

MARTIN MARIETTA

news

DENVER AEROSPACE

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COR followup will continue

Denver Aerospace successfully underwent a comprehensive two-week examination by the Air Force Contract Management Division (AFCMD) recently, and the preliminary resulting ratings have proved constructive to the company.

"I commend our employees and those on the Denver Aerospace COR team for helping us achieve a very successful review," said Peter B. Teets, Denver Aerospace president. "And while we weren't perfect, the AFCMD judged us fairly. They gave us some good ideas to improve our operations, which we intend to implement."

The contractor operations review was completed Nov. 7. The AFCMD rating system of satisfactory, marginal, and unsatisfactory resulted in the following: six segment areas received a satisfactory, or green, rating; and two segments received a marginal, or yellow, rating.

The six segment areas that received satisfactory ratings were engineering, industrial material management, industrial safety/fire protection, manufacturing, quality assurance, and contract administration.

Subcontract management and product integrity were the two segment areas that received marginal ratings. Positive corrective actions were instituted in both areas while the COR team was here.

"The key now is to continue our history as a company dedicated to Mission Success," Teets said. "We have the opportunity to excel now in all areas, with appropriate new methods and techniques to improve further our successful performance."

Followup activities to respond to and take corrective action on the COR findings were implemented while the COR team was still here, and will continue under the leadership and direction of the Denver Aerospace COR team. Subsequent followup audits to ensure continuing responsiveness will be directed under the Denver Aerospace Executive Audit Committee and departmental audit teams.

The COR team, led by Michael W. Page, director of operational reviews, Headquarters AFCMD, discussed the preliminary eight major segment findings in an outbriefing Nov. 7 with Teets; Stanley F. Albrecht, Denver Aerospace COR team leader and vice president, Production Operations; Steven E. Story, vice president, Business Management; Warren G. Beery, vice president, Technical Operations; Richard E. Weber, vice president, Personnel and Facilities; and Lt. Col. Kenneth Tollefson, AFPRO.

"Our employees combined teamwork, professionalism and a positive attitude that contributed to our success, and will pave the way for continued growth and a well-deserved reputation for being a topflight aerospace contractor," Teets said. ■



Martin Marietta constructed this full-scale functional model of a space station module at NASA's Marshall Space Flight Center. The company is using the Core Module Integration Simulator to develop technologies and test various systems for the station.

Company unveils simulator to test Space Station systems

Martin Marietta unveiled a full-scale functional model of a Space Station module Nov. 12, which is being used to develop technologies and test various systems for the station.

The \$4.2 million Core Module Integration Simulator (CMIS) was built by Martin Marietta, using its own funds, at the NASA Marshall Space Flight Center's productivity enhancement facility to enhance the company's work on Space Station.

"The simulator gives us a chance to pursue advanced development and integration of new technologies in a high-fidelity, functional mockup," said J. Richard Cook, vice president, Space Station.

"We will be able to evaluate and integrate the complete range of supporting systems and software for space station, as well as habitation, life science, and materials science concepts in this unique facility."

Using Marshall's facilities and support, the company also is conducting studies in the simulator on how to make Space Station systems and equipment easier for astronauts to use.

The 43-foot-long simulator consists of a cylindrical aluminum shell and is equipped with 18 computers with workstations; power, thermal, environmental control, and life support systems; and audio and video systems. The computers are capable of simulating various situations that could occur on the Space Station, such as an equipment malfunction, al-

lowing an operator at a workstation to identify the problem and correct it.

The simulator, which is 14 feet in diameter, includes two "expert systems"—computer programs that embody the knowledge and techniques of experts for performing complex tasks. One system diagnoses malfunctions in a candidate carbon-dioxide removal assembly for the Space Station, and the second assists in the design of computer communication systems.

As the Marshall Space Station work progresses, element or flight-type hardware will be installed in the simulator and tested. This will provide an operating environment and ground simulation of station operation before the systems are required to perform on orbit.

Presently, the simulator is being used for a number of design studies, including rack and utility installations, acoustics testing, galley and crew quarters design, infrared communications systems, state-of-the-art manned spacecraft workstation development, air flow evaluation, and smoke detection. It also has aided in development of artificial intelligence technologies for Space Station by providing a test bed for the expert systems.

Later, the simulator will be used to examine module and systems maintenance activities, evaluate crew training techniques, and develop new software programs for use in Space Station computers. ■

On the cover—

Former NASA astronaut Bob Overmyer and Martin Marietta engineer Carol Akerlund check computer controls in a Space Station module simulator at Marshall Space Flight Center in Huntsville, AL. Martin Marietta is using the simulator to test equipment and computer software for potential use aboard the orbiting Space Station.

Titan reassessment insures mission success, reliability

Martin Marietta has completed an independent reassessment of the reliability and performance of the Titan III vehicles, following two Titan 34D flight failures.

As many as 80 engineers, all from product areas outside of the Titan program, were involved in identifying individual issues, concerns, and recommendations which resulted in more than 230 action items.

"The reassessment effort was very successful," said Warren G. Beery, vice president, Technical Operations. "Titan project personnel have already implemented many recommendations from the team, as well as many other actions which will enhance the reliability of the Titan family of launch vehicles."

The reassessment began in mid-June when Robert F. Johns, director, Titan programs, initiated the idea for the review. Larry Norquist, director of engineering on the Ground Support Systems (GSS) program at Vandenberg Air Force Base, Calif., headed the team, which completed the review Oct. 10 with a presentation to Caleb B. Hurtt, senior vice president for Aerospace Operations, and members of the Senior Executive Management Committee.

This comprehensive Titan review effort was undertaken as a result of discussions between Lt. Gen. Forrest McCartney, commander, Air Force Space Division, and the executive officers of all companies involved in the Titan program, including Thomas G. Pownall, chairman and chief executive officer. Comparable design review and reassessment programs are continuing at all Titan associate contractors and subcontractors.

Reassessment team members were non-project personnel from various Denver and Michoud organizations, as well as the Corporate headquarters.

The team evaluated all aspects of the vehicle, from requirements, through design, fabrication, acceptance, processing, checkout, pre-launch operations and flight. The assessment included design margins, qualification, mis-

sion analysis, detail fabrication processes, Martin Marietta Automatic Reporting System (MARS) and Computer-Aided Programming Software (CAPS) history, flight performance history, and other aspects that could influence flight reliability. A review of the Failure Modes and Effects Analysis (FMEA) was conducted and a complete new FMEA was developed.

The primary goal of the reassessment was to increase confidence in flight reliability. "We'll derive long-term benefits from this review," Beery said. "We expect the Titan program to be around for decades to come, and it behooved us to examine the entire launch system, to insure mission success." The review, will provide methods to improve acceptance tests, inspections, qualification test, and processes, Beery said.

Some of the more significant action items developed by the team included: 1) use of Military Standard 1540B for acceptance and qualification testing; 2) additional qualification testing for several components; 3) emphasis on contamination control; 4) flow-induced vibration assessment of flex lines; 5) use of "clean" nitrogen for vehicle pressurization; 6) separation of critical circuits at umbilical connectors; 7) upgraded failure modes and effects analysis; 8) second reader for weld x-rays; 9) screening of piece parts; 10) electrostatic sensitive device (ESD) control of flight control computer; 11) transtage pressurization system performance; and 12) re-review of flight anomalies.

"We, the company, made a maximum effort to make sure that we'll have successful launches. And, with the Air Force and our associates' own detailed examination, the entire Titan family of launch vehicles will be improved," Beery said.

"We initiated this effort because of our company's history of integrity and mission success, and we intend to continue that tradition."

Company to study orbital fluid management on Space Station

Martin Marietta Corporation has received a contract from NASA to study the most cost-effective methods for handling propellants and other fluids on the Space Station.

The 15-month contract, awarded by NASA's Marshall Space Flight Center at Huntsville, Ala., for the "Space Station Integrated Propulsion and Fluid Systems Study," will assess all space station systems that will use or contain fluids, including propulsion systems, the environmental control and life support system, laboratory modules, attached payloads, and associated satellite and spacecraft servicing systems.

The study, to be conducted by Denver Aero-

space, will determine if the various fluid systems—whether for propellants or for waste fluid collection and disposal—should be integrated into one system with central storage and distribution, or if separate systems would be optimum.

One of the keys to successful operation of the Space Station is orbital fluid management, which involves the onorbit storage, transfer, and resupply of propellants and other expendable fluids. Martin Marietta has been involved in development of orbital fluid management technology since the early 1960s. Dale A. Fester will be program manager. ■



Gavit



Smith

Gavit, Smith win referral drawings

Sarah A. Gavit won the Project Referral drawing held in August, and Jay H. Smith won the drawing held in September.

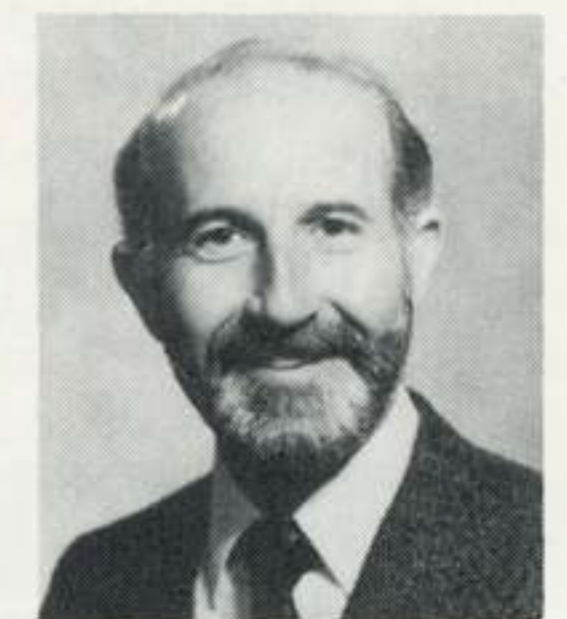
Gavit, an employee for the past two years, is a senior engineer on the Magellan program. Gavit referred David Baker, and for her referral received \$2,000. By winning the Project Referral drawing, Gavit may choose between five locations for a three-night, expense-paid trip.

Smith has worked for Denver Aerospace for 16 years. A components engineer in propulsion, he referred William Fleming, who now works in the same area.

For winning the drawing, Smith also may choose among five locations for his vacation. ■

Moser to direct Space Station office

NASA Administrator James C. Fletcher has named Thomas L. Moser director of the Space Station Program Office, which will be located in the Washington, D.C. area.



The Space Station Program Office will be responsible for general Moser technical direction and content of the Space Station program, including systems engineering and analysis, configuration management, and the integration of all elements into an operating system that is responsive to customer needs. Moser will report directly to Andrew J. Stofan, associate administrator for Space Station.

Establishment of the program office in Washington was in response to a recommendation by a committee headed by former Apollo Program Director Gen. Samuel E. Phillips (USAF-ret.) that is conducting a long-range assessment of NASA capabilities and requirements. Dr. Fletcher announced this past summer that program management of the Space Station would be centralized in Washington to improve communications, program control, and accountability.

Moser was appointed deputy associate administrator for space flight at NASA headquarters in February 1986. Before this position, he was director of engineering at the Johnson Space Center, Houston. ■



The planning department salutes its Most Valuable Planners for the third quarter of 1986. Seated, left to right, are Scott FlaHavhan and Elsie Hughes. Standing, left to right, are Barry Black, Randy Davis, Santo Bertuzzi, director of plans and programs, Dan Lovitt and David Harrison.

Valuable planner program started

The plans and programs department recently announced its Most Valuable Planners at a breakfast held in their honor.

The Most Valuable Planner (MVP) program is a newly-organized employee recognition effort. The program honors those in planning throughout Denver Aerospace Business Management who have excelled in one or more of the following categories: innovation, leadership and dedication.

Elsie Hughes, a planner on the Peacekeeper

program, was honored as the first quarterly MVP because of her "excellent work in the critical subcontract area within the instrumentation flight safety system (IFSS) on the Peacekeeper project." Top planners from the following programs also received awards: Dan Lovitt, Defense Systems; Scott FlaHavhan, Military Space Systems; David Harrison, plans and programs; Barry Black, Space Launch Systems; and Randy Davis, Space Station. ■

'Goodbye carbon monoxide, hello better air' campaign underway

Metro-area residents will be urged to leave their vehicles home any time air quality is poor between now and Jan. 15.

The Better Air campaign, which Gov. Dick Lamm and Mayor Federico Pena launched Nov. 17, is intended to lessen carbon monoxide pollution by reducing the miles driven in the metro area by 12 percent.

The campaign is an effort of the Colorado Department of Health, which is picking up the entire cost.

Motorists are asked to leave their cars home one day a week and whenever high pollution days are predicted. Carpooling for employees can be flexible; those who cannot commit to carpooling 5 days a week are encouraged to share a ride 2 or 3 days a week.

Employees interested in finding possible carpool candidates may complete a carpool match application and return it to the Share-the-Ride office, mail stop 1344. Forms are located in all recreation racks.

The following no-drive day schedule is based on the last number of license plates:

Monday, 0-1 (includes personalized plates); Tuesday, 2-3; Wednesday, 4-5, Thursday, 6-7; Friday, 8-9. ■

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Company sponsors series of concerts

Windham Hill will kick off the winter-spring season of the critically acclaimed PBS television series "On Stage at Wolf Trap," funded by a grant from Martin Marietta Corporation. Windham Hill is a joint musical venture whose repertoire spans a broad spectrum of music from jazz and "acoustic" rock to classical and folk.

The first show, to be telecast Wednesday, Nov. 26, will be the first of five broadcasts featuring noted musicians and performers.

On Jan. 28, 1987, the New England Ragtime Ensemble will perform in the second in the series. The King's Singers will appear in March, Karen Akers will be featured in April, and the National Symphony Orchestra will complete the current season in May with a salute to composer George Gershwin on the 50th anniversary of his death.

The concerts were taped live during the summer and fall at Wolf Trap, the nation's only park for the performing arts, and are produced by Maryland Public Television.

This will be the second season of Martin Marietta's "On Stage at Wolf Trap." ■

GSS program plans outlined at VAFB

Revised plans for the Ground Support Systems (GSS) program at Vandenberg Air Force Base, CA, and for helping employees affected by changes in the program, were outlined at a Nov. 3 meeting by William Sparkman, GSS program director. The new plans result from the October announcement by the Air Force to place the space shuttle program at Vandenberg into operational caretaker status by April 1, 1987.

Remaining tests to be completed at Space Launch Complex-6 before entering caretaker status include finishing the solid rocket booster tests, and developing and implementing the hydrogen disposal system.

The number of Vandenberg GSS employees will continue to be reduced, and by mid-year is expected to stabilize at approximately 105 employees, said Sparkman.

Sparkman said he was encouraged by the number of GSS employees who have been able to relocate to other Martin Marietta facilities. At the time of the briefing, 817 had transferred to other company locations and 439 had been hired by the space shuttle processing contractor.

"Our short-term commitment," said Richard E. Brackeen, Space Launch Systems vice president, "is to find jobs throughout Denver Aerospace for our GSS employees in an effort to bridge the job gap.

"In the long term, we're trying to encourage the government to accelerate all expendable launch vehicle programs—to build them faster, use them sooner, and fly more of them—in an effort to bring Martin Marietta space shuttle employees back to Vandenberg in force," Brackeen said. ■

United Way goal surpassed

(Editor's note: The following letter was written by Ralph Hatch, the 1986 general campaign manager of the United Way, on behalf of the generous contributions from Martin Marietta employees.)

Dear Martin Marietta Employees:

I welcome this opportunity to express my sincere "Thank You" to each of you who gave so generously in support of the 1986 Mile High United Way Campaign. As individuals and as members of a team, the Martin Marietta Corporate and employee fund drive generated more than \$1,625,000, and represents the largest single donation ever made to the Mile High United Way.

Your response to the campaign this year clearly demonstrates your and your management's interest and concern for our community. You can be assured that your positive leadership will be felt by the areas served by the Mile High United Way.

Personally, and on behalf of the 97 agencies of the Mile High United Way, thank you for your generosity.

Very truly yours,
Ralph Hatch
President and General Manager
Denver Coca Cola Bottling Company
and
1986 General Campaign Chairman
Mile High United Way

United Way coordinators drive employee campaign over the top

The following coordinators for the 1986 Mile High United Way Campaign at Denver Aerospace have earned the praise of United Way officers and Martin Marietta management for the successful drive:

Cindy Teiffel, Jerry Valdes, Geneva Purdy, Jamie Horacek, Jim Truesdale, Jeff Owings, Jan Karns, Martha Reif, Carolyn Byers, Sandra Konkright, Ray Almanza, Beverly Finger, Sharon Palmer, Teri Sprague, Dorislyn Silby,

Linda Grisham, Barbara Lynn, Brett Reigel, Barb Navarra, Bevan Percell, Irene Woodzell, Jan Burleson, Barb Roepke, Al Kemmerer, Jeanette Goodwin, Jim Prueter, Jim Pearl, Shirley Myers, Donna Campbell, Nancy Strippel, Norma Emerson, Bette Maddox, Nadine Holder, Jim Schaefer, Jim Waples, Toni Little, Jane Dolan, Betty Purkey-Huck, Joy Archibald, Barb Riney, Lori Ungren, Bernie Wenninger and Beverly Cupp.

What employee contributions can buy...

The more than \$1,615,000 total 1986 contributions from Martin Marietta employees this year alone can fund the following six critical-need areas:

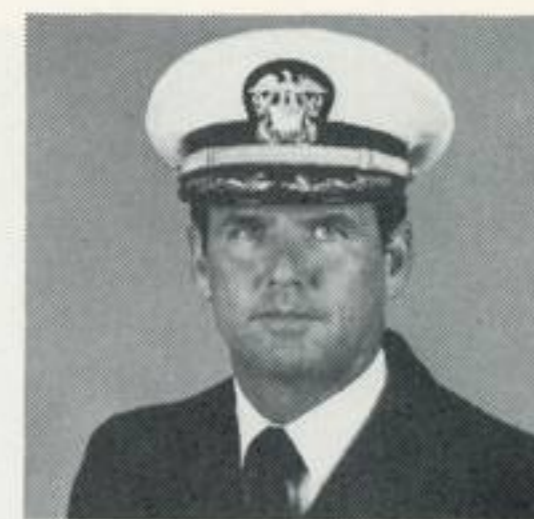
- 1) Battered women and children can receive \$22.19 a day for 12,130 days.
- 2) Child care centers can receive \$9.50 a day for 28,333 child days.

- 3) Services for Seniors can receive \$3.76 a meal for 71,587 hot meals.
- 4) Alcohol and Drug Abuse centers can receive \$15.96 a session for 16,865 sessions.
- 5) Youth Services can receive \$4.81 for a night and council session for 55,960 nights.
- 6) Care for Homeless centers can receive \$2.66/day night for 10,119 day sessions. ■

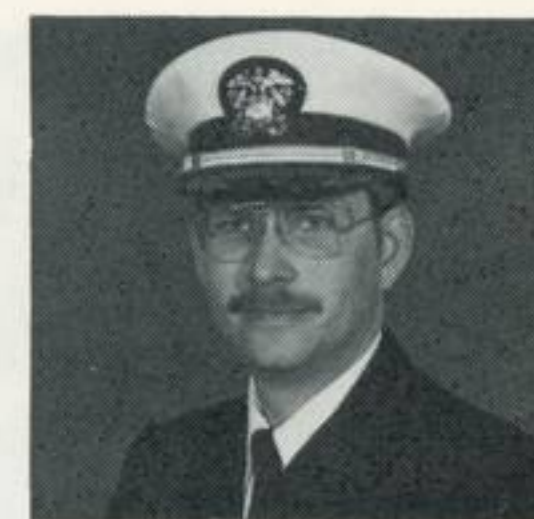


Women's association gives table to Sheltercare

As part of their community service involvement, the Career Women's Association (CWA) presents a new kitchen table to the Westminster Sheltercare facility for abused children. Pictured, left to right, are Tom Cimock, director of Sheltercare; Donna Sexton, vice president, CWA; and Marilyn and Bob Allen. Bob Allen, CWA-member Leslie Rogers' father, volunteered to build the table. Anyone interested in CWA membership information should contact Karen Bujaci, MS 0093.



Tucker



Hefestay

Reserve honors two employees

Two Denver Aerospace employees were honored recently at a U.S. Naval Reserve Change of Command ceremony at Lowry Air Force Base, CO.

Capt. Steve Tucker, commanding officer of the unit that supports Space Command/NORAD, accepted the Reserve Intelligence Area Five award for the outstanding Naval Intelligence Unit of 1986 in a five-state region.

Lt. Jack Hefestay, attached to a unit that supports the Pacific Fleet, received the area's top Intelligence Analyst award for the year. His unit was honored as the area's best recruiting unit.

"The success of the Naval Reserve Intelligence Program in the Denver area is due in no small measure to the outstanding support provided by Martin Marietta and its employees," Tucker said. Tucker is manager of system support on the Kinetic Energy Weapon project. Hefestay works in the engineering administration department.

A number of other Martin Marietta employees are involved in the Naval Reserve Intelligence program, including Glenda Pfannensteil, Cheryl Chase, Robert Hunter, John Stonehocker, Ted Chase, Chris Reidel, Mike Watson, Burness Ansell, Bruce Jackim, Ken Speer, Tim Parmentier, Greg Hatstat, Mike Vieau, Matt Coblenz, Bob Shiflet, George Melander, Tom Sartin, John Chapman, Don Jones, Patricia Farley, Mark Dorman, Grant Oasheim, Jerry Glover, Richard May, Bill Schaar, Mike Ragole, and John Caples. ■

PSP forms due by December 5

The benefits office announces that the deadline for all forms for enrollment in or modifications to the Performance Sharing Plan (PSP) has been extended to Friday, Dec. 5, in order for changes to be effective on Jan. 1, 1987.

The new extension allows employees to make changes to their elections as a result of the effect of the 1986 Tax Reform Act.

Forms may be obtained at the following locations: Waterton facility, Engineering Building, Room 125-hallway; Linpro, near the guard station; Terrace Towers, front lobby; Littleton Systems Center, Room 1333; West Point Facility, Room 340; Electronic Manufacturing-1, lobby.

Employee services/recreation

Alpine Skiing—The Alpine Club has scheduled the following one-day cross-country skiing trips: Nov. 23, Mayflower Gulch, beginner/intermediate trip. Contact Dan Hawkins, Ext. 7-0705. Nov. 30, Vail Pass, beginner/intermediate trip. Contact Frank Farrell, Ext. 7-6786. Dec. 6, Henderson Mine, intermediate trip. Contact Rich Nicholson, Ext. 7-5166.

Amateur Radio—The Waterton Amateur Radio Society will meet at 5 p.m. Tuesday, Dec. 2, in the Hamshack, west side of the recreation area.

Auto Emission Testing—Testing at work locations will be held Dec. 1-3 at the following sites: Monday, Dec. 1, Waterton facility; Tuesday, Dec. 2, Greenwood Commons and Littleton Systems Center (LSC); and Wednesday, Dec. 3, Denver Systems Center (DSC). Detailed schedules are in all recreation racks.

Riding—The Ridge Riders Saddle Club will meet at 7 p.m. Tuesday, Dec. 2, in the club meeting room at the recreation area.

Chess—The Chess Club will meet at 6:30 p.m. Wednesday, Dec. 3, at DSC I, second-floor snack room.

Hunting—The Skyline Hunting and Fishing Club will meet at 5 p.m. Monday, Dec. 8, at the club meeting room in the recreation area.

Archery—The Red Rock Bowmen Club will meet at 4:45 p.m. Tuesday,

Dec. 9, in the club meeting room at the recreation area.

Tennis—Trophies from the Summer Tennis Tournament and the "Weekend Hackers" Tournament are available for pickup at the recreation office, Eng. Building, Room 124G.

Skiing Discounts—Breckenridge coupons offer a \$7 savings on full-day adult lift tickets or on an all-day lesson. The regular price is \$27; with coupon, \$20. Save \$6 on full-day adult and child lift tickets at Vail. The regular adult price is \$30; with discount, \$24. The regular children's ticket (age 12 and younger) is \$18; with discount, \$12.

Walt Disney—Tickets are available from the recreation office for Walt Disney's "Magic Kingdom on Ice" at McNichols Sports Arena for the 7:30 p.m. performance on Thursday, Dec. 4. The discounted price of the ticket is \$8, a savings of \$1.50. Tickets are available from the recreation office, Eng. Bldg., Room 124G, through Nov. 26, while they last. Employees may obtain a mail-order form from recreation racks and mail with payment by check to the recreation office.

Skiing—The Martin Marietta Satellite Ski Club plans a trip to Keystone on Saturday, Dec. 13. The bus will leave at 6:30 a.m. from the Denver Systems Center parking lot. The deadline to register is Dec. 10. Contact Christy Ahern, Ext. 1-5153, or 972-2445.

AF announces study results

The Air Force has completed initial sampling and analysis work on a 464-acre site it owns at the Denver Aerospace Waterton facility, and reports there is no current public health hazard as a result of former industrial and disposal activities at the site.

The work was conducted under the Department of Defense's (DOD) Installation Restoration Program (IRP), which closely parallels the federal Superfund program. The IRP is designed to identify the location and status of former disposal sites at DOD facilities and clean them up if necessary, while Superfund governs similar activities at non-DOD facilities. Denver Aerospace is conducting an investigation of its own property under Superfund.

The Air Force, which announced the results of Phase II, Stage I of its IRP study at a news conference last Friday, said sampling and analysis of eight areas on the Air Force property showed detectable levels of trichloroethylene (TCE) in ground water around some of the areas. The areas were identified as having potential environmental concerns during Phase I, which consisted of a records search.

Although some of the TCE levels found were above the federal drinking water standard, environmental officials stressed that the contamination was found in ground water monitoring wells—not drinking water. TCE is a solvent routinely used by industry until about ten years ago when its health effects became better known.

The study also revealed that some of the sites contained trace amounts of nitroso dimethylamine, a product of the degradation of unsymmetrical dimethyl hydrazine, a rocket fuel. Oil and grease also were found.

Radioactivity was found in the ground water, but the Air Force said the measurements were caused by naturally-occurring uranium.

The next stage of Phase II will determine the directions and rates of contaminant migration and assure that the clean-up and containment recommendations will resolve the contamination, the Air Force said. ■

Royalty shared

Lyle E. Bergquist has received a substantial payment from Martin Marietta Corporation for royalty sharing.

Bergquist's leak detector invention was licensed to Quantum Mechanics. In accordance with company *Bergquist* policy, this entitled Bergquist, a senior staff engineer, Technical Operations, to be considered for sharing in the proceeds from licensing his invention to a third party. His leak detector device is used in measuring extremely small leaks in components. ■



Employees earn degree in systems management

Graduates of the University of Southern California's master of science degree in Systems Management are, front row, left to right, Gayle Ganger, USC coordinator; Al Brandts, Leslie Rogers, Tim Parmentier, Scott Kempshall, and Larry Baker. In the back row are Lynn Zoller, Virginia Hall, David Gunter, William Johnson, and David Allen. Not shown: William Miller, Rod Halverston, John Wightman, and Jeff Rogers. The program is sponsored by Martin Marietta and classes are held in the in Denver area. For more information, contact Betty Hilton, Ext. 7-5226.