expected to save U.S. industry billions of dollars in increased manpower productivity, higher quality, and effective inventory systems.



Orbital fluid management projects gear up



Orbital transfer vehicle

As enthusiasm for building a space station increases, Denver Aerospace is playing a key role in development of a particular technology needed to make the whole space station concept work.

Called orbital fluid management, it is a technology that has been under development here since 1962, but has taken on new significance with President Reagan's announcement of plans to build a permanent, manned station in space in the next decade.

"In the NASA studies which have gone on in regard to space station, there are two key technologies identified," says Dale Fester, space fluid systems manager. "One is data management, and the other is orbital fluid management."

Orbital fluid management is the storage, transfer, and resupply of storable and cryogenic fluids in space. It is necessary for resupply and servicing of a number of

McCown to head space station program

Development efforts on a permanent, manned space station will be headed by James W. McCown, who has been named vice president of the program at Denver Aerospace.

Martin Marietta last year submitted to NASA a study of architectural needs and attributes for space stations, including preliminary designs.

The Company expects to compete on the major technology and systems definition studies, which McCown says "we believe will lead us to a major future role on space station."

McCown, who joined Martin Marietta in 1961 at Baltimore, MD, has been vice president of space and defense programs for the Strategic and Launch Systems Division since July. Alan L. Schaeffle will assume those responsibilities.

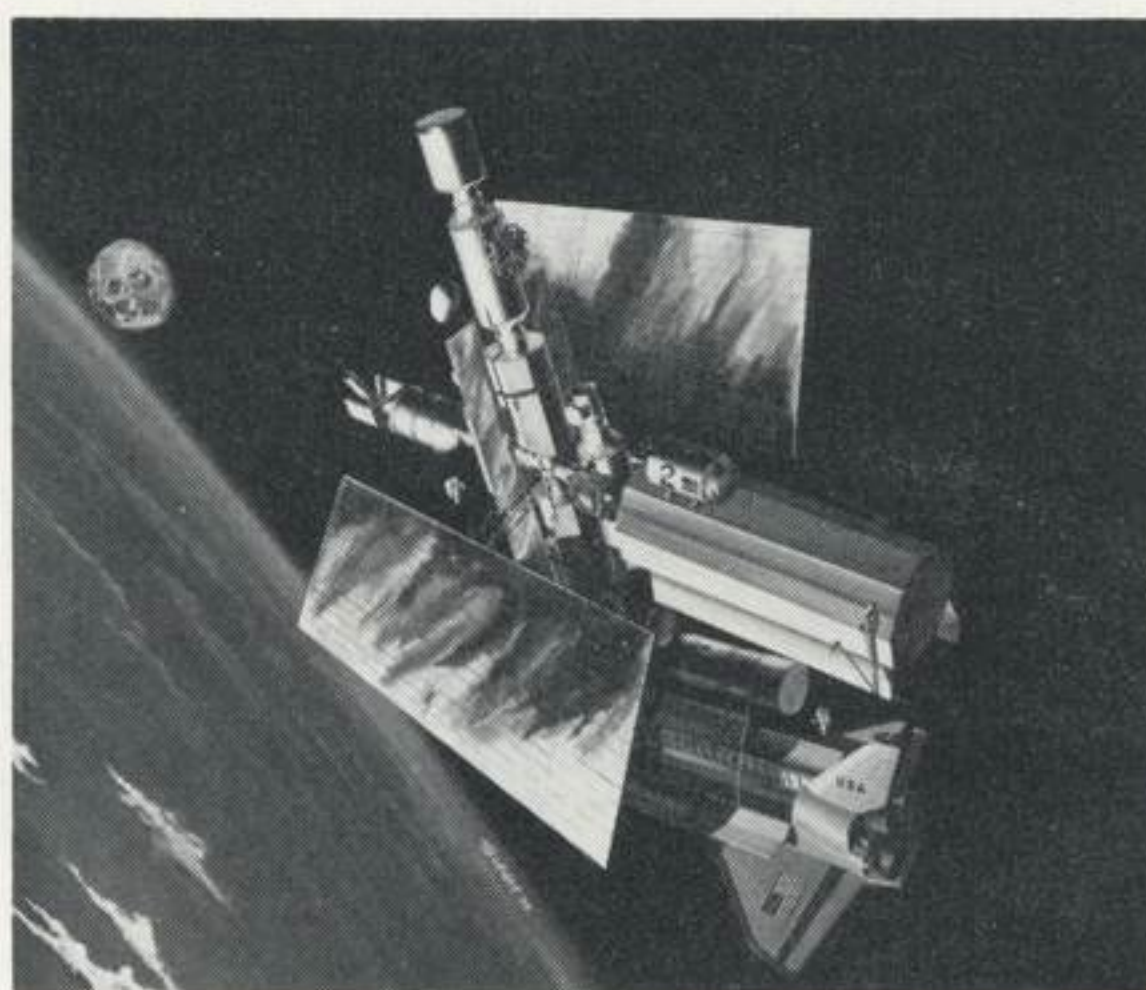
McCown's main involvement at Martin Marietta and NASA has been with the Space Shuttle program. He helped win the external tank program for Martin Marietta and then moved to Michoud, where he was external tank project manager until 1978.

space-based systems, including satellites, telemaneuvering systems, small platforms, orbital transfer vehicles, space stations, laser weapons, and sensors and telescopes.

According to Fester, Denver Aerospace presently has six active contracts dealing with every aspect of orbital fluid management from getting propellants into space to storing them there and transferring them from storage facilities into satellites and other space systems.

There are two ways to get propellants into space: transporting them in dedicated tankers in the Space Shuttle's cargo bay and scavenging them from the Shuttle's external tank. Denver Aerospace has been building propellant tanks since 1956 and presently has contracts to produce the reaction control system tanks on the Shuttle orbiter and tanks for the British Large Satellite (LSAT) program.

In addition, Martin Marietta's Michoud Division recently received a \$250,000 contract from NASA to study propellant scavenging. The 12-month project will determine the amount of propellant available



Space station

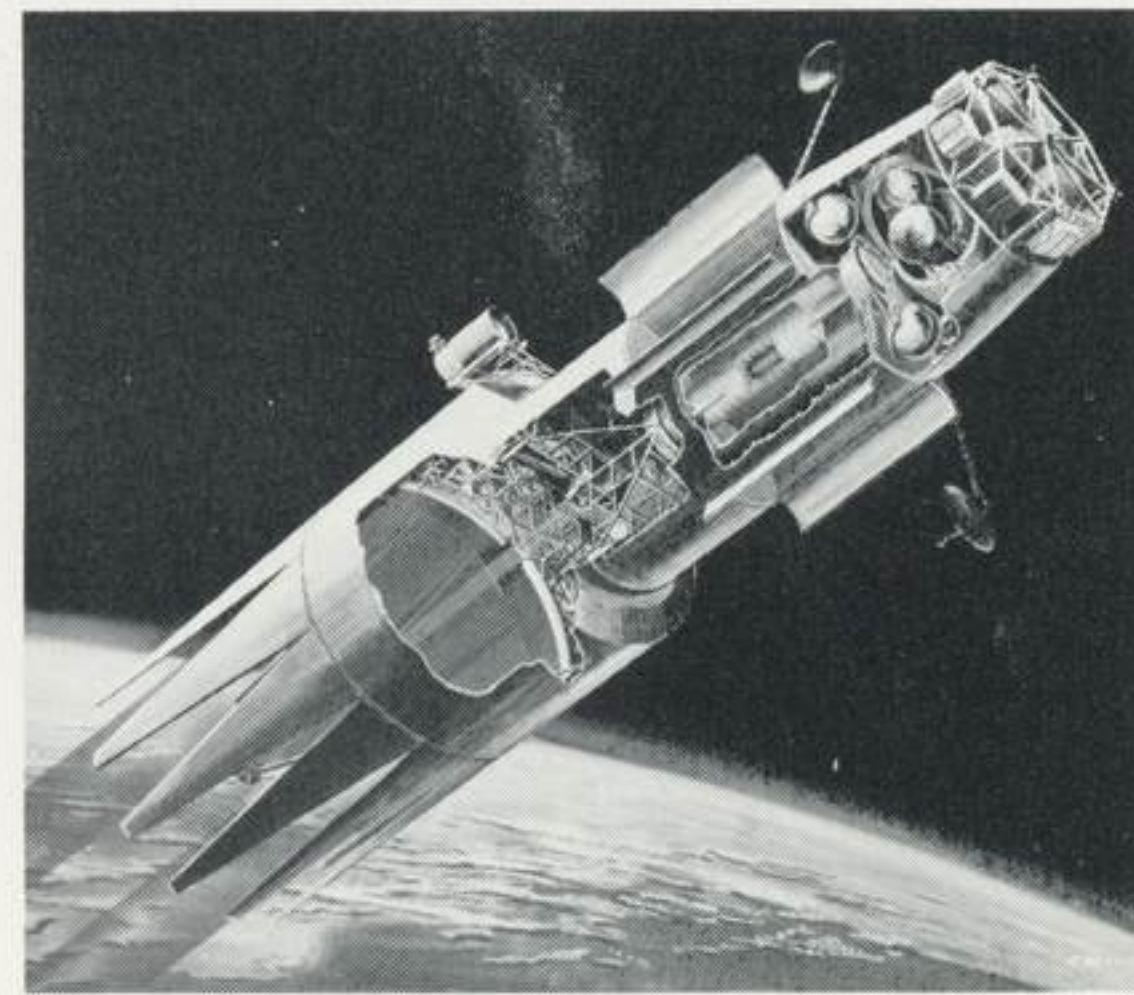
for scavenging in the external tank after a Shuttle flight and will examine different system concepts for retrieval of the remaining propellants while in orbit.

Another major issue to be dealt with is long-term storage of cryogenics, such as liquid hydrogen and liquid oxygen, in space. Denver Aerospace is finishing up a contract with the Air Force Rocket Propulsion Laboratory (AFPL) in which technology improvements needed to store large quantities of cryogenic fluids in space for periods of up to 7 years were identified.

Scheffler named director at VAFB

Director of Titan programs at Denver Aerospace for more than two years, Felix J. Scheffler has been named director of operations at Vandenberg Air Force Base, CA.

Scheffler succeeds John P. Murphy, who has become director of the Peacekeeper Flight Test program at Vandenberg.



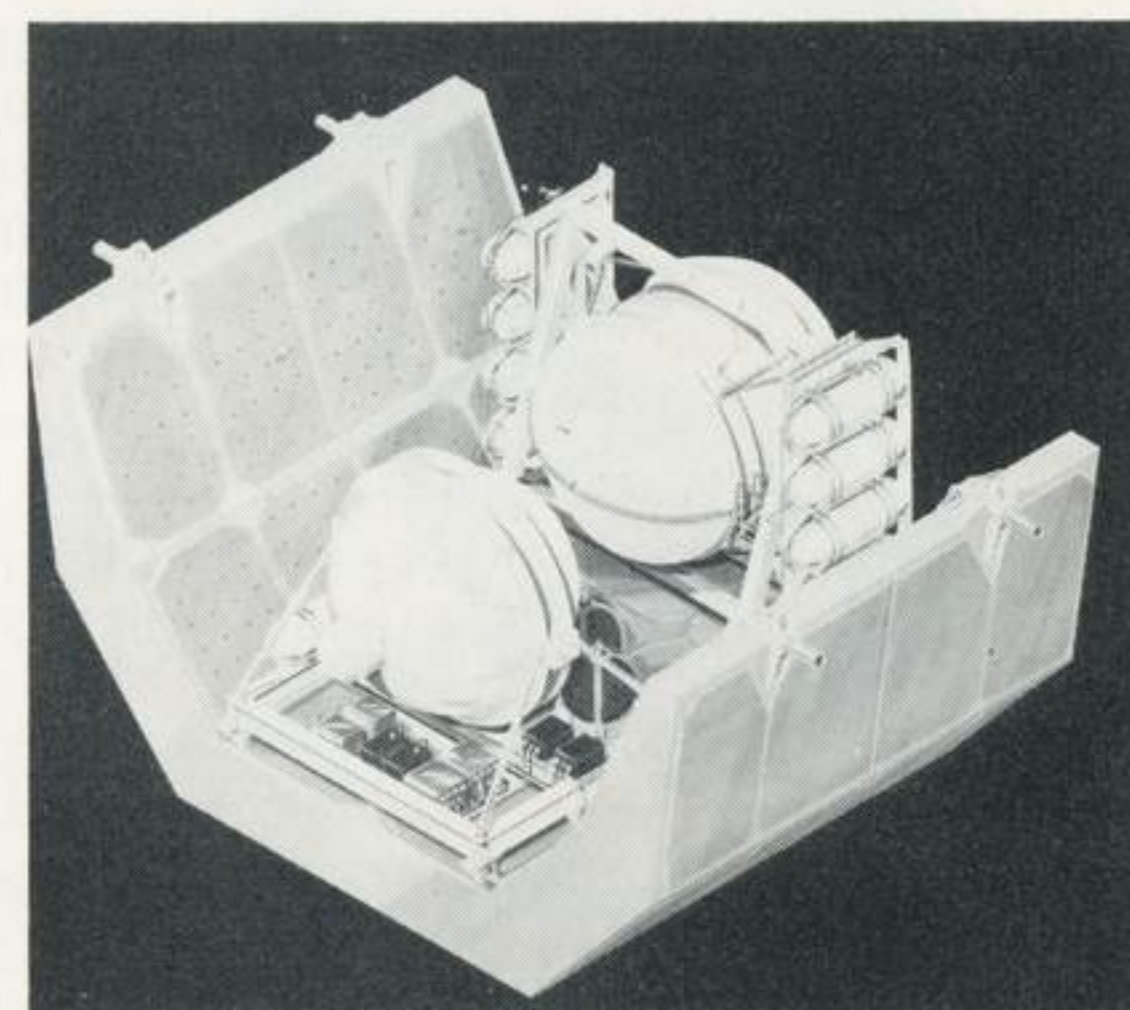
Space-based laser

The company also has a contract with AFPL to study the use of large, liquid oxygen toroidal tanks for Shuttle-launched orbital transfer vehicles.

Denver Aerospace also is gathering basic technology for transferring fluids in a low-gravity environment—a necessary measure to get propellants from storage tanks into spacecraft propulsion systems. A fluid transfer experiment designed and built by Martin Marietta for NASA is scheduled to be flown on the Space Shuttle later this year.

The company also is designing a cryogenic fluid management facility under a \$1 million contract to NASA. The facility would provide information on long-term storage of cryogenics and filling of tanks in space.

The unique facility is composed of a simulated space station propellant supply tank and a simulated orbital transfer vehicle tank to receive the propellant. Ralph Eberhardt is manager of that program.



Cryogenic fluid management facility

"The real purpose is to gather fundamental data that will give us some insight into the design of actual flight systems," Fester explained. The facility is scheduled to be flown on three or four Shuttle flights in late 1987 or early 1988.

Finally, Denver Aerospace, under contract to NASA, is evaluating the feasibility of tethering a propellant depot to a space station and is defining what is required for satellite servicing in space.

Recreation

Golf—The first meeting of the Martin Marietta Ladies Golf League will be held in the second-floor lunchroom at LSC at 5 p.m., Wednesday, March 14. Contact Diane Fults, ext 2546 or Debbie Didomenico, ext 2604.

Basketball—Wednesday, March 21 will be DAESRA (Denver Area Employees Service and Recreation Association) Night when the Denver Nuggets meet the Houston Rockets at 7:35 p.m. at McNichols Sports Arena. Mail-in forms for the discounted tickets—\$6.60 instead of the regular \$13.20—are available in Recreation racks.

Running—The Waterton Shepherders Running Club will begin its 1984 Spring Handicap Race Series at 4:45 p.m., Thursday, March 15. The first in the series of eight races will be a two-mile scratch start event in which runners establish individual handicap levels for subsequent races. Entry is free to all Denver Aerospace employees and their immediate family members. Guests may enter for 50 cents a person. Contact Stan Barrett, ext 9185.

Ice Capades—Mail-in \$1.50-a-ticket discount coupons for the April 10-15 Ice Capades at McNichols Sports Arena, featuring Olympic champion Dorothy Hamill, are available in Recreation racks.

Skiing—The Martin Marietta Satellite Ski Club will hold its last meeting of the season at 7 p.m., Wednesday, March 14 in the Millbrook Townhome clubhouse at Depew St and Platte Canyon Dr. Members will still have a chance at that session to sign up for the Sunday, March 18 trip to Beaver Creek. The \$30 price includes the lift ticket. Contact Sherry Stachnik, 794-9258 or call the ski phone, 977-3477. Information also available in Recreation racks.

Soccer—The Martin Mariners Men's soccer team is gearing up for the highly competitive spring season and needs experienced players. Team members must be available to play Sunday games and make one practice a week. The season is scheduled to kick off March 11. Contact Bob Avjian, ext 3085.

Affirmative Action manager named

Ralph D. Barr has been named to succeed Tom J. Perry as manager of Affirmative Action/Equal Employment Opportunity for Denver Aerospace.

Perry has been reassigned to Martin Marietta's Air Traffic Control Division at Washington, DC.

Barr, a 1968 graduate of Des Moines' Drake University, previously had been area director of the Salt Lake City office of the Office of Federal Contract Compliance Program.

RTD bus schedule changes equal plus for some riders, minus for others

The Regional Transportation District's (RTD) new bus schedules, which go into effect Sunday, March 4, will mean day-long service for employees at the South Lincoln Street facility (SLF).

The bad news is that those accustomed to riding the No. 67 bus from Littleton will now have to transfer to the No. 76 at Coal Mine Rd and Wadsworth Blvd to get to the plant in the mornings. In the afternoons, they will have to ride the No. 76 to Southwest Plaza to make their connections with the No. 67 for the ride home from work. RTD reports drivers have been instructed to wait for each bus so passengers can make the various connections.

Another piece of good news is that the No. 76 will now make four trips in and out of the Waterton plant each weekday morning and afternoon. That scheduling is intended to better accommodate early and late shifts.

Also, a new bus—No. 105—will be making its debut appearance at the plant to provide transportation to and from Broadway and Arapahoe Rd.

For precise details on each route, riders are encouraged to pick up new schedules from RTD locations or Recreation, or telephone RTD at 778-6000.

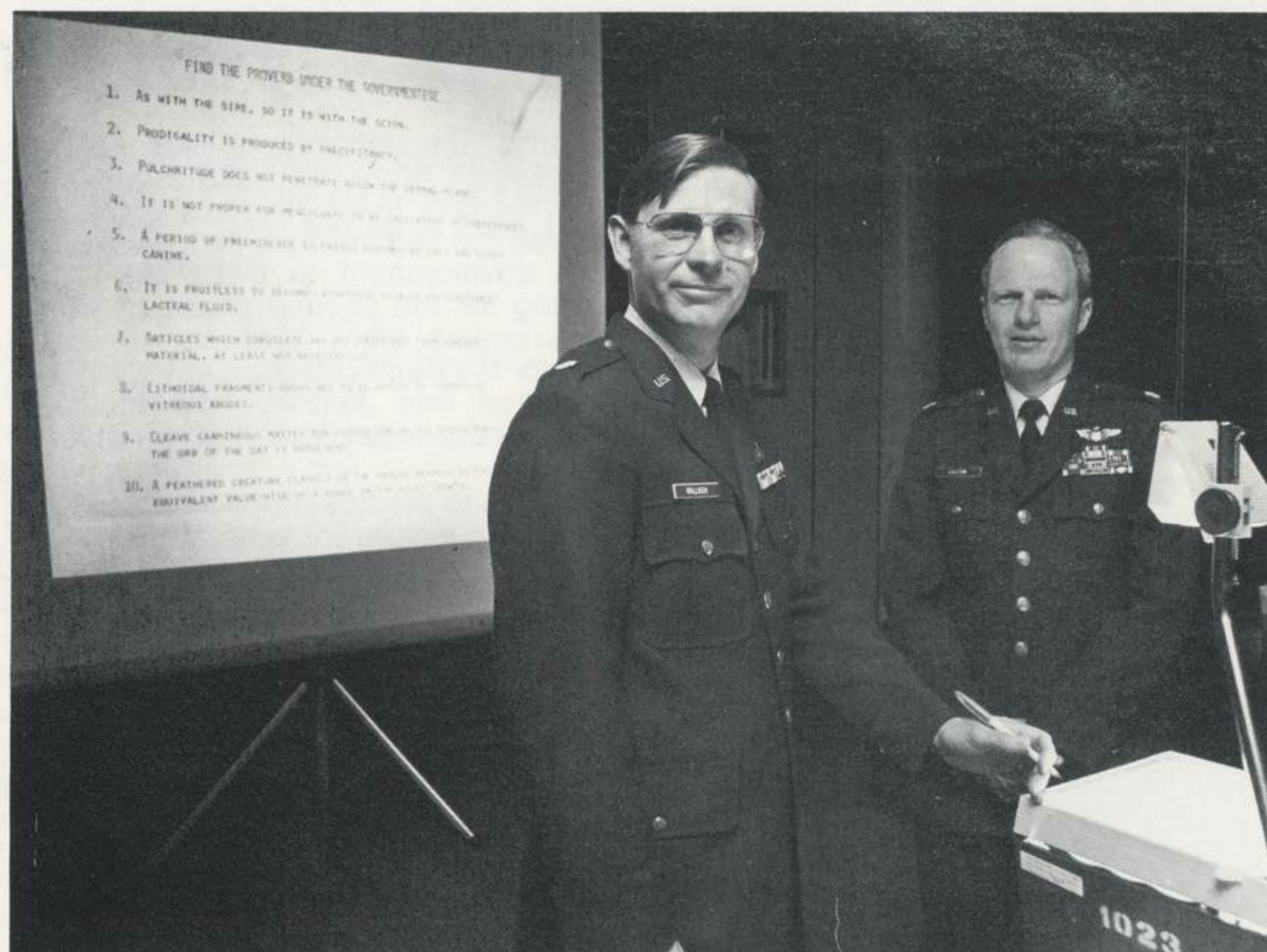
Route arrivals and departures:

No. 0—Arrives at Littleton Systems Center (LSC) weekday mornings at 7:15 a.m. and 7:45 a.m. It departs from LSC at 4:20 p.m. and 4:50 p.m. weekday afternoons. That bus also will run past the Littleton Clinic every half hour at 13 minutes and 43 minutes after the hour at Mineral Ave and South Lincoln St.

No. 67—Arrives at the Coal Mine Rd/Wadsworth Blvd transfer point for the No. 76 at 5:57, 6:12, 6:54, and 7:27 a.m. weekday mornings. Waiting time ranges from one to eight minutes. That bus leaves Southwest Plaza at 3:45, 4:15, 4:45, and 5:15 p.m. weekday afternoons. Waiting time on the return trip via the No. 76 transfer ranges from 4 to 10 minutes.

No. 76—Arrives at the main plant gate at 6:10, 6:30, 7:06, and 7:39 a.m. weekday mornings. That bus starts its return rounds from the main plant at 3:11, 3:37, 4:07, and 4:43 p.m. weekday afternoons from the main plant.

No. 105—Arrives at the main plant gate at 6:04, 7:06, and 7:36 a.m. weekday mornings. That bus begins its rounds on the weekday afternoon return trip at 3:04, 4:05, and 4:35 p.m.



"It is fruitless to become lachrymose because of scattered lacteal fluid." Translation: "Don't cry over spilt milk." That is just one of the many gems Lt. Col. Bill Wallisch (left) and Jim Gaston of the U.S. Air Force Academy shared recently at the main plant with members of the Air Force Plant Representative's Office (AFPRO) and Denver Aerospace contracts personnel during an executive writing seminar. This year, the company was one of the few nongovernment organizations to get the seminar which, since 1974, has been presented to audiences as far away as Tokyo. The course is aimed at all who "speak in tongues" of governmentese, legalese, engineerese, and other murky, mysterious forms of English to help them write concisely, effectively, and clearly. Wallisch is director of public affairs at the Academy and Gaston is a professor and head of its English department.