

September 8, 1989 Number 19

Double Titan success





South Valley Road extension begins

Jefferson County commissioners (left to right) Rich Ferdinandsen, Marjorie E. (Bunny) Clement, and John P. Stone join Stanley F. Albrecht, vice president of Plant Operations for the Astronautics Group, in a ground-breaking ceremony for the South Valley Road extension. Located just east of the Astronautics Group's Deer Creek facility, the road will be extended in less than four months to connect Ken Caryl Avenue and the Deer Creek facility access

road. "This road will benefit the company's employees and visitors and certainly will be in line to maintain the environmental ambience of the scenic area," Clement said. The extension calls for two lanes covering 1.22 miles. It will feature Swareflex reflectors for deer protection, and a bike lane connecting to the C-470 bike path system. For the new road, the Astronautics Group has deeded 23.37 acres to the county.

PIE program praised as 26 receive certificates

The Greek letter *pi* denotes a constant in mathematics.

Because *pi* is a constant—a known quality—scientists and engineers use it with great confidence, knowing it will be the same every time they use it.

The same idea applies to Product Integrity Engineers (PIE) for the Titan family of launch vehicles. They are "known quantities."

One hundred fifteen engineers have been certified as Product Integrity Engineers. They wear a tie tack or lapel pin bearing the *pi* symbol to denote certification.

PIEs are technical experts in a system, subsystem, component, standard parts, materials and processes, system test procedures or software for the Titan family of launch vehicles.

They are certified through a board process after completing an 8-hour course and a test. They must know the overall program for which their product is a part and be able to resolve problems in design, fabrication and test.

At a recent PIE certification ceremony, Peter B. Teets, Astronautics Group president, praised the PIE program for its contribution to mission success.

He urged the 26 new PIEs being certified to be proud of their certification and noted how important it is for people such as PIEs to "own" their jobs, and for management to provide the resources.

The first group of PIEs was certified in September 1988. Most PIEs are associated with the Titan IV program. ■

Score double Titan success

Titans launched from both coasts

Martin Marietta scored a double Titan success this week with two Titan vehicle launches.

The first was a Titan 34D launch vehicle that soared into space Sept. 4, from Cape Canaveral Air Force Station, marking the last launch of that series of Titans by the Air Force. It was launched at 1:54 a.m. (EDT) Monday by the Air Force Eastern Space and Missile Center.

The second success was a Titan II space booster that was launched Tuesday, Sept. 5, at 6:48 p.m. (PDT) by the Air Force Western Space and Missile Center at Vandenberg Air Force Base, Calif.

Both boosters were built by Martin Marietta Space Launch Systems company in Denver.

The Titan 34D launch was the 135th success in 141 operational launches for the Titan III series, of which the Titan 34D is the latest version.

The Air Force plans to use the larger, more powerful Titan IV—first launched on June 14—as its space launch workhorse for the 1990s, replacing the Titan 34D.

The Titan II was the second of 14 decommissioned Titan ICBMs that Space Launch Systems company is under contract with the Air Force to refurbish and launch.

"With these launches, the Titan launch vehicle family continued its unparalleled success record," said Gareth D. Flora, president of Space Launch Systems.

"Titan expendable launch vehicles have been the backbone of the Air Force's space program

for more than 20 years, and we expect the Titan IV to continue that tradition."

An Air Force press release called the Titan 34 launch "a milestone in the U.S. military space program."

Titan IIIs began service in 1964, and the Air Force awarded Martin Marietta a contract for the Titan 34D in June 1977. The first Titan 34D, carrying a payload of two high-performance military communication satellites, was launched on October 30, 1982, from Cape Canaveral. Fifteen were built and launched from both coasts.

The Titan 34D, which can be up to 162 feet in length, depending on the configuration, weighs up to 760 tons, excluding the payload. Two liquid-propellant booster stages make up the core vehicle. ■

On the cover

The 15th and final operational Titan 34D lifts off the pad at Cape Canaveral Air Force Station at 1:54 a.m. (EDT) on Monday, Sept. 4. This launch marked the end of an era for the Titan 34D series of vehicles. The Air Force also successfully launched the second Titan II space booster this week.

Employees win awards for inventions and new technology

Eleven Astronautics Group employees won invention awards during the first half of 1989, and four won awards for new technology disclosures.

The Intellectual Property Review Board for the Astronautics Group granted the invention awards, and the New Technology Evaluation Committee granted the new technology awards.

Three employees also received Tech Brief awards and Certificates of Recognition from NASA.

Employees are eligible for invention awards for ideas submitted under the Inventions and Patents Program. Ideas conceived while working on Defense Department contracts, Independent Research and Development projects, and other non-NASA activities include discoveries, improvements and innovations, whether or not patentable, in products, processes, systems, software programs, materials, equipment, devices, facilities or methods.

Invention awards were granted to:

Dr. Wayne E. Simon—"An Integral Version of an Ultrasonic Method for Non-Intrusive Low-Liquid-Level Sensing;"

Frederick E. Bikle (Retired)—"Alternate Hydraulic Actuator Concept;"

Robert M. Zubrin—"Nuclear Rockets Using Indigenous Martian Propellants;"

Karyn S. Downs, James M. Arrajj, Kurt P. Leyendecker—"Topcoat KSD: A Sprayable, Fiber-Reinforced Coating for Protecting Low-Density Insulators;"

Karyn S. Downs, James M. Arrajj, Kurt P. Leyendecker, Ron L. Campbell—"Low-Density Sprayable Insulator and Ablator, MI-15" and "Low-Density Trowelable Insulator and Ablator, MI-15 Repair Material;"

Alexis Hubert and John A. Shepic—"Capacitive Angle Sensor Improvement;"

Wendell H. Chun and Philip D. Brunson—"Concentric Power Take-Off End-Effector and Tool System."

Awards for new technology disclosures are granted for ideas submitted under the New Technology Program.

Ideas include any invention, discovery, improvement or innovation, whether or not patentable, conceived or reduced to practice while charging to a NASA contract or subcontract.

These employees received new technology awards:

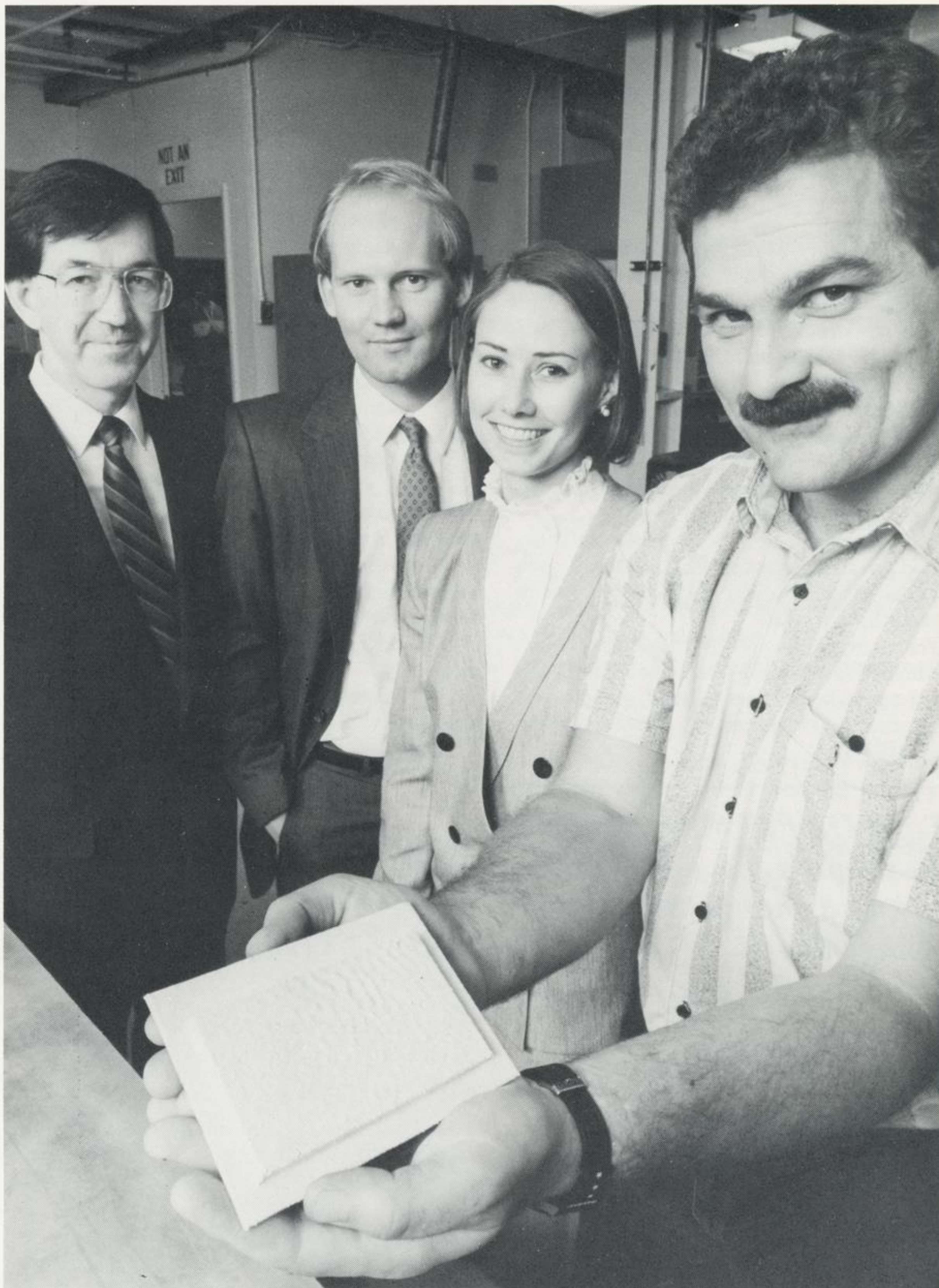
John P. Gille—"Method and System Design for Filling Storage Dewar with Superfluid Helium;"

Steven C. Wilson—"Space Station On-board Propulsion System Computer Program;"

Stanley J. Larimer (Formerly I&CS; now Orlando), Thomas R. Lisec, and Dr. Andrew J. Spiessbach—"Simple Autonomous Mars Walker."

NASA grants awards for significant New Technology Disclosures that are published in NASA Tech Briefs. These employees received awards from NASA:

Garry L. Brauer, David W. Olson, and Robert Stevenson—"Program To Optimize



Happy inventors

Jim Arrajj (right) displays a sample of MI-15 insulation covered with Topcoat KSD. He and three other award-winning inventors—(from left) Ron Campbell, Kurt Leyendecker, and Karyn Downs—invented the lightweight, sprayable insulation. MI-15 stands for Martin Insulator with a density of 15 pounds per cubic foot. They developed it for use as a flame-resistant, thermal insulation for commercial and military jets. MI-15 will be used in the cowling around jet engines and in thrust reversers to meet flame-resistance criteria of the Federal Aviation Administration (FAA). Topcoat KSD is a reinforced, rubbery material used as a sealer for MI-15 and minimizes potential MI-15 damage caused by abrasion and fluids.

Simulated Trajectories (POST)" and "Six-Degree-of-Freedom Program To Optimize Simulated Trajectories (6D POST)." ■

Canyon fire set to improve bighorn sheep habitat

Fire was deliberately set in Waterton Canyon last Friday to improve conditions for bighorn sheep, deer and elk there.

Martin Marietta cooperated with the U.S. Forest Service, the Colorado Division of

Wildlife, and the Denver Water Board to set and control the fire.

The controlled fire originally had been scheduled for Thursday, but was canceled because conditions weren't right.

According to the Colorado Division of Wildlife, the vegetation in the canyon before the fire did not meet the needs of the animals there. Burning will help wildlife species that use mixed grass-shrub habitats, including bighorn sheep, deer, elk, turkeys and several species of songbirds. ■

Teets reveals Astronautics Group TQM plan

Astronautics Group President Peter B. Teets revealed the group's Total Quality Management plan to a packed house of senior managers last Tuesday at the Deer Creek facility, saying that Total Quality Management—TQM—means change.

"Total Quality Management will simplify the way we do work and change the role of management," Teets told the crowd.

"It's important for you to embrace this change," he said as he made his own personal case for change.

The Astronautics Group's business interests demand change, Teets said. Without it there will be loss of jobs, lower probability of mission success, higher costs to customers, less profit and a lower new business win rate.

But with change will come greater job satisfaction and security, more pride and less hassle.

The result will be, in Teets' words, "Quality in everything we do."

The Astronautics Group TQM plan, which was mailed to all employees at their homes last week, relies heavily on training, people empowerment, and Manufacturing Resource Planning (MRP II).

"Total Quality Management will simplify the way we do work and change the role of management."

—Peter B. Teets

"We can't invest in anything better than training," Teets said. More than 12,000 Denver employees have undergone education for cultural change or TQM implementation training over the past year. Some 2,000 have been through high-performance work team training this year.

People empowerment happens when management moves from a control-oriented, authoritarian mode to one in which semi-autonomous teams of employees exercise a high degree of control over and commitment to their work.

Calling MRP II the "lead technical initiative" in TQM, Teets said Space Systems, Strategic Systems, Space Launch Systems, Central Labs and the Electronic Manufacturing Facility all will implement MRP II.

Although the word "manufacturing" is used in the term, MRP II is a broadly based, total enterprise business planning system. "It goes all the way back to engineering and the bill of materials," Teets said.

MRP II is a game plan for planning and monitoring all of the resources of a manufacturing company: manufacturing, marketing, finance and engineering. Ron Drobnik will be coordinating MRP II implementation across the three companies, Central Labs and EMF.

"It (MRP II) will be up and running next year, and I'm awfully glad of that," Teets said. "We have an opportunity to lead all our competitors in this, to become DOD's highest quality supplier."

Another groupwide TQM initiative is subcontractor management and supplier involvement. More than half the group's business is done with subcontractors, vendors and suppliers.

"We will do ourselves a favor in bringing them (subcontractors, suppliers and vendors) along with us and helping them implement TQM," even when they are also competitors, Teets said. The TQM plan that employees received also will be sent to all suppliers.

During the presentation, Teets also discussed the Annual Performance Improvement Program—the APIP.

Referring to the APIP as an "annual slice" of the TQM plan, he said he expects the 1990 APIP to contain "ways to measure improvement in our processes."

Over the next 60 days, Teets said managers will assess their operations, come up with their own case for change, and be able to articulate it. He also charged managers to be seen—and to listen.

"You can't implement this (TQM plan) without listening to your people," he said.

"This is not going to be an easy task. But we must all embrace change," he concluded. ■

First National TQM Symposium set

The First National Total Quality Management Symposium, scheduled for Nov. 1-3 in Denver, will feature Undersecretary of Defense for Acquisition John A. Betti; Gen. Bernard P. Randolph, commander of the Air Force Systems Command; and Martin Marietta's own Norman R. Augustine, chairman and chief executive officer.

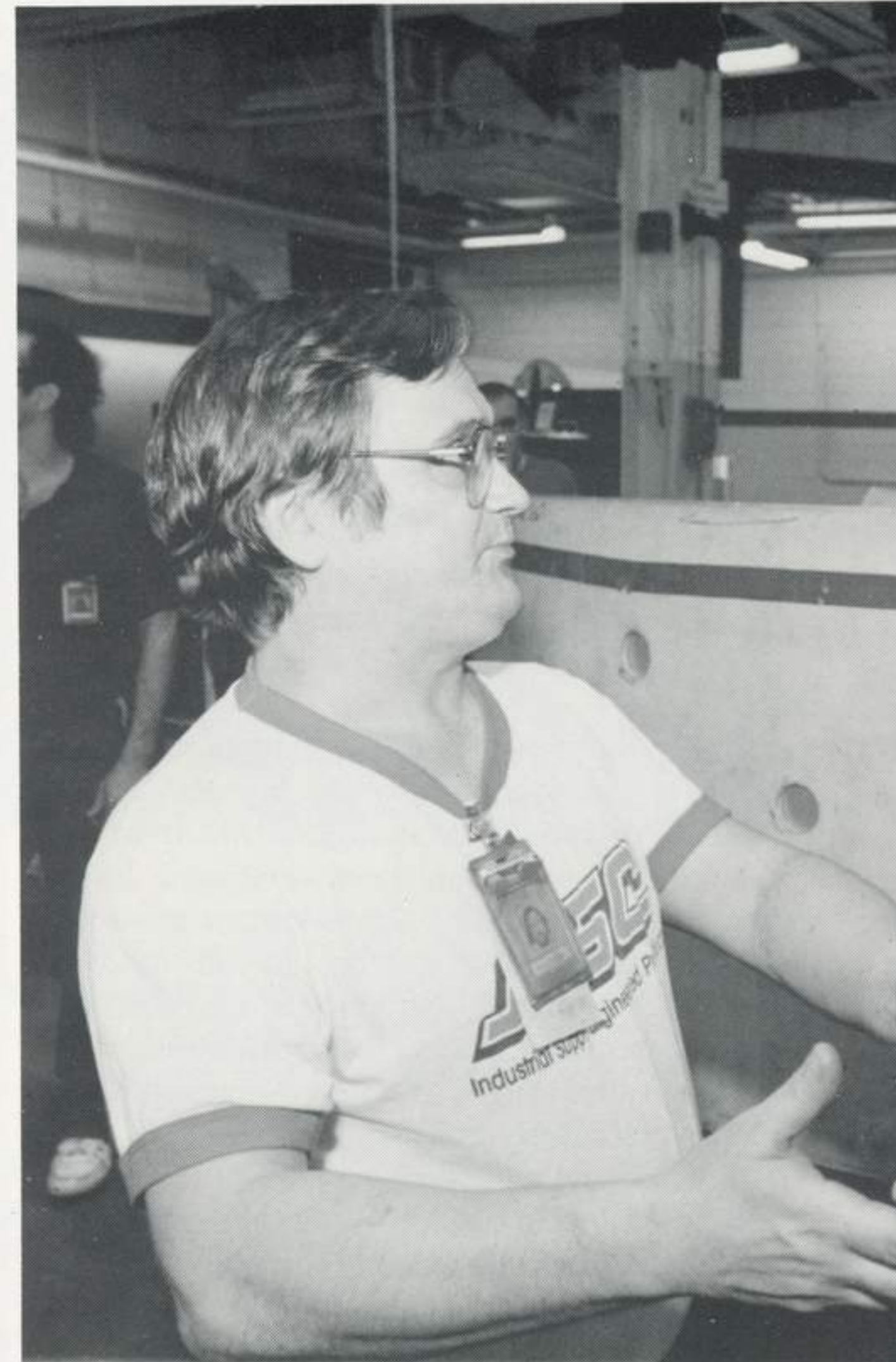
The symposium will explore continuous performance improvement nationwide, with emphasis on lessons learned.

Five general sessions, 20 topic-specific panels and presentation of 40 papers are scheduled. The general sessions will cover TQM in business processes, engineering and technical processes, production and procurement processes, support processes, and across the entire business organization.

Motorola and Westinghouse, both of which won Malcolm Baldrige National Quality awards, will be among the companies represented.

The American Institute of Aeronautics and Astronautics is sponsoring the symposium, with the National Security Industrial Association and the American Defense Preparedness Association as cosponsors. Martin Marietta is the host organization.

The entire symposium schedule, plus a registration form, is included in the Astronautics Group TQM plan that was distributed by mail to all employees last week.



Workers in factory tell Teets how it's going

Mike Caron, spokesman for the Sheet Metal Machinists, tells Peter B. Teets what his high-performance work team accomplished during a recent visit by Teets to the factory.

What others are saying

Martin Marietta is not the only company that has turned on to Total Quality Management.

To give *Martin Marietta News* readers an idea of what others are saying, here are comments from two of the acknowledged leaders in the aerospace industry.

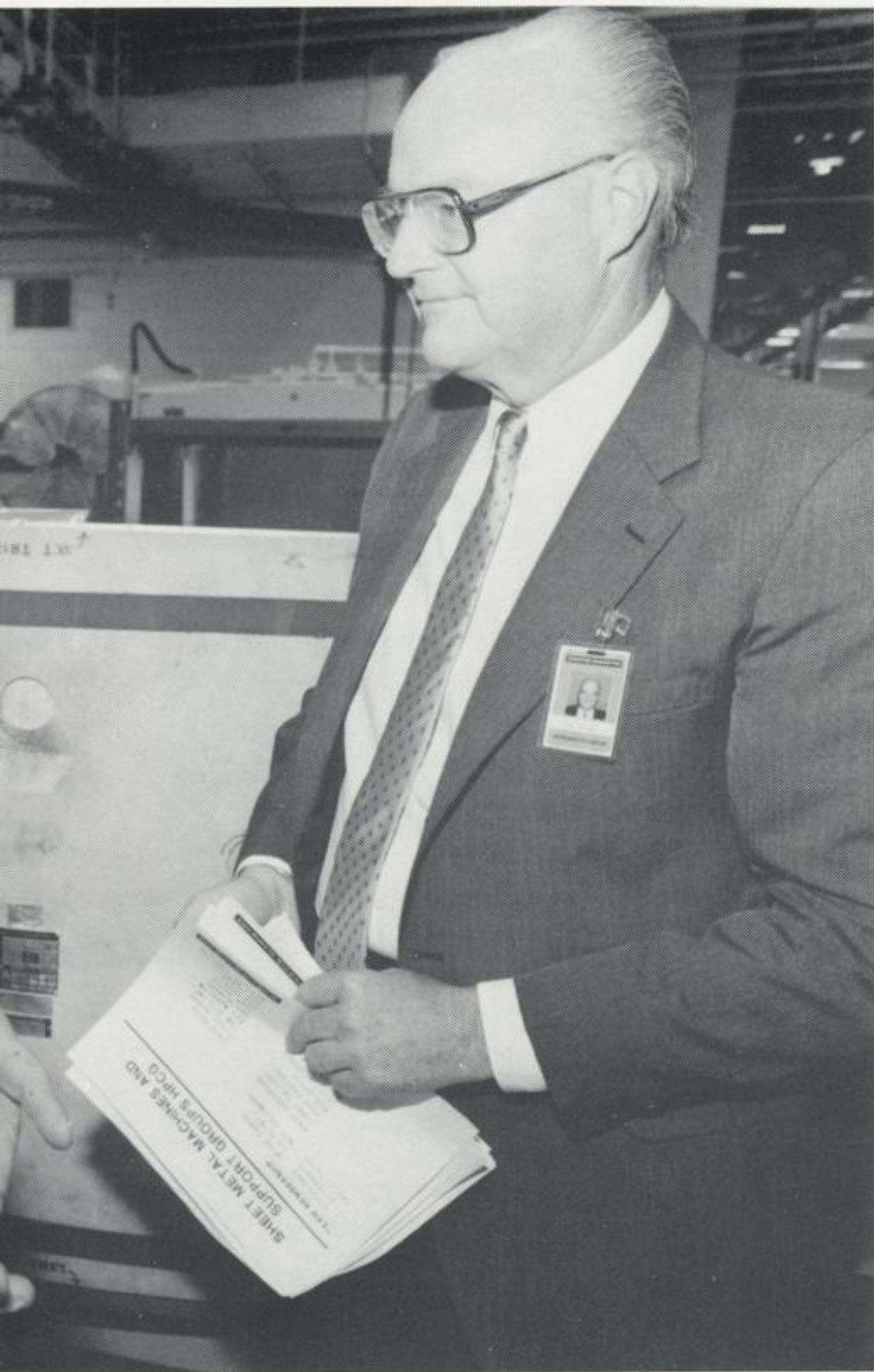
The first is John McDonnell, chairman of McDonnell Douglas Corp. Asked whether McDonnell Douglas' TQMS (Total Quality Management System) was "here today, gone tomorrow," here's what McDonnell said:

"All I can say is I am committed to it. TQMS is an overall management system and it really encompasses [quality and productivity] ideas. The white-collar productivity and various other approaches at the component companies are consistent with TQMS. TQMS is the system that we've come to after eight years of evolving and developing. And that's not going to change."

Later in the same interview, McDonnell had this message for McDonnell Douglas Space Systems Company employees:

"Well, I think it's the same message that I have for everybody in McDonnell Douglas, and that is a message of change. We must change. The world is changing, and if we don't, we're going to be left behind."

"Changing requires learning; if someone is learning, they're much more open to change. That's one of the very important reasons for training and development. To a great extent, it's



and Support Groups High-Performance Core Group, group is concerned about and what they want to

Why quality?

by Peter B. Teets
President
Martin Marietta Astronautics Group

Why all the fuss about quality lately?
Hasn't Martin Marietta delivered quality products at a fair price?

Doesn't Martin Marietta have a success rate of better than 96 percent for Titan launch vehicles?

Doesn't Martin Marietta have a reputation for Mission Success—for delivering what we commit to deliver on time?

And hasn't Martin Marietta produced a profit for its stockholders and jobs for its employees?
The answer is, "Yes, but . . ."

Yes, Martin Marietta has delivered what it promised. Yes, Martin Marietta has made a profit. And yes, Martin Marietta has provided jobs, helped defend our Nation, and even helped to expand the known universe for Mankind.

But today, that's not enough.

Today, in order to remain competitive, we must do all these things *and* build quality into everything we do. And our customers will tell us what quality is.

Whether we ever touch a launch vehicle, spacecraft, or other product, or whether we ever even see or talk to the people who take final delivery of and use our products, we have to build quality in.

We have to build it into everything we do, into everything we touch, whether or not the Air

Force or NASA or any other customer organization sees or touches that product.

Each Martin Marietta employee has one or more customers. We are suppliers to them, and each of us, in turn, has suppliers.

We must satisfy the quality requirements of our customers with products that meet *their* definition of quality, not ours. Likewise, our suppliers must deliver products to us that meet *our* definition of quality.

Few of us has the thrill of delivering a completed launch vehicle or spacecraft.

But all of us get things from people inside or outside the company, add value to these products, and deliver them to others. So we all have an opportunity to build quality into our products.

To make sure that Martin Marietta continues to be perceived as a company that delivers quality at a fair price, we must:

- Determine who our *personal* customers are;
- See whether we are meeting their quality needs; and
- Adjust our processes—the value we should be adding to our products—so that we meet our customers' quality needs.

Every step that adds value and meets requirements is one that lowers our costs and helps us remain competitive.

Quality is what the customer says it is. And it's our job to build it in. ■

ng about TQM . . .

each individual's responsibility to develop himself, but we've got to create an environment that encourages it and enables it. By learning and developing, we're going to be open to change. And change is going to be a way of life."

At Boeing, chairman Frank Shrontz told employees:

"Our corporate focus for the long term is to be the number one aerospace company in the world as measured by quality, profitability and growth

"We need both product and process quality to maintain our reputation, improve our productivity and nourish our pride in this company

"How are we planing to ensure success in this mission? So far we have identified six objectives that are critical to our success.

"The first is to continuously improve the quality of our products and processes. That requires both large financial and human investments over time."

Later in the same speech, Shrontz said:

"Most importantly on the human side of our business, we are embracing the principles of Total Quality Management or continuous improvement, whichever terms you might wish to describe the process.

"I believe in it; we are spending a lot of time on its implementation and are absolutely convinced it's necessary to sustain our mission."



High-performance team training for senior staff

Executive managers go through high-performance work team training at Scanticon. Left to right are: James A. Sterhardt, Andrew J. Stofan, Col. John McCabe (AFPRO commander), Arnold F. Roane, Gareth D. Flora, and Frank X. McKenna.



Changes at EMF

Process changes suggested by this high-performance work team at the Electronics Manufacturing Facility (EMF) have resulted in less testing and rework—and lower manufacturing costs—on the Peacekeeper program. The integrated safety control unit (ISCU) high-performance work team at EMF recommended that production performance in-line testing be performed only once. They also came up with a way to reduce rework on ISCU relief valve testing by shifting the testing to a point at which the valve is more accessible. Manufacturing Process Plans have been revised to reflect

these changes, and an unexpected saving of \$33,749 in man-hours and damaged parts has been chalked up, according to John Parker, Peacekeeper program director. ISCU high-performance work team members shown here are: (front row, left to right) Jong Bu Raymond, Eleanor Howard (lead), Grisel Simonds, Linda Roybal, and Ying Her; (second row, left to right) G. Lee Robey, Melinda Talent, Vivian Madrid, Boni Thuett, Stan Albrecht (vice president, Plant Operations), Richard Bird, and Kathleen Slape. Not pictured: Khanh Nguyen.

How three Baldrige Award winners measure quality

What is the best way to measure quality?

A number of measurements can be used, but here's how the three companies that won the first-ever Malcolm Baldrige National Quality Award measure it.

The Baldrige Award is a new award that's the Super Bowl of quality in the United States. The first three winners were named last November.

Motorola set out in 1981 to reduce defects in products, paperwork and other areas of business by a factor of 10 over five years. But some segments of the company began reaching those goals in just two years.

So they raised their sights to a hundred-fold reduction. When that, too, was achieved, Motorola set "Six Sigma" as the goal.

Six Sigma is a statistical term. It means that processes and procedures will have no more

than 3.4 defects per million. And Motorola expects to reach Six Sigma by 1992.

At Westinghouse's Commercial Nuclear Fuel Division—roughly equivalent within the Westinghouse Corporation to the Astronautics Group within Martin Marietta Corporation—they once were satisfied with meeting the regulatory requirements for nuclear fuel rod assemblies.

If statistical analysis said 95 percent of their products were going out the door perfect, they were happy.

Over the past nine years, however, their product reliability has gotten 10 times better. Yet they set last year—the year in which they won—as their benchmark year for beginning to improve.

The smallest company to win the Baldrige Award, Globe Metallurgical, used a system

called statistical process control. Workers there plot data by hand to analyze frequently-drawn samples, then make production adjustments based on the data.

What did they get for their effort? Customer complaints are down 91 percent, and they had no product returned for replacement in 1987.

No one way of measuring quality will work the same for two different organizations. Each must find its own measure that works. ■

Rigger gives safety tips

Do you know what to do if you encounter a launch vehicle being towed up or down the hill, to or from Missile Storage or the Y-Lot?

Gary Wilson, a rigger who works on the second floor of the factory, provided the *Martin Marietta News* these tips:

- If you're behind the vehicle, stay there. Do not pass.
- If you're coming toward the vehicle, pull over to the right, stop, and wait for it to pass. After it has passed, you may proceed.

"You need to stop, even if there seems to be room to pass, because there's always a chance a rock can be thrown from the tire of a passing vehicle and damage flight hardware," Wilson said.

He asked everyone to abide by these simple rules.

"We've had several incidents recently that make me concerned. Once, the truck carrying the launch vehicle had to slam on its brakes because someone didn't yield," Wilson said.

"It's for the safety of us all. I just thought people ought to know," he said. ■

Open house gifts available Thursday

Employees who did not attend the 1989 Family Open House can get their special gifts on Thursday, Sept. 14, at the locations listed below. The Martin Marietta clock is available on a one-per-person basis only. Enough clocks were ordered for each employee to have one.

Here's the distribution schedule:

Greenwood Commons	9:00 a.m.-10:00 a.m.
South Lincoln	10:30 a.m.-11:00 a.m.
Littleton Systems Center	11:15 a.m.-1:00 p.m.
Engineering Building	10:00 a.m.-12:00 noon
Space Support Building	12:15 p.m.-2:00 p.m.
Deer Creek Facility	10:00 a.m.-11:00 a.m.

White vans will be in the parking lots outside each facility to distribute the gifts, except at Deer Creek, where a table will be set up outside the Employee Services area at the south end of the building on the "A" level.

Training scheduled

Automated Policies and Procedures System coming to Astronautics Group

The Automated Policies and Procedures System (APPS) is coming, and September is the month for training.

All Astronautics Group employees except those in Strategic Systems will get a 20-minute APPS familiarization and demonstration session. The Command Media group will conduct the training.

Strategic Systems employees will be trained separately with their functional organizations.

The Command Media group has scheduled APPS training sessions at LSC, Waterton and Deer Creek. To make it easy for everyone to see and hear the presentation, employees should attend the session for their last name group.

The schedule is as follows:

Location	Date	Employee Last Name	Time
LSC 1st floor Pres. Rm.	Sept. 18	A-F	12:00 p.m.
		G-M	12:45 p.m.
		N-S	1:30 p.m.
		T-Z	2:15 p.m.
		Make-up	3:00 p.m.
SSB 6th floor Pres. Rm. (613)	Sept. 19	A-B	8:00 a.m.
		C-E	9:00 a.m.
		F-G	10:00 a.m.
		H-J	11:00 a.m.
		K-L	1:00 p.m.
		M	2:00 p.m.
		N-Q	3:00 p.m.
SSB 6th floor Pres. Rm. (613)	Sept. 20	R	8:00 a.m.
		S	9:00 a.m.
		T-Z	10:00 a.m.
		Make-up	11:00 a.m.
Deer Creek Facility R level Aud.	Sept. 21	A-C	8:00 a.m.
		D-G	9:00 a.m.
		H-L	10:00 a.m.
		M-Q	11:00 a.m.
		R-T	1:00 p.m.
		U-Z	2:00 p.m.
		Make-up	3:00 p.m.
ENG 2nd floor Pres. Rm.	Sept. 25	A	7:30 a.m.
		Ba-Bk	8:30 a.m.
		Bl-Bz	9:30 a.m.
		Ca-Ck	10:30 a.m.
		Cl-Cz	12:00 p.m.
		D	1:00 p.m.
		E-F	2:00 p.m.
		G	3:00 p.m.
ENG 2nd floor Pres. Rm.	Sept. 26	Ha-Hk	7:30 a.m.
		Hl-Hz	8:30 a.m.
		I-J	9:30 a.m.
		K	10:30 a.m.
		L	12:00 p.m.
		Ma-Mk	1:00 p.m.
		Ml-Mz	2:00 p.m.
		N-O	3:00 p.m.
ENG 2nd floor Pres. Rm.	Sept. 28	P	7:30 a.m.
		Q-R	8:30 a.m.
		Sa-Sk	9:30 a.m.
		Sl-Sz	10:30 a.m.
		T	12:00 p.m.
		U-Z	1:00 p.m.
		Make-up	2:00 p.m.

More than 6,000 health screenings at Wellness Fair

Employees responded enthusiastically to the 5th Annual Wellness Fair in August. The fair is held to increase the awareness of health issues and to encourage employees to take an active part in preventing potential health problems. Screenings at the fair are not meant to take the place of needed visits to the doctor's office. Employees whose screening results indicated high blood pressure, high cholesterol, excess percentage of body fat or other problems should follow up with their physicians as soon as possible. People who were unable to take part in the Wellness Fair can call the Deer Creek Wellness Center to schedule free weight loss and fitness consultations, a free body composition analysis test, and \$3 cholesterol screenings. Free blood pressure checks are performed on a drop-in basis.

HealthMark exercise physiologists are available from 11:30 a.m. to 5:30 p.m., Monday through Friday. Call Ext. 7-7575 or 7-7576 to schedule appointments. ■

Computer seminars, demos and courses set

X Window seminar—Astronautics Group Technical Operations will host a two-day seminar on the X Window System at Deer Creek on Sept. 12 and 13. The focus is engineering applications.

A series of presentations will be given on Sept. 12 in the R-Level Auditorium at Deer Creek. System demonstrations will be conducted both days from 8:00 a.m.-5:00 p.m. in the Executive Dining Room on the First Floor at Deer Creek.

Sun, Hewlett-Packard, IBM, DEC, Apple, Prime/CV, NCR, Tectronix, SDR, Datagraphics, Interleaf, Analogy and Pacific Numerix products will be represented.

Direct questions on this seminar to Ron Remy at Ext. 1-5170 or 1-5940.

See NeXT computer—The NeXT computer workstation will be available for "hands on" in the Computer Library the week of Sept. 11. The Computer Library is in Room 3A-418 at Deer Creek. A Businessland representative will be there Monday, Wednesday and Friday from 8:30 a.m.-noon. Contact Marilyn Huber at Ext. 7-6716 for more information.

Learn to program in Ada—The Colorado Center for Software Engineering will offer a 60-contact-hour course entitled "The Discipline of Programming in Ada" from 5-9 p.m. on Tuesdays and Thursdays, beginning Sept. 26, and on Saturdays from 8:30 a.m.-4:30 p.m. beginning Sept. 30. A 15-contact-hour course called "The Software Engineering/Ada Discipline," designed for managers, analysts, designers and others, will be offered on Wednesdays from 5-9 p.m. for four weeks beginning Sept. 27. Contact Bob Lewis at Ext. 1-6731, or call the Colorado Center for Software Engineering at 795-3758. ■

Alcoholics Anonymous meetings—Employees who want to address personal alcohol/addiction problems can attend Alcoholics Anonymous meetings at two work locations. Groups meet at Waterton, Room 401 of TSB at 11 a.m. on Mondays and Fridays, and at LSC, Room 201 at 11:30 on Wednesdays. The location may change due to room availability.

Corporate news

NASA contracts for 60 more external tanks

NASA's Marshall Space Flight Center in Huntsville, Ala., recently awarded a \$1.797 billion contract modification to Martin Marietta Manned Space Systems in New Orleans for 60 additional Space Shuttle External Tanks.

The tanks will be delivered during the 1990s.

This award is the second portion of a procurement to obtain the tanks. The first portion—\$500 million—was awarded to Martin Marietta in June 1988. It was for long-lead hardware required in the manufacture of the tanks.

Manned Space Systems will produce the tanks at NASA's Michoud Assembly Facility near New Orleans.

The first tank to be built under this contract is expected to be completed in late 1991. The final tank is planned for completion in mid-1997. They are slated for use with Shuttle missions STS-60 through STS-119.

Under previous awards, 59 tanks have been contracted for and 52 have been produced to date. ■

United Way plans 'FamilyFest'

Mile High United Way will host "FamilyFest" tomorrow at City Park as a community-wide thank you event.

The family oriented, free-admission event begins at 11:00 a.m. and is scheduled to go until

6:00 p.m. It will feature top name local musicians and more than 50 food and game booths.

Many of these activities will be free. Food and carnival booths will cost just 25 cents. ■

Smokey Robinson and Stephanie Mills in concert

The company-sponsored Family Event Concert featuring Smokey Robinson of Motown fame will be held Saturday, October 7, at 2:30 p.m. and 8 p.m. in McNichols Arena. Award-winning vocalist and Broadway star Stephanie Mills will open the performance. She has replaced Natalie Cole on this tour. Employees had the opportunity to reserve concert tickets in April when the activity card was sent to home addresses. Department administrators or secretaries will begin distribution of tickets after Sept. 20. Employees who did not reserve tickets, but would like to attend, can request 2:30 p.m. tickets only from their department representative. The Employee Services and Recreation office distributes tickets only through the departments.

Employee services/recreation

Mile High L5 Space Society—The group will meet for a picnic and star party on Friday, Sept. 8, at 6 p.m. at Observatory Park on the University of Denver campus. For further information, contact Mark Schloesslin at Ext. 1-9057.

Fall Fitness Classes—The eight-week fall sessions begin Sept. 11 at the Deer Creek Wellness Center. Whether you are just beginning an exercise program or are an avid athlete, there is a class to fit your needs. Choose from low-impact aerobics, ski fitness and body toners. Daytime and evening classes are offered at a modest cost. Registration forms are in the information racks.

Smoking Cessation Classes—Enjoy a breath of fresh air. The American Cancer Society's "Fresh Start" program is available free to all Martin Marietta personnel, their spouses and dependents. Classes consist of four meetings from 5-6:30 p.m., Sept. 18, 21, 25 and 28 at Goddard Middle School, Room 211. Those who have not sent in a registration form, but would like to attend, can call the Employee Services office at Ext. 7-6605.

Hunting and Fishing Club—The group will meet at 5 p.m., Monday, Sept. 11, in the clubhouse at the recreation area. For more information, contact Mel Smith, Ext. 1-8655.

Red Rock Bowmen—Archery club members will meet at 4:45 p.m., Tuesday, Sept. 12, in the clubhouse at the recreation area. This meeting will feature the last security briefing. All members are required to attend. For further information, call Dave Unruh, Ext. 7-0477.

Radio Club—The Waterton Amateur Radio Society will meet at 5 p.m., Tuesday, Sept. 12, in the hamshack at the recreation area. For further information, call Jeff Owings, Ext. 7-3629 or 7-6898.

Scuba Club—Fathom Dive club members will meet at 6 p.m., Wednesday, Sept. 13 at A-1 Diving Company, one block west of Santa Fe at 1800 W. Oxford Avenue. Upcoming dive trips include Jamaica in October; Cozumel, Nov. 17-24 and Dec. 25-29; and LaPaz in April 1990. For details, contact Carol Claypool, Ext. 7-4194, or Larry Espelage, Ext. 7-6371.

Running Club—Runners of all levels are invited to participate in the Shepherders Running Club fall series. Race dates are on Thursdays, Sept. 14 and 28, and Oct. 12 and 26, and begin at 4:45-5:00 p.m. at the Waterton Canyon Parking lot. For further details, contact Corrina Perrone, Ext. 7-4162.

Satellite Ski Club—The annual fall picnic and membership drive will be at 5 p.m., Friday, September 15 at the recreation area pavilions. Alpine and Nordic skiers can enjoy food, fun and entertainment. Gold C coupon books and the American Ski Association Gold Card will be for sale. Ski trips for '89-'90 include Copper Mountain, Beaver Creek, Steamboat, Aspen, Utah, Crested Butte, Telluride and Jackson Hole. Questions can be answered by Dan Ruedy, Ext. 1-9547, Bill Decker, Ext. 7-8815, or Bob Foglia, Ext. 7-7122.

Ada/Software Engineering Working Group—Interested employees will meet at 5 p.m., Monday, Sept. 18, at LSC—SCOE 133, classroom. Please contact Robert Lewis at Ext. 1-6731 for further information.

Parapsychology Club—Will meet Thursday, Sept. 21, 5-7 p.m. at Southpark West I in the MIC Room. Speaker will be Kenneth Lesser on "Tapping into the Powers of Your Subconscious Mind," emphasizing how to use your subconscious to relieve stress. All

employees and guests are welcome, and are required to be age 16 or older. To reserve a guest badge or for more information, please call Helen Davis, Ext. 1-6887.

Photography Club—Platte Canyon Photography Club members will meet at 7 p.m., Monday, Sept. 25 at the Public Service building, 10001 W. Hampden Avenue. Contact Bill Privratsky, Ext. 7-4969, for details.

Toastmasters Clubs—LSC Toastmasters meets at 4:30 p.m. Wednesdays, in Room 209G of Littleton Systems Center. The contacts are Michele Stillman, Ext. 7-3582, or Marti Friend, Ext. 1-1806. Titan Toastmasters meets at 6 p.m. Mondays, at Mission Trujillo Restaurant, 181 Ridge Road (Broadway and Ridge Road). Contact Mark Willey, Ext. 1-6183.

Career Women's Association—CWA invites all employees to hear Peter B. Teets, president, Astronautics Group, speak on "Women in Management," 7:30 p.m., Wed. Sept. 20, at the Denver Marriott Southwest, I-25 at Hampden. Social hour begins at 5 p.m. Dinner is at 6 p.m. The cost is \$18 for CWA members and \$23 for nonmembers and guests. Reservations can be made through CWA boosters (see information racks) by 3:00 p.m., Fri. Sept. 15.

MARTIN MARIETTA NEWS

Published by Public Relations

MARTIN MARIETTA

R. Christopher Talley Editor

Call Ext. 7-5364 with information for articles.

Prepared and produced by the publications department.

ASTRONAUTICS GROUP

P.O. BOX 179—Denver, CO

September 8, 1989