Getting Kids Excited About Science and Math

Sandia Programs, People Reach Out to Schools

We must expand our involvement in science and education to inspire the youth of America to either enter or feel more comfortable in the fields of math, science, and engineering. With our labs and facilities, we are uniquely well positioned to provide major assistance in strengthening science and engineering motivation and education, making it "come alive" for the main body of students who too often fear these disciplines or who cannot relate to them. I intend to lead this effort personally.

— Sept. 5, 1989, statement by Energy Secretary James Watkins

Already in step with Secretary Watkins' initiative, Sandia has plans to better coordinate its already considerable education outreach efforts in the community, state, and nation, says Executive VP Lee Bray (30).

Lee, who is chairman of the Albuquerque Chamber of Commerce Education Planning Council and chair-elect of the Albuquerque Business-Education Compact, says, "We are certainly in agreement with the Secretary's interest in expanding the involvement of the national labs in science education, and we have already begun some of that increased emphasis and activity. If we were to go back several years and just map some of our activities and educational involvement, we would see that they have been on an increasing ramp in organizations such as 3100 and 3500."

"What we're really saying now," Lee continues, "is that we want to be sure we are managing all that activity as a program, and that it is cohesive, properly targeted, and well communicated so we are getting the maximum leverage, benefit, and recognition from it."

Education Outreach Steering Committee

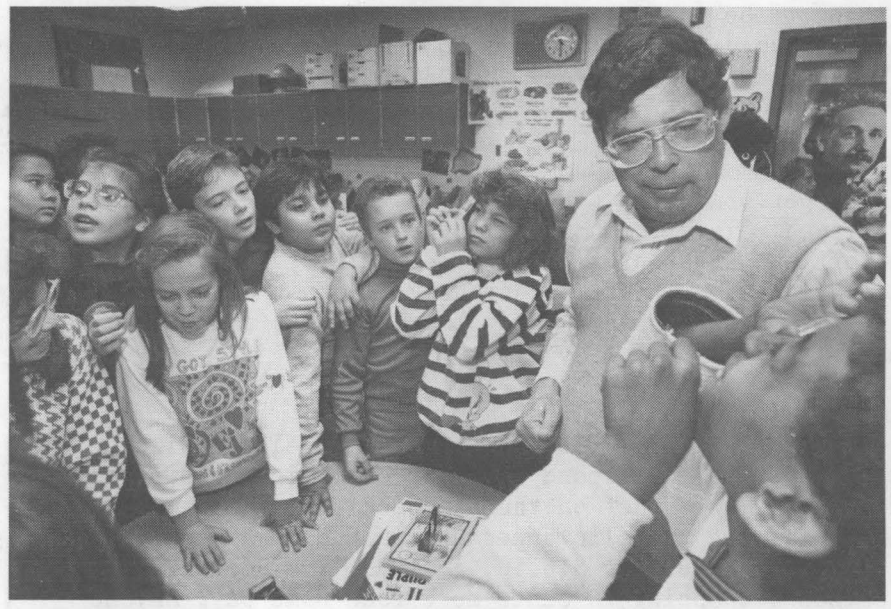
To accomplish that, an education outreach steering committee has been created with oversight and implementation responsibilities. Mike Wartell (9001) is education program manager and chair of the steering committee. Other committee members besides Mike and Lee: Gerry Yonas (400), Ken Eckelmeyer (30), Bob Eagan (1800), Ralph Bonner (3500), Maureen Baca (3510), Dan Hartley (6000), and a representative to be named from 8000.

A component of the Labs' expanding education effort is a new School Partnership pilot program coordinated by Ken Eckelmeyer. Ken has set up teams of Sandia volunteers who are working with teachers and administrators of Highland High School, Hayes Middle School, and La Mesa Elementary School to determine what helpful projects Sandians can accomplish in the schools.

"The feedback we're getting from teachers is that the kids are responding to our teams with great excitement."

"We're not trying to dictate anything to the schools," Ken emphasizes. "We want to help Sandians do things in schools to get kids excited about science and math. Our high school team

(Continued on Page Six)



FIFTH GRADERS at Chaparral Elementary School crowd around Phil Hargis (1128) to look through light-scattering devices that diffuse laser light (see "An Educational Show of Colors" on page six). Don't look now, Phil, but there seems to be another interested observer in the back of the room — and we think his name is Einstein . . . .

View From the Top

"Sandia has a strong commitment to improving math and science education, particularly in the important elementary and middle-school years," notes President Al Narath. "In general, our initiative does not require a large commitment of funds but relies on laboratory wherewithal and a substantial volunteer effort, the spirit of which is already surfacing throughout our Laboratory."

LAB NEWS

VOL. 42, NO. 3 SANDIA NATIONAL LABORATORIES FEBRUARY 9, 1990

Sandians Respond Quickly and Thoroughly To Make Labs Safer, Cleaner, Healthier

Phase one of Sandia's Environmental, Safety, and Health (ES&H) Compliance Initiative that began in October has been completed successfully. Initiated by top management as part of a "get-on-with-it" effort to make the Labs a safer, healthier, and cleaner place to work, it touched virtually every part of the Labs at all locations. It required — and received — support throughout Sandia.

"I appreciate the dedication and enthusiasm of all the participants in this critically important program," says President Al Narath. "I urge that all of you cooperate in making the next phase equally successful."

Phase two, which began with the new year, involves ongoing efforts to continue to correct findings identified during phase one and to reinforce new attitudes toward ES&H within the Labs. Through providing training and developing processes to keep the Labs in compliance, phase two will run through late spring. It will set the stage for Sandia's "do-it-right-the-first-time" approach to all future activities.

In phase one, Sandians combed the Laboratories, noting every missing exit sign, outdated appliance, and faulty electrical cord or plug they

(Continued on Page Eight)

STAN LOVE (3200A, left) and Nestor Ortiz (3200) use a map of Sandia facilities to track progress in resolving ES&H concerns.

New-Generation Quality Effort Is Paying Off: See Page Four

This & That

An Education About Education – Even a know-it-all editor can learn by reading LAB NEWS stories. The ones in this issue about the many ways that Sandia supports education – elementary school through post-graduate work – taught me a lot. Most of the programs rely on Sandians who generously volunteer their time. I think you'll find the stories "educational." Al Stotts (3163) did the writing.

* * *

The Battling Bunnies! – In the last issue, I asked for your unusual school mascots/nicknames. "Is this the wimpiest school name yet – the Benson Bunnies?" asks Karen Shane (3551). Karen says she, her husband John (5161), and Bill Kampfe (DMTS, 7535) were all Benson Bunnies at their Omaha, Nebr., high school.

Retiree Roscoe Champion submitted nicknames of two Colorado schools – the Rocky Ford Meloneers and the Brush Beet Diggers. Guess what they grow in those areas! Amazingly, there's another school that carries the Beet Digger nickname – Jordan High School in Sandy, Utah; Mark James (3533) says his wife graduated from there. An anonymous Sandian (embarrassed alumnus?) pointed out that University of California at Irvine teams are called Anteaters. That's nothing to be embarrassed about – seems that the Beet Diggers are the ones who should be "red-faced." No one enlightened me about the location of the Texas team that's tagged the "Fighting Sand Crabs." How 'bout it, Texans?

* * *

Quality Cultural Entertainment – Sandia employees and retirees who participated in the S^2A^2 performing arts sampler series last year had high praise for it when surveyed. "This is an excellent program," said one purchaser. "It helps support the arts, plus gives good variety, quality, and value. I'm ready to sign up again." That person and all other Albuquerque-area employees and retirees have a chance to do that now. See story at right about the 1990 series.

* * *

In The "Why Bother?" Category – Info from the New Mexico Taxation and Revenue Department: Beginning Jan. 1, 1990, the state withholding allowance increased from $1950 to $2000 to correspond with the exemption allowed on the state income tax return. The effect on the paycheck for a married person earning $20,000 a year, claiming two allowances and paid on a biweekly basis: The withholding amount in 1989 was $16.50; in 1990, the amount will be $16.30, giving that person a whopping 20 cents more take-home pay. Anyone wanna pool savings and buy some gum?

* * *

Other Small Differences – Mickey Shortencarier (9215) called our attention to this item in a recent issue of *Aviation Week & Space Technology*: "NASA may have unwittingly provided new ammunition to untold generations of environmental activists. The space agency calculated that Galileo's two flybys of Earth will slow the Earth's orbital velocity by 9.6 billionth-billionth of a mph. That would alter the Earth's position by 5.3 in. per billion years. NASA did not go on to estimate how much sooner the human race will perish when the Earth falls into the Sun."

* * *

Facing Retirement – From a recent issue of *Focus* newspaper (for Kirtland AFB personnel): "One of the base's most familiar faces retired recently after 35 years . . ." If I ever make it to retirement age, I hope Sandia lets all of me retire, especially that part that my boss is trying so hard to work off. •LP

S^2A^2 Begins Second Season

Enjoying the arts and supporting the arts are complementary goals of Sandians Supporting Albuquerque Arts (S^2A^2), the Sandia performing-arts sampler, now entering its second season.

Coordinated by Community Relations Div. 3163, S^2A^2 gives Sandians and their families an opportunity to sample Albuquerque performing arts at reduced prices.

A fifth event has been added to the series this year, but the cost of each membership — which includes one ticket per performance — has gone up by only $6, to $56.

A brochure with complete details and membership information will be mailed soon to active and retired Sandians. However, enrollment cards are available now from Division 3163 by calling 844-6909 or 844-2282. To kick off the season, a free noon concert by the New Mexico Symphony Orchestra's Brass Quintet will be held today in the Tech Transfer Center. Seating will be on a first-come basis.

Here's the 1990 S^2A^2 lineup:

- *Lola's Last Dance* and *You Say Chaquegue and I Say Shaquegue*; one-act bilingual plays at La Compañia de Teatro de Alburquerque; Saturday, March 10. *Lola's Last Dance* is the story of an aged dancer on her deathbed in her home near Old Town. She is visited by long-dead friends who come to witness her last dance and usher her into the unknown. *You Say Chaquegue and I Say Shaquegue* is based on traditional New Mexican *cuentos* (stories).
- *FENCES: The Legacy of an American Family*; New Mexico Repertory Theatre; Saturday, March 31. A Pulitzer Prize-winning drama, *FENCES* tells the story of talented Negro-league baseball player Troy Maxson, who was never permitted to compete in the then all-white major leagues. The play portrays his turbulent but loving relationship with his family.
- *Neal Stulberg and the New Mexico Symphony Orchestra* with guest pianist Ivan Moravec performing Haydn, Franck, Ravel, and Stravinsky; Saturday, April 7. Moravec is considered one of the century's great pianists. He was the piano soloist in Milos Forman's Academy Award-winning film *Amadeus*.
- *Chamber Orchestra of Albuquerque* with guest artist Lori Lovato on saxophone performing Bach, Glazunov, Handel, and a symphony by New Mexico composer John Donald Robb; Friday, May 4. Lovato is a founding member of the New Mexico Woodwind Quintet and a member of the Chamber Orchestra's clarinet section.
- *The Mikado*; Albuquerque Civic Light Opera Association; Saturday, June 23. This production of the popular Gilbert and Sullivan musical has a modern-day Japanese setting, but the same great music and hilariously twisted plot. •

LAB NEWS

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SANDIA NATIONAL LABORATORIES

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MORRIS TANENBAUM (center), Chief Financial Officer of AT&T and Vice Chairman of AT&T's Board; President Al Narath (left); and Executive VP Orval Jones review the agenda for Tanenbaum's recent visit to Sandia, during which he spent a day and a half learning more about the Labs. Because of a recent organizational change within AT&T, Narath now reports to Tanenbaum. During the visit, he was briefed on Sandia's programs in nuclear weapons, energy, arms control, several DOE-sponsored research areas, the "work for others" program, and education, personnel, and administration.

Begins Training in July

Former Sandian Chosen as One of 23 Space Shuttle Trainees

Former Sandian Ellen Ochoa is among 23 persons selected to enter astronaut training this year for the US space shuttle program.

Ellen worked at Sandia, Livermore, from October 1985 to July 1988 in Imaging Technology Div. 8435 and then joined NASA at its Ames Research Center in Sunnyvale. On Jan. 16, Ellen received the call from NASA telling her she is one of the 23 successful applicants — including five women — out of 2000 nationwide. With her engineering background — she has a PhD in electrical engineering from Stanford — she will become a mission specialist.

"I had updated my application each year but didn't know this was coming until I got the phone call."

"I originally applied for the program in 1985, right after graduate school. I made it to the interview stage by 1987 — that meant I was among the final 100 — but wasn't chosen at that time," Ellen said in a recent telephone interview with the LAB NEWS. "I had updated my application each year but didn't know this was coming until I got the phone call. It was so exciting! I spent all evening on the phone telling my relatives, including four brothers and sisters, and my friends."

News Clipping Reappeared

Ellen says a 1978 newspaper article about Sally Ride being named the first female astronaut must have made a strong impression on her — she recently found the article, which she had clipped and saved. "It was the first time that scientists and other civilians were given the opportunity to participate, and it planted the seed in my mind," Ellen says. Later she heard Ride speak at Lawrence Livermore Lab.

Ellen was recruited for Sandia by Dan Tichenor (8446) — she and Dan worked with the same thesis advisor, Prof. Joseph Goodman. "I could tell right away she was an outstanding candidate," Dan says. "She presented herself very well in the interview, received high praise from Prof. Goodman, and had a 4.0 GPA."

When Dan circulated Ellen's resume, Don Sweeney (8435) — who was heading a relatively new program in optical image processing — hired her almost immediately. "She was an exceptional performer, and we were pleased to have her with us for nearly three years," says Don, "but it's hard to hold someone who has her eye on becoming an astronaut. NASA had what she was looking for."

FORMER SANDIAN Ellen Ochoa fields questions during press conference at NASA/Ames Research Center after her selection as one of 23 persons to enter astronaut training this year. (Photo courtesy of San Jose *Mercury News*)

While at Sandia, Ellen worked on optical methods for image processing and pattern recognition. She received two patents, one in conjunction with Don and George Schils (8435), and the other with Don and a Purdue professor. Ellen also received a patent while a graduate student.

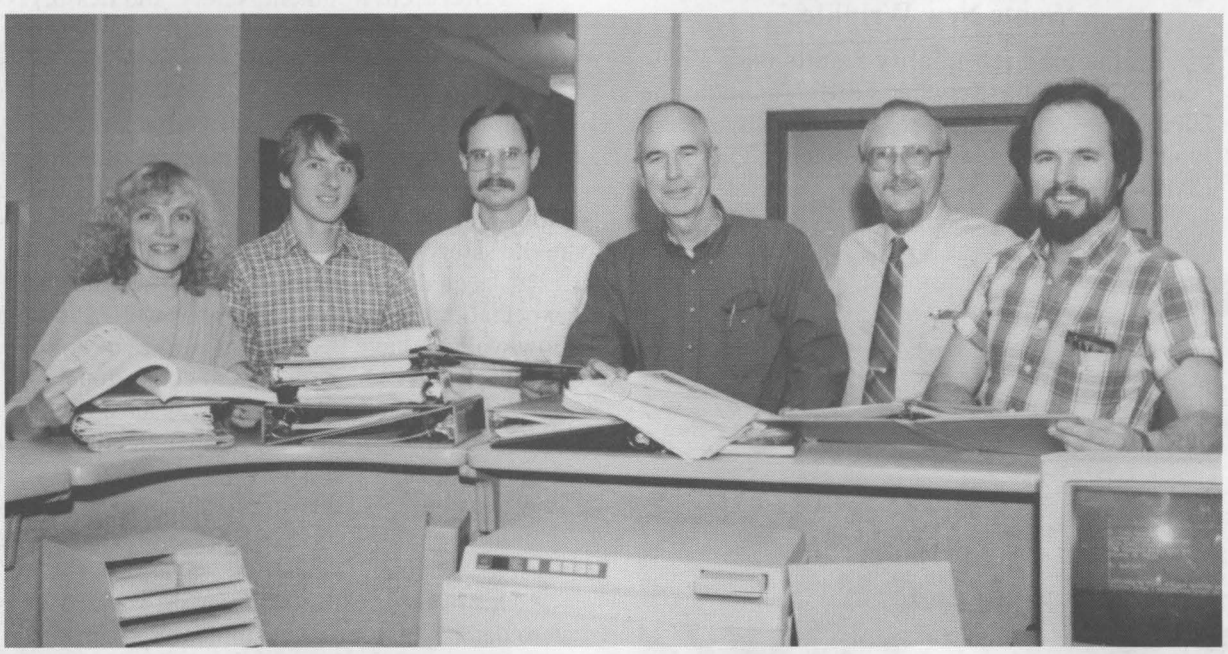
"It's hard to hold someone who has her eye on becoming an astronaut."

Outside of work, Ellen's interests range from music to flying. She played the flute in the Livermore-Amador Symphony for two seasons. While at Livermore, she took flying lessons from fellow Sandian Jake McMichael (8161), using a plane from the Flying Particles Club out of the Livermore airport. She says she hasn't had much time to fly since going to Ames, but has managed a few flights.

Ellen joined Ames as a photonic-processing group leader and is now chief of Intelligent Systems Technology Branch. She will transfer to the Johnson Space Center at Houston in July and begin a three-year training stint leading toward a shuttle assignment.

By the mid-1990s, Sandia employees should be able to watch a space-shuttle launch and say, "There goes someone I know!" •BLS

SANDIA LIVERMORE NEWS



ANNUAL OPSEC (Operations Security) assessment for Sandia, Livermore, was successfully completed in December. The OPSEC working group, shown with some of the documents it examined, is (from left) program manager Sherry Angelini (8531), Rob Barlow (8351), chairman Gary Richter (8172), Frank Cupps (8235), Barry Schrader (8522), and Fred Hansen (8431). The purpose of the assessment was to identify any potential leaks of classified or sensitive unclassified information. The committee submitted its final report in January to the OPSEC policy group, composed of department-level representatives from each directorate.

Congratulations

Terry and Mark (8165) Higuera, a daughter, Hannah Renee, Oct. 20

Fun and Games

For the second consecutive year, Todd Howe (contractor in 8286) has earned the Golfer of the Year award from the Sandia Employees Golf Club by accumulating the most points of any player during 1989. He was awarded an individual trophy and a $50 prize, and his name was engraved on the club's perpetual trophy.

A Stiff Sentence?

Californian Robert Hanshew was stopped dead in his tracks recently by the state's highway patrol. He had been driving in one of California's "car pool" lanes — a special lane, invariably faster than the others, which drivers can use only if they have at least two passengers.

Hanshew, 35, who transports cadavers for a mortuary, told the officer that he had four frozen corpses in the back of his van, and that qualified him to drive in the lane. No, the judge didn't buy it either. Hanshew was fined $58.

New Scientist

'This Is Not Your Father's Oldsmobile'

Org. 2000 Spearheads 'New-Generation' Quality Effort

Sandia's increasing emphasis on quality management is already paying dividends.

Last September, Semiconductor Components Directorate 2100, headed by Harry Saxton, received a highly complimentary report when DOE/AL's Weapons Quality Division surveyed 2100's quality program. (See "Semiconductor Components 2100" sidebar.)

"Those results were no accident," observes Glen Cheney, VP Component Development 2000 and the Labs' resident "quality guru." "The 2100 organization has been heavily involved in an effort to build a strong quality management program for more than three years." And Glen and his entire 2000 organization began a quality initiative with a new set of objectives a year ago — an initiative that's likely to serve, in many respects, as a model for the Labs-wide Quality Action Plan set in motion last fall.

Quality: What Does It Mean — And Why the Big Push?

"Quality" is one of the main buzzwords around the Labs today. But what does it really mean, and why the big emphasis now? Does it mean that Sandia has been designing and developing second-rate products?

"Certainly not," says Glen Cheney, VP Component Development 2000. "Sandia has long enjoyed an outstanding reputation for fine engineering and development work. The reliability of our products — especially in weapon systems — is nearly legendary.

"Reliable products will always be our number one priority, but that by itself isn't enough today. Tight budgets and new programs that demand attention — the ES&H program, for example — require that we design and develop our products more efficiently than ever before.

"We have a strong tradition of getting the job done. Our 'can-do' attitude has served us well, but we now need to amend it so we can *always* say 'can do — efficiently.' Performance, timeliness, and cost-effectiveness are the main elements. That's what the Labs-wide quality initiative is all about."

Something extraordinary is happening in US businesses, according to Glen. Last year, he says, Motorola asked its suppliers to go through the rigorous task of applying for the Baldrige Award — the nation's top prize for quality issued annually by the US Commerce Department. Motorola knows what it takes to win the award, since it was one of the first recipients in 1988.

So, the thinking went, what better way to upgrade its suppliers' products than to focus on the question of quality? Suppliers that went along with the program could count on continued business; suppliers that did not were told to expect no more of Motorola's business.

And, Glen adds, General Motors recently sent a message to one of its suppliers. Gist of the message: "The products you send us are zero-defect. However, you scrap material along the way that doesn't meet quality standards. That costs money. If you can't reduce the amount of waste, we can't do business with you."

'The Rallying Cry'

"Quality is capturing the attention of corporate leaders and of the US government," Glen says. "It's become the rallying cry behind American business's attempt to revitalize US international competitiveness. There's a groundswell of interest in the subject — and it's clearly recognized here at Sandia that we can't be separate from the rest of the world, especially in terms of expected high standards."

That's the reason behind the quality initiative begun by Glen and his organization. Basic to the initiative is the establishment of a value system, for both individuals and organizations in 2000, that's keyed on the ultimate value: total satisfaction on the part of 2000's customers.

"That's the real test," says Glen. "High quality doesn't mean 'goodness.' It means conformance to customer requirements — in performance, cost, and timeliness — in a congruent manner. It doesn't mean barely meeting those requirements; it means consistently meeting and *exceeding* those requirements in such a way that the customer is not merely satisfied, but is delighted in every sense of the word.

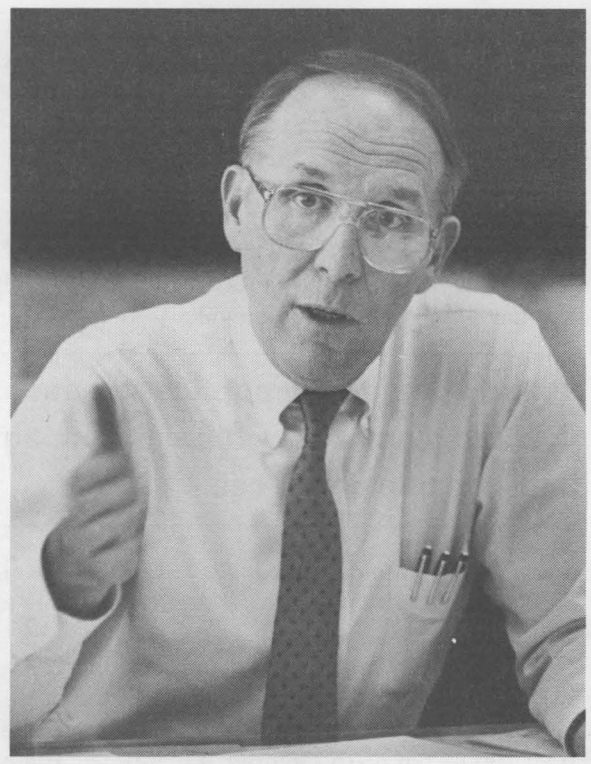
"Note that the performance, cost, and timeliness requirements must be congruent; no one of them should be emphasized more, to the detriment of another. For instance, if you focus on outstanding performance and delivering when you said you would, but the final product or service costs more than originally agreed on, you don't have a high-quality end result."

Many projects that fail, Glen points out, have one thing in common: Customer requirements weren't firmly established at the beginning. "And once you disappoint a customer," he says, "you may not have a second chance to prove yourself. That goes for Sandia in general; if we disappoint our customers, they're likely to look elsewhere for the results they expect. And — make no mistake about it — other organizations out there would love to have the opportunity to take on some of our work!"

'Some New Wrinkles'

Producing high-quality results isn't a new concept at Sandia. So what's different about the 2000 initiative, and the Labs-wide Quality Action Plan? (See "INTEC Courses Focus on Quality," LAB NEWS, Aug. 25, 1989.)

"A recent TV commercial gets the idea across," Glen says. "It says something like, 'This is not your father's Oldsmobile; this is a new generation.' There's no question that quality has had a lot of attention at the Labs for more than 40 years; only now, there are some new wrinkles.



GLEN CHENEY (2000): "Make no mistake about it — other organizations out there would love to have the opportunity to take on some of our work!"

"We're not talking about inspection — or fault-finding — or focusing blame in situations that might have been handled better in the past. Rather, we're talking a whole different concept: customer focus. Customers are notoriously fickle,

"[The question] will be 'How much have you improved lately — and how did you measure your improvement?' "

and I don't mean that in any detrimental sense. Customers won't accept old quality standards; they change their minds a lot. They move with the times — and we must, too.

"For instance, the DoD isn't asking for the same kind of weapon systems that it asked for 20 or 30 years ago. And equipment we produce these days must, in many instances, be as easy to use as an automated teller machine.

"ES&H [environment, safety, and health] issues are another beautiful for-instance," Glen continues. "A very important customer, DOE, is now saying, 'I still want your good R&D work, but I want other outcomes as well — such as guarantees that this process or program [and the end results] will produce no additional threats to the environment or will pose no unwarranted threats to the safety or health of the people involved.'

"As quality expectations in this country rise, expectations of Sandia will rise as well. Showing how well we have been doing won't cut it alone, because we will be expected to continuously improve. The question won't be, 'How have you been doing?' Rather, it will be, 'How much have you improved lately — and how did you measure your improvement?' Quality improvement is a process that never ends, because it is tied ultimately to the elusive customer's needs and wants."

One of Org. 2000's major quality objectives is zero defects in terms of customer requirements — a big order. Frame of mind has much to do with it, according to Glen: "One person sees a defect and thinks, 'That's normal — par for the course — so it won't make much difference.' But another sees a defect and says, 'Holy smoke! Something's got to

(Continued on Next Page)

SEMICONDUCTOR COMPONENTS DIRECTORATE 2100 conducts a quality training program for all members of the organization. Courses are taught by department managers in 2100. Here, during a "Quality Education System" class, instructor Jim Woodard (2140, standing) works with 2100 staff members (from left) Al Disch (2114), Ron Hospelhorn (2171), Dennis Kramer (2174), Jay Jakubczak (2173), and Jim Fleming (2131).

(Continued from Preceding Page)

be done to correct this!' If that last attitude were present 100 percent of the time, most quality problems would simply fade away."

As American industry continues to sharpen its quality focus, Glen notes, new measures of quality are on the rise. For instance, manufacturing quality metrics include scrap rates, rework rates, and destructive test rates. Reducing each creates a domino effect: As scrap rates decline, more and more of the product is made defect-free.

One of Org. 2000's major quality objectives is zero defects in terms of customer requirements.

As major scrap-causing defects decline, less severe defects also decline, thereby reducing rework. And as the producer's confidence in the product increases, the need for — and incidence of — destructive testing decreases.

Quantifying Progress

"In 2000, one of our initiatives involves establishing quality measurements on R&D," says Glen. "Once you apply strict measurements across the board, you're able to quantify your progress." Other 2000 initiatives, besides establishing a value system focused on customer total satisfaction, include:

- commitments by Glen and each of his directors to obtain formal education about quality and its management;
- establishment of criteria for quality training for people throughout 2000;
- meetings between 2000 top management and the top management of "2000-customer" VP organizations at Sandia. • PW

Semiconductor Components 2100 Comes Through With Flying Colors

Last September, when DOE/AL's Weapons Quality Division surveyed Semiconductor Components Directorate 2100's quality program, the survey team was highly complimentary. In fact, it reported "no findings that require reply."

Among the report findings about the 2100 program:

- strong evidence of management support and participation at all levels;
- a quality training program for all members of the directorate, with department managers teaching many of the courses;
- emphasis on the use of quality metrics to measure the progress of the program;
- significant effort in achieving and maintaining appropriate relations with suppliers, resulting in high-grade services with appropriate quality elements included;
- guidelines for evaluating purchased software and for ensuring adequacy of software developed in-house; and
- reliability studies establishing performance expectations for families of components, ensuring that individual components meet system requirements.

According to the report, "the survey team saw the 2100 quality program as a developing strategy that is being diligently pursued to bring it to maturity. . . . Experiments that are being conducted to explore the value of assimilating project quality plans into overall project plans have good likelihood of showing value."

Including quality elements in project plans, the team noted, gives those elements more visibility and a better likelihood of being observed.

SANDIA AWARDS FOR EXCELLENCE recently went to the team responsible for developing the "Design for Manufacturability" short course for Sandia designers and production-agency/DOE personnel. Recipients are (from left) Belinda Holley (3522), Nick Magnani (2520), and Jack Gallagher (2545). "Design for Manufacturability" was designed to support the Labs-wide quality initiative.

Reserved Copies at Atomic Museum

History of Sandia's First Decade Available Next Week

Sandia National Laboratories: The Postwar Decade, written by corporate historian Necah Furman (3141-2), was recently published by the University of New Mexico Press.

The $45 book — a history of Sandia during its formative years — is available for just $26, plus $2.50 for postage and handling, to Sandians and retirees who placed advance orders. To avoid paying the $2.50 charge, on-roll Albuquerque employees and Albuquerque-area retirees may pick up their copies at the National Atomic Museum (Wyoming Blvd., Kirtland AFB) next week (Feb. 12-16) between 9 a.m. and 2:30 p.m. each day.

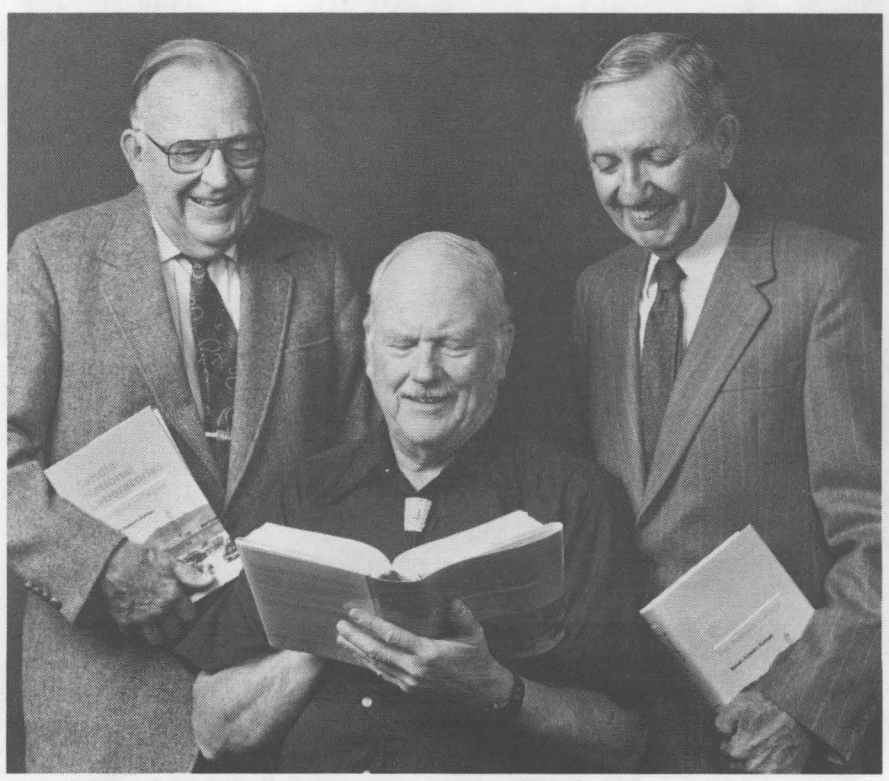
Necah will be at the Museum for a book-signing between 4 and 6 p.m. on Friday, Feb. 16. Also at the book signing, which is sponsored by UNM Press and the Museum, will be some of the Manhattan Project pioneers (see photo) whose activities are detailed in the book.

At Sandia, Livermore, book distribution to on-roll Sandians is being handled by Public Relations people in Div. 8522, Bldg. 911. Retirees in the Livermore area can save the postage charge by picking up their copies from Jeff Manchester (8526) in Bldg. 911 (also Feb. 12-16).

Money orders or checks for $26, payable to Sandia National Laboratories, will be accepted at distribution sites. Cash will not be accepted in payment.

Those unable to pick up their reserved copies next week or who prefer to have the book mailed to their home addresses should send the order form they received earlier and a check for $28.50 to Archives and Records Management Sec. 3141-2, Attn: Sandia History, Sandia National Laboratories, P.O. Box 5800, Albuquerque, NM 87185.

If you didn't reserve a copy of the history in advance, but would like to purchase one, some 500 additional copies are available (at the discount price of $26) to employees and retirees on a first-come basis; call Tonimarie Stronach (3141-2) on 846-9618 to place your order. •



MANHATTAN PROJECT PIONEERS (from left) Bob Henderson (ret. Executive VP, Weapon Development); Glenn Fowler (ret. VP, Systems); and Leon Smith (ret. Director, Monitoring Systems) share a humorous memory as they peruse *Sandia National Laboratories: The Postwar Decade*. Bob, Glenn, and Leon have been members of Sandia's History Review Board since it was established in 1987, and all three were primary information sources for the book.

(Continued from Page One)

Education Outreach

coordinator is Eldon Boes [6221]; I'm coordinating the middle-school team, and the elementary-school team is coordinated by Gary Shepherd [DMTS, 2613]."

Ken says the elementary-school team has been particularly active so far, developing module presentations on the concepts of hot and cold, physical and chemical changes, and others. All school presentations will be packaged so they can be used by other teams in additional schools.

"The feedback we're getting from teachers is that the kids are responding to our teams with great excitement," Ken says. "We've been told that kids in middle-school and elementary classes who normally are nonparticipants or negative participants have been very positive in these activities. What we're doing is highly interactive with kids and in collaboration with teachers."

A New Resource Data Base

A data base of Sandians interested in education outreach activities of all kinds is being developed by Ken and Community Relations Div. 3163.

"If you already conduct school-based presentations or activities or if you are interested in becoming involved, call Community Relations on 4-6909, and a questionnaire will be mailed to you so you can become part of that data base," Ken says.

"What we're doing is highly interactive with kids and in collaboration with teachers."

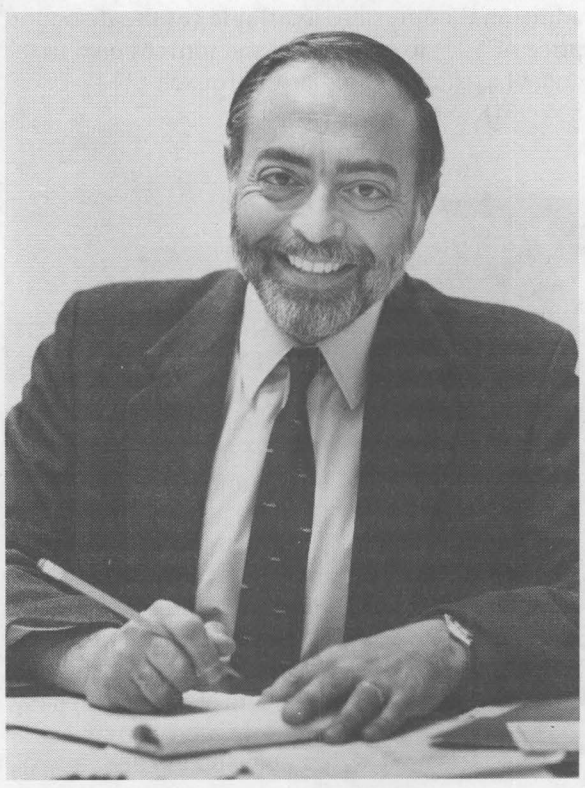
Mike Wartell sees Sandia becoming involved in a variety of programs that also would have impact on state and national education efforts.

"Almost from the beginning of its 40-year history," Mike says, "Sandia has been involved in a broad range of educationally related endeavors. Those programs included recruiting talented individuals from among students and faculties of universities, providing continuing education for employees, and contracting with universities to accomplish educationally related research projects. Additionally, there has always been a belief in and practice of volunteerism where educational institutions are involved. These include guest lecturing, technical demonstrations, science fair sponsorship, and tutoring."

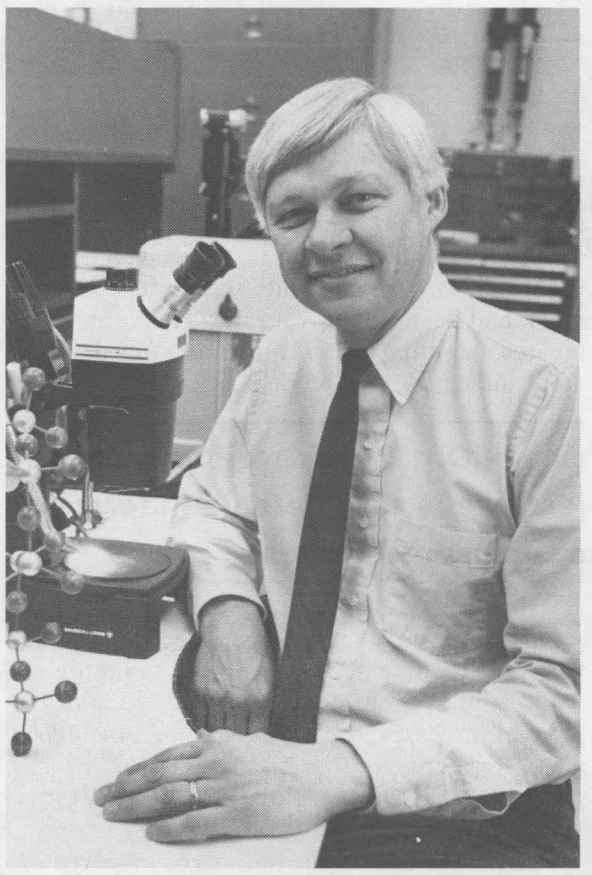
Two such programs operated by the Community Relations Division — the Speakers Bureau and Volunteers in Action — have, over the years, channeled large numbers of Sandians into the schools.

In FY89, the Speakers Bureau placed Sandians whose audiences included more than 3000 mid- and high-school students (see "An Educational Show of Colors"). For example, earlier this fall Paul Yourick (3428-3) used his expertise in packaging delicate equipment to help Taylor Middle School students with a special math/science project for which they built straight-pin and soda-straw constructions to cushion the fall of raw eggs.

Maureen Baca (3510) says the Department of Energy is eager for Sandia to become a DOE Science Education Center, joining six other national labs that currently receive funding for special programs through the Office of Energy Research. She says two other DOE-funded education proposals are currently pending. One would team Sandia and Los Alamos National Laboratory with the New Mexico Minority Engineering Student Association in providing summer jobs for mid-school teachers from rural areas of the state. The other would create Hispanic and American Indian Technical Education Centers. •AStotts(3163)



MIKE WARTELL (9001), chair of the Education Outreach Steering Committee: "Almost from the beginning of its 40-year history, Sandia has been involved in a broad range of educationally related endeavors."



KEN ECKELMEYER (30): "We want to help Sandians do things in schools to get kids excited about science and math."

Sandians Lighting Up the Classroom

An Educational Show of Colors

When Phil Hargis (1128) was in fifth grade, lasers didn't exist, he tells a class of fifth graders at Chaparral Elementary School on Albuquerque's West Side (see photo on page one.)

Lasers, he goes on, are now in use everywhere, even in items the fifth graders are familiar with, like compact disc players and grocery store check-out counters. Soon they'll be in use in television sets, he says. The students are excited and responsive to Phil and his presentation on "Light, Colors, and Lasers," which was arranged through the Speakers Bureau in Community Relations Div. 3163.

Teachers Deborah Johns and Chris Davis have prepared their students in advance of Phil's demonstration, piquing their interest with a look at a small laser and assigning research papers on lasers. So when Phil arrives, the students know about a variety of laser applications. One boy volunteers his new knowledge of the origin of the word laser. "It stands for light amplification by stimulated emission of radiation," he says proudly.

'Excitement in Science'

"I'm impressed with what you already know about lasers," Phil tells the class. "There's excitement in science. We know a lot about lasers right now, but people are learning more all the time. Our knowledge is always expanding."

To the classroom, Phil has brought a tunable helium-neon laser; an everyday reading lamp; a diffraction grating to display the color spectrum of a light source; flashlights with blue, red, and green lenses; and objects such as a glass tube and a razor blade.

Focusing the reading lamp light through the diffraction grating and onto a screen on the blackboard, Phil shows the students how the instrument breaks white light from the tungsten bulb into its colors. The kids literally "oooh" and "aaah" as the thin line of purple, blue, green, yellow, and red appears on the screen. Then, using the flashlights with blue, red, and green colored filters, he demonstrates that overlapping the colors creates white light.

The laser is an instant hit with the students. They are impressed by the intense red dot it beams onto the screen. Phil asks what colors will be displayed when he runs the laser light through the diffraction grating. The students call out their guesses. Several correctly predict that the red beam will not contain a color spectrum. The laser light is pure.

Then Phil places a pinhole in front of the beam. It enlarges the red laser dot on the screen. An even smaller pinhole creates a larger dot surrounded by concentric circles. He wows his audience with a mini laser light show as he places a glass tube and the edge of a razor blade in front of the beam. To the delight of the kids, spectacular shapes appear on the screen.

There are more questions. Do lasers melt things? Yes, Phil says, there's a carbon dioxide laser used in welding. It can melt metal to weld metal parts together. Are there medical uses of lasers? Phil says he is particularly interested in that application. Cutting and repairing retinas is done routinely with lasers. Experiments are also being conducted with lasers to explode gallstones and for bloodless surgical incisions in organs such as the liver.

Finished with the demonstration, Phil tells the students they can gather around and examine the instruments. They surround the physicist as if he were a rock star or a sports hero. Phil and his laser demonstration have made a lasting impression on these young minds.

(Sandia's Speakers Bureau has been operated by Public Relations Dept. 3160 for almost 30 years. It schedules about 100 talks a year to various audiences — schools, civic clubs, professional organizations, and social groups — that are interested in learning more about the Labs and its programs. The Speakers Bureau also provides speakers on general scientific and engineering subjects, including solar energy, robotics, radioactive waste management, career development, and more. Call Community Relations Div. 3163 on 4-6909 if you would like to sign up or to get more information.)

Science and Technology Alliance

Impacting Education From New Mexico's Plains To the Classrooms of Puerto Rico

Four years ago, when New Mexico Highlands University projected an enrollment for its planned electronics and computer engineering programs, school officials expected about 40 students. To the delight of curriculum planners, almost 100 students have declared those disciplines as majors.

"A large part of the success in attracting this many students to a new program is the quality that we have imposed," says Highlands President Gilbert Sanchez. "We have been successful in implementing a high-quality program in a relatively short period of time primarily because of the Science and Technology Alliance."

Funded by DOE's Office of Energy Research, the Alliance includes Sandia (as lead lab), Oak Ridge National Lab, and Los Alamos National Lab. It was formed in 1987.

Involves Three Institutions

Institutions that benefit from the Alliance are Highlands, North Carolina A&T State University, and the Ana G. Mendez Educational Foundation of Puerto Rico.

In Puerto Rico, Sandia — in cooperation with the Mendez Educational Foundation — is helping to establish bachelor of science programs in mechanical and manufacturing engineering at the University of Turabo. John Otts (400), on loan to the school for two years, has been designated Dean of Engineering.

"We're on a tight schedule for initiation of the program in August of this year," John says. "It's a five-year, 150-credit-hour program. Eventually, the program will have up to 500 students and 20 faculty members."

John says a three-year, pre-college project that will feed students to his university programs has been started by the Foundation with 180 high-school students. They go to school all day on Saturdays and six weeks in the summer and will take more than 100 hours of course work in calculus, pre-engineering, physics, chemistry, and computer science. Two other Sandians, Nestor Ortiz (3200) and Tito Bonano (6416), will lecture in that program later this month.

A majority of students at Alliance schools are minorities. New Mexico Highlands, for instance, is 75 percent Hispanic and four percent Native American. North Carolina A&T is a historically black university. The Mendez Foundation is a private organization that serves Turabo and two other Puerto Rican universities.

Ralph Bonner (3500) says the alliance will help increase the supply of scientists and engineers. "We're in a formative stage, but clearly we're trying to do things that impact institutions and that improve their capabilities," he says.

Ken Holley (3511), Sandia coordinator of the Alliance, says Sandia and the other national labs are helping to develop a technical capability that didn't exist at these institutions.

"We want to increase the number of minorities in science and engineering by investing in the capability of Alliance schools to produce good students," Ken says. "Our goal at NMHU, for instance, is to get Accrediting Board for Engineering Technology approval for the engineering technology program. It has a review coming up and could get accredited in 1991."

Two Sandians at Highlands

Sandia has loaned John O'Hare (7532) and Elmer Collins (410) to Highlands for a year as full-time faculty in the engineering technology program. They assist in curriculum development, laboratory design, and integration of a loaned computer system into existing laboratory programs at the university.

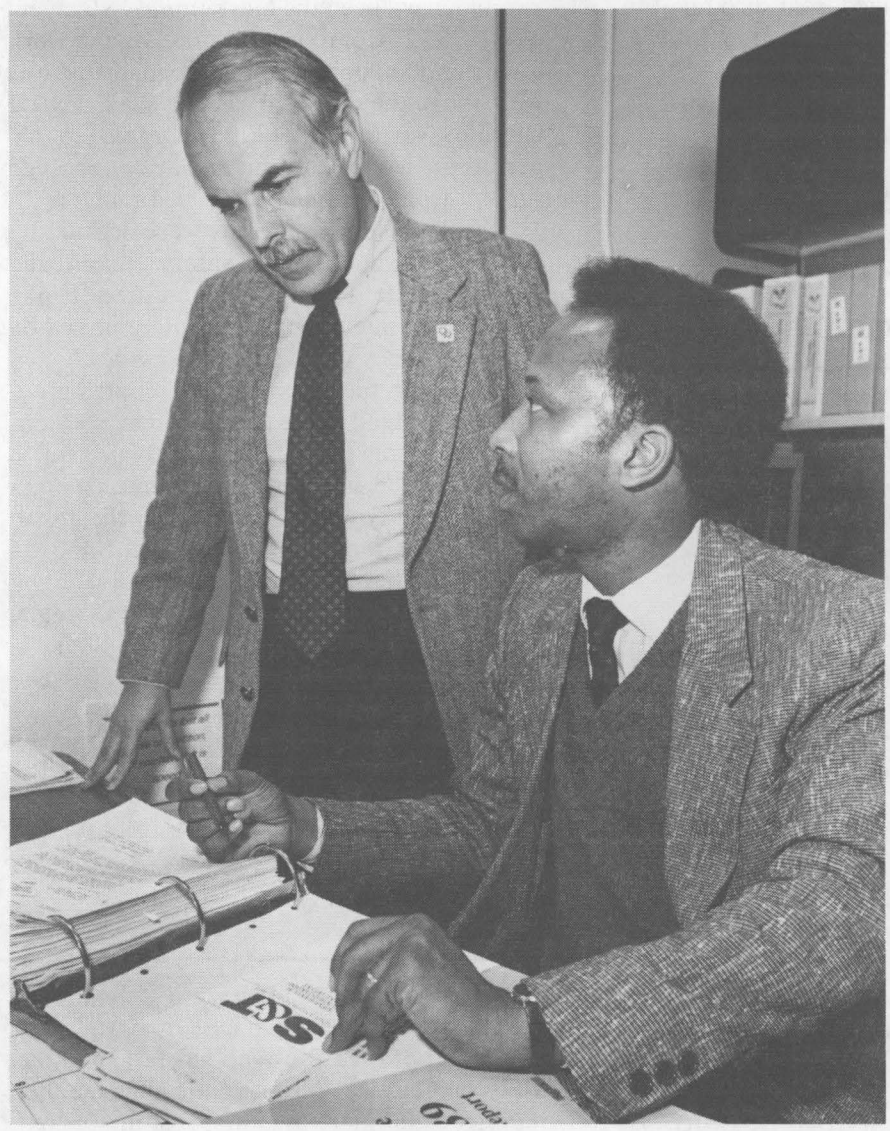
With the assistance of Sandia, Highlands received a Hewlett-Packard grant for an HP-1000 computer and a data-acquisition system. Sandia, Los Alamos, and Oak Ridge also are collaborating to develop a technical library at Highlands to support the engineering technology program.

Last year, six Highlands students and one faculty member worked in technical projects at Sandia in the Summer Research Program. Ken says a goal of the summer research collaboration between labs and universities is eventually to produce significant research capabilities at Alliance universities.

Students majoring in science, engineering, or technology fields are chosen for the summer program. At the labs they learn practical applications of theories they have been taught in the classroom.

"Students are assigned to mentors," Ken says. "One is the technical person they are assigned to at the job site. The other is a mentor who works to make sure students are adapting to the situation personally as well as professionally."

The summer programs also offer technical writing courses, special events and speakers, and tours of the laboratories. •



KEN HOLLEY (3511, seated on right) discusses the Science and Technology Alliance with Ed Aebischer, manager of graduate and outreach programs at Oak Ridge National Laboratory. Ken coordinates Sandia's participation in the Alliance.

An Educational Outreach Program Roster

The current list of formal Sandia educational programs that support pre-college, college, and post-baccalaureate students and teachers includes:

•Hands On/Minds On, an initiative of the Black Outreach Committee and supported by Sandia, annually serves 80 black middle-school students;

•Summer Science Program, annually provides 100 high-school students with four weeks of half-day classes in science and engineering;

•Albuquerque Public Schools Gifted Program, provides summer employment at Sandia for five gifted high-school students;

•DOE Teacher Research Associates Program, provides summer employment for five science teachers;

•Science Teacher Enrichment Program, brings 14 science teachers a year to Sandia for continuing science education;

•Historically Black Colleges and Universities Program, provides employment and extended science education for 17 students and faculty members at historically black institutions;

•Science and Technology Alliance (see "Impacting Education From New Mexico's Plains to the Classrooms of Puerto Rico") links Sandia and two other national labs with three minority higher-education institutions;

•School Partnerships (see main story), provides hands-on science experiences for elementary- mid-, and high-school students in Albuquerque;

•Minority Engineering Program, just initiated by UNM with funding from Sandia, and designed to provide special pre-college engineering programs for Hispanic and Native American students; and

•Summer Employment for New Mexico Minority Youth, also a new program, provides summer jobs for at least 25 students (high-school juniors through college sophomores) who have strong interest and coursework backgrounds in math and science.

(Continued from Page One)

ES&H Cleanup

could find. They found potential hazards numbering in the thousands. These ranged from such relatively minor threats as loose electrical plugs and clutter atop filing cabinets to potentially more serious problems involving abandoned chemicals and lack of safety procedures.

The inspections were carried out by some 50 teams, with more than 400 total team members.

Phase two will set the stage for a "do-it-right-the-first-time" approach.

These employees were trained and then began a thorough ES&H appraisal of facilities in Albuquerque, Livermore, Tonopah, Pantex, and Kauai. By year's end, the teams had reported more than 35,000 "findings."

Most Findings Minor

Most were minor electrical or housekeeping items, quickly remedied. Others will require longer-term efforts. All were recorded, evaluated, prioritized, and referred to line organization, ES&H, or Facilities Directorate employees for fixes.

"The repair and general housekeeping process began as soon as findings started coming in," explains Stan Love (3200A). Stan coordinates the massive effort from Albuquerque, reporting directly to Nestor Ortiz, Director of

Sandians combed the Labs, noting every missing exit sign, outdated appliance, and faulty electrical cord or plug.

ES&H 3200. "Fixing started slowly and picked up speed," says Stan. "Now more than 20,000 findings have been fixed. The top-priority findings, with potential for hazard to health or the environment, were taken care of first."

The brunt of the follow-up has fallen on the Facilities Directorate. However, the huge number of findings — far more than most estimators expected — has pushed the massive effort into a two-phase project.

But Dennis Roth (former VP 3000), now AT&T Sales Vice President for Federal Systems, Vienna, Va., sees this as a positive result: "The large number resulted from the fact that we wanted a detailed review. We wanted to err on the side of identification, when in doubt. We wanted this to be a thorough scrubbing."

"The success of this initiative is in the heightened awareness of all Sandia employees," agrees Bill Burnett, manager of Health and Safety Dept. 3210. "Nobody argues that safety isn't important. The question is, 'How important?' This effort raised the awareness of safety in the workplace to a higher level."

Culture Is Changing

The key objective of the ongoing initiative, of course, is to find and fix problems promptly. But an objective of even greater importance in the long run, according to Executive VP Orval Jones (20), was to shift Sandia culture to drive home the message that if things are done right the first time, the expense and inconvenience of repair can be avoided. Line organizations are now placing a higher emphasis on ES&H activities, he says, and must now begin to think of these issues in terms of quality assessment: "Clearly, we want to get into the mode of action of doing things right the first time."

"We wanted this to be a thorough scrubbing."

Examples of this new mode of action are already appearing.

When Fred Perea and Robert Kaneshiro (both 7818) recently encountered a small oil spill in Area V, they immediately alerted the Labs' spill-response team. Although such spills might have been ignored in the past, no more. A team quickly responded, cleaning up the oil and contaminated soil. Bob Peurifoy (VP 7000) praised Fred and Robert's "environmental awareness and timely reporting."

An important long-term approach to doing things right the first time is now developing in the Facilities Directorate, where Mike DeWitte (7850 manager) is now also acting supervisor for a new division (7853). "The Facilities Directorate is intimately involved with almost all aspects of ES&H,"

(Continued on Next Page)

TAKING CARE of one of 35,000 findings — most minor — listed by inspection teams during phase one of Sandia's ES&H Compliance Initiative, Ron Young (7813, left) and Doug Wilfon (7813, center) replace a metal electrical-outlet box with a new nonmetallic one and make other electrical repairs. Jim Smith (7823, right) coordinates ES&H compliance activities for Facilities 7800.

'A Challenge, Not a Burden'

'Supporting Cast' Undergirded Effort

Though the positive response from Sandians may have been the most impressive aspect of the ES&H Compliance Initiative, the work by the cast supporting the 50-team effort was well above the daily call of duty, says ES&H Director Nestor Ortiz (3200). Organized in a period of two weeks, the initiative received support from new and established sources.

As the inspection teams were organizing and training, the existing Safety, Health, and Environmental Advisory Committees began gearing up to lend assistance. Organized by vice-presidency and with a Labs-wide council for oversight, these committees scouted problems and helped solve them once inspections began, explains Dick Lynch, 6300 Director.

In addition, an *ad hoc* compliance committee met weekly to troubleshoot for the effort. Made up of representatives from Sandia's ES&H, Purchasing, Facilities, and Legal organizations, this committee also provided regular reports to President Narath and Small Staff.

In Purchasing, Lyle Whelchel (3710 manager) and his staff handled the initiative on a project basis, assigning Tommie Thompson (3718) to coordinate, track, and expedite needed purchases. Staff in Divisions 3722 and 3726, led by supervisors Skip Reader and Toby Tobyas, negotiated needed construction and asbestos-evaluation contracts.

In Technical Communications Development Div. 3151, Warren Klein set up a rapid-response team to provide training materials, viewgraphs, and other needed forms. Also coming for praise by Nestor were Dick Fairbanks and Mike Rex (both 3521) for their support of the inspection team training effort.

Facilities Directorate 7800 was faced with responsibility for correcting an estimated 18,000 of the total findings. "We're still working furiously," says Jim Smith (7823), who coordinates the effort. He estimates workers in his directorate are still completing findings at a rate of 120 per day. They've completed more than 9000 to date, with the work absorbing almost all of the directorate's maintenance employees and time-and-materials contractors.

Facilities also fielded 24 of the 50 inspection teams. This support of the initiative has been at the expense of regular program support, Jim explains, but adds that most Sandians have been understanding and cooperative.

"Our staff — including engineers, maintenance personnel, inspectors, contractors, and others — jumped into this with a lot of enthusiasm," says Mike DeWitte, manager of Department 7850. "They took it as a challenge, not as a burden. That's been the key to making this work."

(Continued from Preceding Page)

Mike explains. "The initiative made us realize it was time to set up a proactive group."

The new division will focus on ES&H concerns for all facilities activities and will coordinate with Nestor Ortiz's ES&H Directorate. "We'll offer expertise for other Facilities personnel and implement new ES&H policies as they are made," Mike says. To improve coordination between the two directorates, a safety engineer and industrial hygienist from the ES&H Directorate will be assigned for a significant part of their time to the new division.

Disposal Jumped Tenfold

Though the bulk of the findings addressed by the inspection teams were in the area of occupational safety, attention to environmental concerns also received a boost, reports Gordon Smith, supervisor of Environmental Protection Div. 3202: "We had a tenfold increase in the volume of waste for disposal. Many people decided they had excess hazardous materials." Gordon's staff and contractors worked overtime to catch up on the disposal requests.

At Livermore, 71 people were formed into nine teams, says Rick Wayne, Director of Compo-

Sandians now have consistent guidelines for safety and environmental compliance.

nents and System Research 8400. Each team concentrated on a thematic area, such as fire protection, hazardous waste, and others. The result: 4400 findings (included in the total of 35,000). More than 80 percent of these have now been fixed, Rick reports.

The marathon effort "has allowed Sandia to make a large jump" in improving its occupational safety posture and preparing for anticipated visits by DOE Tiger Teams (ES&H inspectors) later this year, says Medical Director Larry Clevenger (3300). "A challenge, at present, is to ensure that staff and supervision don't become complacent and perceive that the ES&H initiative has been completed."

To this end, phase two involves more than just completing remaining repairs. It's also an opportunity to improve practices and documentation and to address training issues.

"We're analyzing remaining findings to get a feeling for their nature and what it will take to fix them," says Stan Love. "We're also developing a training awareness package for employees."

The package will include a training manual and a video presentation. Each employee will receive information on what was found and fixed in his or her organization and learn about further areas of concern, Stan says. The intent is to stay in compliance and continue applying the lessons learned. Areas where better training is needed will also be addressed, he says.

Better Looking, Too

Not the least of the spin-offs from the initiative is the fact that the Labs look better, notes Stan. "We got a lot of unsightly areas cleaned up and removed an enormous number of unsafe appliances. More serious findings resulted in the shutdown of some operations until equipment or operations could be made safer."

In the case of two buildings — 845 and 888 in Albuquerque — hundreds of minor findings added up to decisions to stop operations until renovations could be done. The buildings house Sandia's plasma spray facility and lightning simulation facility, respectively. They are expected to be in operation again by the end of April.

Another spin-off is the fact that Sandians now have consistent guidelines for safety and environmental compliance. Questions about checking fire extinguishers, proper use of electrical cords, bolting down five-drawer file cabinets, and other details resulted in a number of carefully prepared interpretations — 125 in fact. "This activity made us sit down and think what the Labs' stance was going to be on these matters," Stan says.

"It provided the team members a real quick education in the scope of ES&H concerns and regulations," says Paul Yourick (3428), an inspection team leader. "There were things we did in day-to-day operations that we didn't give a thought to. But when we looked closely, we found they fell under a regulation."

"We're working very hard to make it a continuing system," says Lloyd Bonzon (2514), another team leader. "We need to make it a process instead of a one-time issue." Lloyd says cooperation among employees was a highlight of the effort. "A lot of people viewed this as an opportunity to get things fixed that they might not have done otherwise. They took positive advantage of it."

●WKeener(3161)

Joined DOE Inspectors in Kansas City

Last-Minute 'Tiger' Predicts Sandia Efforts Will Pay Off

How will Sandia fare when the DOE Tiger Teams inspect the Labs later this year? Marty Nee (7843) has some insight. Marty spent three grueling weeks near the end of last year as a member of the Tiger Team inspecting the Allied-Signal plant in Kansas City.

"I think the ES&H Compliance Initiative here at Sandia is a very positive thing that can only help," he says. "When the Tiger Team visits Sandia, I think the members will look at that effort and say that it was a noteworthy practice."

An idea of Secretary of Energy James Watkins, Tiger Teams — made up of environmental, health, and safety experts from various DOE groups and consultants throughout the US — began a program to thoroughly inspect each DOE facility last summer. Inspections at Mound, Pantex, Rocky Flats, and several other production facilities have already been completed. Inspections are planned for Sandia, Livermore, in April and for Albuquerque later in the year.

Marty was recently recognized for his work with the Kansas City team by Richard Grill, DOE's Office of Safety Compliance in Washington. In a letter to President Al Narath, Grill praised Marty, calling him a "complete professional and a credit to Sandia."

A veteran of 15 years as an electrical designer at the Labs, Marty got a call from DOE on a Thursday afternoon in November and was on a flight to Kansas City on Sunday.

The Tiger Team did a pre-assessment at Kansas City, he explains, and learned of potential electrical problems. Because an electrical expert is not normally a part of the team, DOE had to find one on short notice.

Since his return, Marty has briefed several managers in his line organization, including VP Bob Peurifoy (7000). He's scheduled to talk to some Sandia Safety, Health, and Environment Advisory Committees as well.

Among the advice Marty will share: be positive. Some people might tend to "clam up" during an inspection, but an open, cooperative attitude is better in the long run, he believes.

Take Note

Top Albuquerque 7th and 8th grade "Mathletes" will meet Feb. 24 from 9 a.m. to 2 p.m. at UNM's Mechanical Engineering Bldg. for the annual regional Mathcounts competition. The competition includes oral and written tests, with participants working individually and on teams. Admission is free, and the public is invited. For more information, contact Mathcounts coordinator Brian Burnett or publicity coordinator James Topmiller on 823-1000.

* * *

Sigma Gamma Rho Sorority, Inc., Eta Beta Sigma Graduate Chapter, is sponsoring a Health Fair at the John Marshall Multi-Service Center (1500 Walter SE) on Feb. 10 from 10 a.m. until 3 p.m. Community nurses, doctors, and medical technicians will answer questions and do cholesterol-level screening, blood pressure checks, weight and height measurements, and other health-problem screenings. Admission is free. For information, contact Marsha Dompreh on 275-0869.

* * *

Members of the Bear Canyon Senior Citizens Center (4645 Pitt NE) invite retirees to join them in a beginning-level Assembly Language computer programming course held Wednesdays at 10 a.m. Phase I classes started Feb. 7 and will continue for three months. Just show up for the class or contact Bill Chaney on 298-3300 for information.

Summer Housing Needed For Temporary Employees

Staff Recruiting and Employment Div. 3531 is seeking furnished housing/apartments/rooms for summer employees — college professors and students who will be arriving in May or June and leaving in August or early September.

If you have summer rental property, please call 844-4919 or 844-4636 no later than March 2.

Sandia Colloquia

Brigadier General R. Lajoie will discuss "Experiences with Monitoring the INF Treaty" on Friday, Feb. 16, at 9 a.m. in the Technology Transfer Center (Bldg. 825). For information, contact host Stan Fraley (9242) on 6-4464.

The Cultural Diversity Colloquia series presents Randy Snow, 1989 US Open Wheelchair Tennis Champion, on Tuesday, Feb. 20, from 10 to 11 a.m. in the Technology Transfer Center (Bldg. 825). His presentation is entitled "Overcoming Adversity." Randy is a world-class athlete in three sports. He has won the US Open Wheelchair tennis singles title seven times and the doubles title five times. He has also held national records in the 200- and 400-metre track events and was one of four athletes who broke the world record in the 4x400-metre relay.

Sandians Honored by American Ceramic Society

Brinker and Michalske Named Fellows

Two Sandia scientists, one who makes specialty glass out of chemicals and one who studies the physics of how glass breaks, have been named Fellows of the American Ceramic Society.

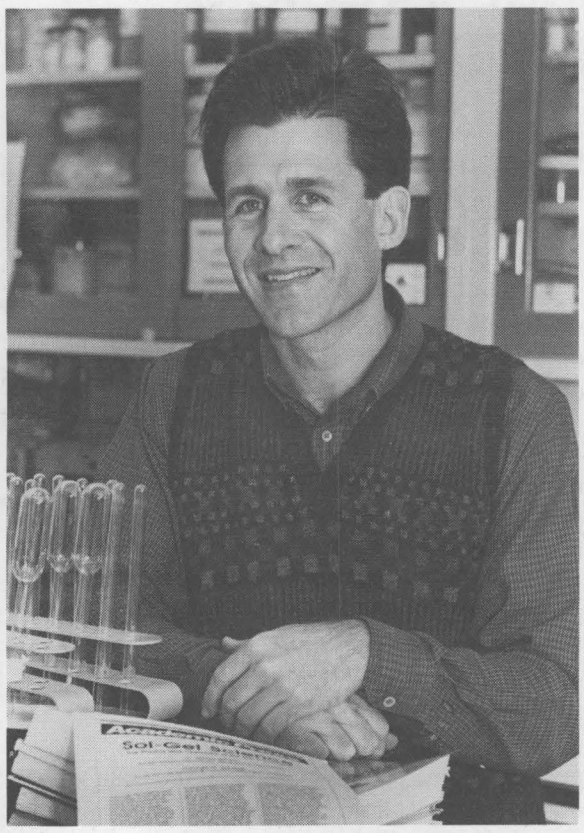
Jeff Brinker, Inorganic Materials Chemistry Div. 1846, is one of the leaders in the Labs' sol-gel research program, developing ceramics from chemical reagents. Terry Michalske, supervisor of Surface Science Div. 1134, has been developing models for the past 10 years that explain, at the atomic level, what happens when glass breaks.

Both Jeff and Terry will be formally inducted as Fellows at the society's annual meeting April 24 in Dallas. At the same time, Bob Eagan, Director of Materials and Process Sciences 1800 (also a Fellow) will take over as society president.

Jeff's Research

Jeff's specialty, "sol-gel," refers to a process in which glasses or ceramics are synthesized in a solution at room temperature by a polymerization process. The solution can be allowed to harden into a gelatin-like material to create ceramic objects or to be applied as a protective or antireflective coating to a variety of surfaces.

The sol-gel technique differs from traditional ceramics fabrication in that it involves mixing individual molecules within the solution rather than powders mined from the earth, Jeff notes. The process allows scientists to control the structure of ceramic materials at a molecular level so that they can be used to make sensitive films, for example, that detect specific atmospheric pollutants such as hydrocarbons, or optical films that increase the efficiency of solar energy components. The protective films can be used in the manufacture of microelectronics.



JEFF BRINKER (1846)

Achievement Draws Praise

"I'm delighted to see that more of our scientists have been recognized for their contributions to the field of ceramics. I view this as a further endorsement of the excellence of our ceramics program at Sandia."

— Bob Eagan, Director of Materials and Process Sciences 1800, President-elect of the American Ceramic Society

"Not only is Jeff a leader in our sol-gel program, but he's also recognized in the international community as performing state-of-the-art research in advancing sol-gel science and applications," says Dan Doughty, supervisor of Division 1846.

"The thing that's particularly noteworthy is the way he's developed successful collaborations over the years and has brought in people from very different fields to contribute and participate in the sol-gel research that's being done here."

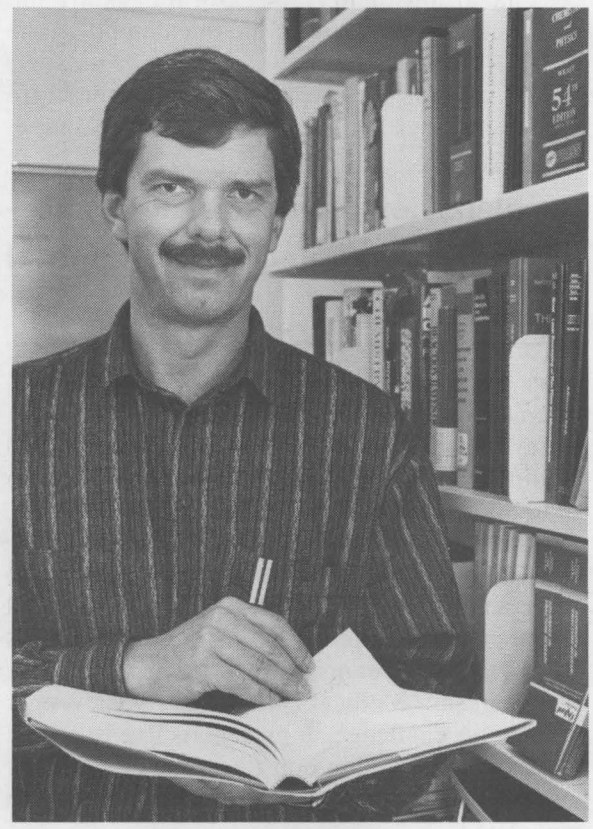
A Pennsylvania native, Jeff joined Sandia in 1979. He earned his PhD in ceramics from Rutgers University. He has received many awards, including the 1988 Zachariasen Award of the American Ceramic Society for the best contributions by a young scientist to glass science literature and DOE's 1986 Basic Energy Sciences Award for sustained outstanding research in metallurgy and ceramics.

He has written or co-authored more than 70 papers, and recently co-authored the first textbook ever written on sol-gel materials, a 900-page volume titled *Sol-Gel Science*, to be released in March by Academic Press. The co-author is George Scherer of DuPont.

Jeff teaches short courses on sol-gel materials for the Materials Research Society (MRS), the American Ceramic Society, and the American Chemical Society, and has helped organize four MRS symposia, including one for this year's meeting in April, with the theme "Better Ceramics Through Chemistry."

Terry's Research

Terry, who has been at Sandia since 1981, has spent the past 10 years developing mathematical and chemical models that describe what happens when glass fractures. His work has greatly increased the understanding of how water — even in the form of atmospheric moisture — and other chemicals accelerate breakage of glass and other brittle materials.



TERRY MICHALSKE (1134)

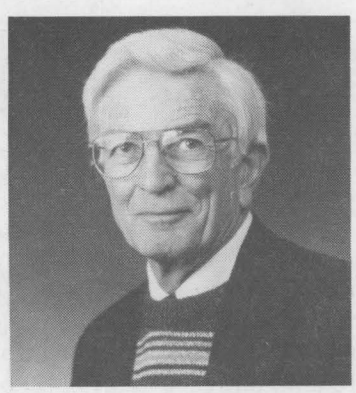
His models make it possible to study the silicon-oxygen-silicon bonds that form glass, to predict glass failure based on the rate at which cracks grow, and to devise methods of strengthening glass and retarding fracture growth, for example, by applying surface coatings that restrict the passage of water molecules.

The knowledge gained from his work is directly applicable to high-tech glass products, such as fiber-optic cables, ceramic bone replacements, and electronic components. In fact, AT&T is sponsoring a program at Sandia to develop ways to predict the useful life of fiber-optic cables as a result of the work of Terry and his colleagues.

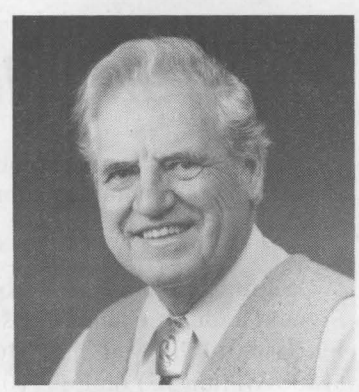
Terry's many awards include DOE's Materials Science Award in 1985, the American Ceramic Society's Ross Coffin Purdy Award in 1987, and the Woldemar A. Weyl International Glass Science Award last year. He has a PhD in ceramic science from Alfred University in New York, and has written more than 30 papers. He was the first Sandian and the third American to receive the Weyl Award, which recognizes young scientists for "ingenuity, initiative, and innovative thinking." To accept the award, he attended the 15th International Congress on Glass in the Soviet Union last July.

Other Sandians who are American Ceramic Society Fellows include Cecil Land (DMTS, 1163), Ronald Loehman (1840), and Gordon Pike (1815). •LD

Recent Retirees



Robert Blount (120) 39



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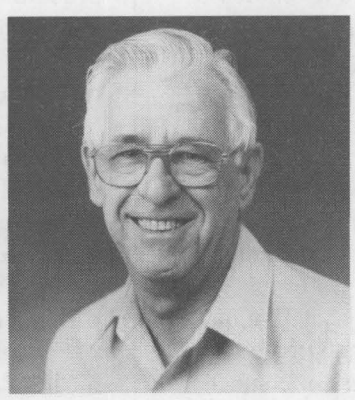
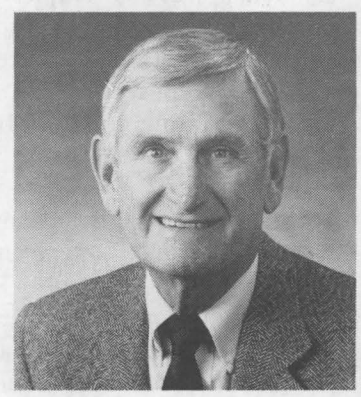
Carl Curtis (7525) 30



Duane Randall (9142) 32



John Hart (3720) 38

Better Air Campaign

'Don't Drive One in Five' Challenge

Sandia will be defending its "Don't Drive One In Five" title Feb. 12-16 when employees respond to the annual challenge from KAFB and DOE. The objective is to reduce the number of people driving to work. The winning group will be the one with the largest percentage of its work force participating.

About 24 percent of the Sandia work force caught a bus, took a hike, or hitched a ride to beat KAFB and DOE/AL employees in last year's Challenge Week, a part of Albuquerque's Better Air Campaign sponsored by Ridepool, Sun Tran, and the city's Environmental Health Department.

There will also be an internal competition among Sandia's vice-presidencies, with a plaque going to the vice-presidency with the best participation percentage. Last year's winner was Org. 4000, which included Orgs. 400 and 100.

To participate, employees must refrain from driving to work at least one day during the Challenge. Sandia's Commuter Assistance Coordinator, Linda Stefoin (3543), has information about Sun Tran and carpool/vanpool opportunities. Call her on 4-7433 for alternatives. "Sun Tran has six express buses serving Sandia, including one that originates in Rio Rancho," says Linda. "Call me, and I'll find a way to get you to work at least one day during Challenge Week."

Flyers containing information and participation coupons are being distributed to employees. Division secretaries will collect coupons from employees and contractors in their divisions by Feb. 16 so they can turn them in to directorate secretaries by Feb. 19.

Employees who already regularly ride the bus, bike, or walk, and all members of a carpool or vanpool, including drivers, may submit participation coupons. •JW

Take Note

Valley High School is planning a '50s reunion for the classes of '55, '56, '57, '58, and '59. For information and reunion dates, call Corky Comiskey at VHS on 345-9021.

Financial Seminars

Jack Graham and Jan Mansure, representing G&G Realty and Investment Co., will present "Tax-Saving Investment," a seminar on how the Revenue Reconciliation Act of 1989 affects investments, Monday, Feb. 12, 7-8 p.m., at the Coronado Club. Call 828-1100 for information.

Daisy Johnson and Mary Mahoney, representing the Financial Network Investment Corporation, will present "What is the Risk and How Do I Manage It?", the second in their three-program series, "Financial Puzzles," on Feb. 13 from 5-6 p.m. at the Coronado Club. Call 291-8585 for information.

UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS

Deadline: Friday noon before week of publication unless changed by holiday. Mail to Div. 3162.

Ad Rules

1. Limit 20 words, including last name and home phone.
2. Include organization and full name with each ad submission.
3. Submit each ad in writing. No phone-ins.
4. Use 8½ by 11-inch paper.
5. Use separate sheet for each ad category.
6. Type or print ads legibly; use only accepted abbreviations.
7. One ad per category per issue.
8. No more than two insertions of same "for sale" or "wanted" item.
9. No "For Rent" ads except for employees on temporary assignment.
10. No commercial ads.
11. For active and retired Sandians and DOE employees.
12. Housing listed for sale is available for occupancy without regard to race, creed, color, or national origin.

MISCELLANEOUS

PEAVEY AMPLIFIER, Backstage 30, $45; Hohner HG11 classical guitar, w/hard case, extras, $100. Letz, 293-4525 after 6.

THREE-TON JACK STAND, 1 pair, used once, 11" to 17-5/8" lifting range, $20. Lambert, 294-4188 leave message.

TRUNDLE BED, $85; dresser and mirror, $75; man's golf clubs, bag, cart, $75; woman's golf clubs, bag, cart, $65. Purcell, 296-4986.

PORTABLE FORCED-AIR HEATER, Centurion, kerosene, 75,000 Btu, on wheels, $150. Golightly, 293-5987.

QUEEN-SIZE SOFA BED, earth tones, $150 OBO. Brandt, 275-1059.

ANTIQUE OAK TWIN BED and dresser, $150. Kallio, 296-4516.

LAMPS, red velvet shades, wood trim, $30; hexagonal end/lamp table, walnut w/slate top, $40; woman's golf bag, $25. Davidson, 275-0098.

CHEST FREEZER, $150; studio knitting machine, $75. Ledbetter, 296-2138.

QUEEN-SIZE WATER BED, complete, w/6-drawer pedestal, headboard, $150. Lesperance, 839-4175.

REFRIGERATOR, 21 cu. ft., $135; keyboard synthesizer, $700; AM/FM record console, $300; Ford truck grille, $300; push-type lawn mower, $45. Gallegos, 294-0233.

JVC STEREO CASSETTE DECK, KD-UR5, auto reverse, Dolby B-C, $150; Mitsubishi linear-tracking turntable, LT-30DD, AKG stylus, $250 OBO. Moya, 897-2272.

EXERCISE BIKE, cycling & rowing action, new, $250; climbing machine, adjustable, $200; snow tires, 155/12 steel-belted radial, on 4-hole rims, $15. Lagasse, 293-0385.

DINING TABLE, 4 chairs w/casters, $200; 4 tires, on 14" Chev. rims, $40. Smith, 892-8633.

WOODEN-FRAME COUCH, 6 cushions, w/matching chair, $99 firm; 2 royal-blue satin formals, worn once, size 11; extra-full floor-length slip, size 12. Freshour, 256-9168.

SOLOFLEX, w/butterfly and leg attachments, $800. Roberts, 275-3699.

ROWING MACHINE, DP Bodytone 250, $45. DeReu, 275-2336.

BLANKET-STORAGE/HOPE CHEST, oak, new, custom-designed and crafted, 48"L x 21"H x 29"W. Carter, 275-8376.

WURLITZER CONSOLE PIANO, w/bench, cherry finish, 5 yrs. old, $1500. Elder, 298-5350.

CULLIGAN WATER SOFTENER SYSTEM, used 1 year, cost $900, sell for $250 OBO. Mooney, 281-2612.

PUNCHING BAG, 70-lb., MacGregor, w/gloves, $60. Oberkampf, 292-4366.

WOOD DINING TABLE and smaller table; 6-drawer chest, hutch; Mexican carved headboard, stand, lamp table. O'Keeffe, 843-7501.

OAK DINETTE SET: glass-top table, 4 upholstered chairs, $230; man's Raichle ski boots, size 9/10, $50. Johnson, 823-1689.

MOVING SALE: furniture, bicycles, suitcases, microwave, chandeliers, 3805 Camino Capistrano NE, Feb. 16-17, 8 a.m. Bonzon, 296-3022.

TRUNDLE BED, w/mattresses, white wood frame, $100; 6-drawer white dresser, w/mirror, 50" x 17" x 31", $100. West, 292-7091.

MOVING BOXES, 4 wardrobe-type, free. Hamilton, 294-5850.

NAGOYA VIOLIN, 1/4-size, w/bow & case, $150. Bauer, 266-8480.

DINETTE SET, wood and glass top, 4 chairs, $50. Holmes, 292-0898.

TELESCOPE PARTS: 12" F/1.4 primary mirror with 3" secondary in cast-aluminum tube, $250. Lynch, 292-8523.

BAND SAW, 12" throat, 3-wheel portable, built-in motor, $50. Coleman, 884-5009.

KODAK CAROUSEL SLIDE TRAYS, 80-slide capacity. Myers, 294-7316.

DINETTE SET, 4 chairs, $100; bathroom items: faucets, cultured marble, baseboard heater, hanging lights, $50. Draelos, 296-3078.

SLEEPER SOFA, full-size, $300. Langlois, 275-2108 or 293-3097.

DIAMOND RING, woman's wedding set, 1/3 carat diamond surrounded by 10 smaller diamonds, appraised at $1825, sell for $800. White, 275-7826.

AKC-REGISTERED COCKER SPANIELS: 17-week-old male, $125; 20-month-old female, $100; both have all shots. Gray, 281-4172.

LAPTOP PORTABLE COMPUTER, Zenith Supersport, 20-MB hard drive, built-in 2400-baud modem, battery pack, $2300. Caffey, 296-1942.

YAMAHA PORTABLE GENERATOR, 1200-watt, model EF1200. McMurtrey, 881-0390 evenings.

LIVING ROOM SET: sofa, chair, ottoman, coffee table, 2 end tables, sell all or part. French, 298-9292.

TRUCK CYLINDER HEADS, '73 Ford 390, $40/pr.; bucket seats from '74 Honda Civic, $20/pr. Zirzow, 281-9896.

TRANSPORTATION

'78 FORD PICKUP, step-side, 302, 4-spd., uses regular gas, $2500 OBO. Hogeland, 884-0290 after 6.

'88 NISSAN 200SX, 2-dr. hatchback, 5-spd., 4-cyl., AC, AM/FM stereo, red, $8300 OBO. Haines, 888-0257.

YAMAHA SCOOTER, Riva, 80cc, $400. Kallio, 296-4516.

'84 MAZDA RX7 GS, 5-spd., AC, stereo cassette, alloy wheels, one owner, 44K miles, $5700. Shirey, 298-6362.

'77 GMC 3/4-TON PICKUP, camper shell, 454, PS, PB, AC, cruise, trailer hitch receiver, $2950. Benson, 268-9727.

TWO GIRL'S BICYCLES, Schwinn, 10-spd., 24", metallic red and white, $40/ea. Davidson, 275-0098.

'87 CHEV. S-10 PICKUP, V-6, AC, PS, PB, AM/FM cassette, CB, 5-spd., long bed, baby blue, 31K miles, $6400. Hahn, 822-1341.

'88 KX80 BIG WHEEL DIRT BIKE, never raced, $1000 OBO; 14' all-wood boat, w/trailer, $250. Marquez, 836-5153.

GIRL'S BIKE, 20", pink, $35. Lesperance, 839-4175.

'72 VW BUG, 40K miles on rebuilt engine, $950 OBO. Kuzio, 281-4280.

'79 MOBILE TRAVELER MMH, 18.5', loaded, loan value $11,160, sell for $9600. Sharp, 243-1498.

'89 CHEV. PICKUP, 17K miles. Portman, 293-3524.

'86 IROC-Z28, blue, tinted windows, AC, AT, stereo cassette, PW, more, $8900. Moya, 897-2272.

'71 GREMLIN, 6-cyl., 3-spd., AM/FM cassette. Silva, 345-3807.

'77 MERCURY COUGAR, PS, PB, PW, PL, AM/FM stereo, $1400 OBO. Montoya, 242-6729.

'83 FORD ESCORT WAGON, AC, $1650 OBO. Prentice, 292-3670.

'72 OPEL GT, canary yellow, damage to left front, service manual, $700. Barnaby, 865-1348.

'73 CHRYSLER NEWPORT, new tires, brakes, seats 6. Ruby, 299-0767.

'80 HONDA ACCORD, $1500 firm. Montano, 891-0921.

'70 LINCOLN CONTINENTAL MARK III, 2-dr., 74.5K miles, $2000. Rodriguez, 291-5432.

MILITARY ATV, "Army Mule," seats 2 or more plus 1000 lbs., fits in pickup, $1650. Ottinger, 296-3648 or 296-3526.

'81 VOLVO GL, loaded, $5500. Ginn, 296-6548.

'82 DATSUN 210, AT, 70K miles, passed emissions test, $1000. Phipps, 299-3151.

'73 CHARGER, original owner, 400, AT, yellow, black stripe, Cragars, rebuilt transmission and carburetor, $3000. Kravitz, 867-3676.

'81 AMC EAGLE, 4x4, 4-spd., AC, 25 mpg, $1100. Foster, 281-3975.

'83 BUICK SKYHAWK, AT, new windshield, tires, & computer, $3000 OBO. Romesberg, 869-6979.

'78 KAWASAKI KE175B2. Shelby, 292-4605.

'84 CHEV. CAPRICE, classic edition, one owner, 25K miles, 305 V-8, 4-dr., AT, AC, cruise. Pilat, 292-4727.

'87 NISSAN MAXIMA GXE, loaded, 40K miles, $10,850. Cassell, 298-5262.

'85 NISSAN 200SX, turbo, loaded, $6500 OBO. Gentry, 831-6253.

'80 TOYOTA COROLLA WAGON, 5-spd., 91K miles, AM/FM cassette, new tires, $1300 OBO. Dawson, 243-6829.

'82 AMC EAGLE LIMITED, 4-WD, 5-spd., AC, AM/FM cassette, $2600 OBO. Balk, 281-9083.

'84 PLYMOUTH VOYAGER LE, one owner, complete service records, 100K miles, $4000 OBO. Schroeder, 296-1011.

'81 CHEV. SCOTTSDALE C10 PICKUP, 1/2-ton, V-8, 4-spd., short bed, camper shell, 76K miles, $2750 OBO. Allman, 268-0714.

'79 JEEP CHEROKEE CHIEF, 4-WD, AC, AM/FM, CB, 82K miles, $4150 OBO. Fleming, 899-8876.

'86 FORD F-150, 4x4, LWB, 4-spd., 20K miles, 302 V-8, $9500; shell, $700; couch kit, $250. Draelos, 296-3078.

'89 NISSAN MAXIMA SE, loaded, 19K miles, $16,000. Terry, 897-4481.

'66 OLDS. DELTA 88, 4-dr., 55K miles, needs paint. Hanna, 299-1126.

REAL ESTATE

NE TOWNHOME, near Juan Tabo/Candelaria NE, assumable FHA, $110,000. Kemm, 294-3959.

2-BDR. HOUSE, near Ridgecrest Drive, w/garage and additional separate room, assume 8.5%, no qualifying. Cook, 266-6088.

5-BDR. HOUSE, near University, garage, 3 baths. Hendren, 883-5070.

3-BDR. HOME, double garage, 1600 sq. ft., passive solar and gas heat, Rio Rancho. Jimenez, 892-5726.

2-BDR. TOWNHOME, 1-3/4 baths, powder room, FP, assumable FHA, no qualifying, $8500 down, take over payments. Hesch, 275-7630.

4-BDR. HOME, Juan Tabo/Spain area, La Cueva HS, 2 baths, 2100 sq. ft., formal LR and DR, FR, $119,900. Barber, 275-2440.

3-BDR. HOME, 1-3/4 baths, 1150 sq. ft., 2-car garage, Rio Rancho, below appraisal, $55,000. Bovard, 892-7676.

2-BDR. HOUSE, Taylor Ranch, 1-1/2 baths, 1-car garage, fully landscaped, assumable loan, no qualifying. Evans, 899-0406.

2-BDR. HOME, Paradise Hills, 2 baths, vaulted ceiling, FP, appliances, 2-car garage, $66,000. Kitta, 823-9317.

4-BDR. HOME, Paradise Hills, 1556 sq. ft., 2 baths, brick, insulated, 2-car garage, $87,500, REC, FHA assumable, $763 PITI. Bailey, 897-4740 or 899-1770 leave message.

CALIFORNIA CONTEMPORARY, near Spain & Tramway, city & mountain views, 1730 sq. ft., $122,000. Archuleta, 296-7244 or 263-2220.

WANTED

HP-85 COMPUTER and accessories, for home use. Crafts, 831-5234.

GERMAN LUGER PISTOL, must be in excellent condition. Greene, 299-4163.

EXERCISE BICYCLE, Schwinn AirDyne or DP Air-Gometer. Woodall, 822-0060.

60-QT. COOKING POT, for use by local church to feed homeless at Sister Dolly's soup kitchen. Ash, 821-7127.

WORLD BOOK ENCYCLOPEDIA SET. Walton, 897-0092.

HOUSEMATE, share 3-bdr./2-bath home, w/separate living areas, kitchen, laundry facilities, enclosed yard, free utilities. Nordeen, 296-7898.

VCR TAPE CONVERSION: Need to transfer a PAL video cassette recorder tape to VHS format. Cibicki, 877-7098.

"LAND BEFORE TIME" DINOSAUR PUPPETS, from Pizza Hut, have "Ducky," "Sharp Tooth," and "Petre," want other characters. Curtis, 296-2232.

FULL-SIZE POOL TABLE, must be in good condition. Eyer, 298-4288.

BICYCLE RACK for Nissan Sentra. Homer, 836-5043.

MAZDA RX-7, '84-'85, low miles, very good condition, prefer light color. Dawson, 243-6829.

CLEANING PERSON, once every two weeks, must have references. Doran, 299-2635.

LOST AND FOUND

GOLD "LOVE KNOT" EARRING, lost between MO-183, Bldg. 802, and the Credit Union on Jan. 18. Gallegos, 867-2469.

SHARE-A-RIDE

RIDE-SHARE needed from N217 and 333 area, nonsmoker preferred. Zirzow, 281-9896.

Coronado Club Activities

If the Moon Hits Your Eye Like a Big Pizza Pie, You're Ready for Italian Night!

DON'T HOWL AT THE MOON tonight. Instead, head for Italian Night, where a bounteous buffet features Tuscan and Neopolitan delights like lasagne, spaghetti with meatballs, linguine casserole, a full salad bar, minestrone, and garlic bread. Afterward, Together plays variety music for dancing from 8 p.m. until midnight. Call ahead for a dinner reservation (265-6791).

CHILDREN HAVE CHANCES at great prizes this Sunday (Feb. 11) when they join the fun at Kids' Bingo. Reasonably priced food's available starting at 1 p.m., and bingo action begins at 2. Cost is just $2.50/player.

IT'S HEARTS-AND-FLOWERS TIME, and there's no better way to celebrate this most romantic of months than at the Sweetheart Dance next Friday night (Feb. 16). Dinner includes your choice of filet mignon or coquilles St. Jacques mornay (that's scallops and cheese sauce to the non-Francophiles out there), full salad bar, a half litre of house wine/couple, and cake for dessert. Then swing and sway the night away to the easy-listenin' tunes of the Roland De Rose Orchestra (8-11:30 p.m.). The price of $14/person covers all of the above and (of course) a flower. Reservations *heartily* recommended.

ANOTHER BRACING BRUNCH is set for Sunday, Feb. 18, from 10 a.m. to 1 p.m. For this one, Virginia, Denver, and Belgium are represented on the menu (ham, omelets, and waffles, respectively). The fabulous feast also includes that ever-popular green chile stew, salsa, scrambled eggs, bacon, hash browns, tossed salad, fresh fruit, and more. Bargain prices prevail: $6.95/adults, $3.50/children 3 through 11 years old, and free/ankle-biters under 3.

T-BIRD CARD SHARKS celebrate Valentine's Day a day late this year when they get together for gaming on Feb. 15, beginning at 10 a.m. Jim McCutcheon's unavailable to model his Cupid costume this year. However, don't be disheartened; maybe someone will serve as a stand-in, gauze wings and all. You'll never know if you don't show up.

CORONADO SCHUSSBOOMERS (aka Coronado Ski Club members) get together for another snow séance on Tuesday, Feb. 20, starting with (of course!) a social from 7 to 7:30 p.m. The evening program (beginning at 7:30) includes a humorous Warren Miller ski film and a videotape about helicopter skiing in Utah. This is your chance to sign up for this season's remaining ski trips, as well as to win one of those famous (infamous?) door prizes.

Events Calendar

Events Calendar items are gathered from various sources. Readers should confirm times and dates of interest whenever possible.

Feb. 9 — Great Artist Series: New Mexico Symphony Orchestra, featuring baritone Sherrill Milnes, works by Mozart, Handel, and Schumann; 8:15 p.m., Popejoy Hall, 842-8565.

Feb. 9 — New Mexi-Chords, benefit concert for the Albuquerque Shelter for Victims of Domestic Violence; 7:30 p.m., First Presbyterian Church (215 Locust NE), 842-9800.

Feb. 9-11 — Annual Black History Month presentation: "A Lesson from Aloes," play by Athol Fugard ; 8 p.m. Fri. & Sat., 6 p.m. Sun.; Vortex Theatre, 247-8600.

Feb. 9-24 — "Seascape with Sharks and Dancer" by Don Nigro, Theatre-in-the-Making performance; 8 p.m. Fri. & Sat., CenterStage, 260-0331.

Feb. 9-March 25 — Exhibit: "Landscape, Portrait, Still-Life — Through the Camera Lens," overview of UNM's most significant photographic works; 9 a.m.-4 p.m. Tues.-Fri.; 5-9 p.m. Tues. evening, 1-4 p.m. Sun.; UNM Art Museum, 277-4001.

Feb. 10 — Pops Concert Five: New Mexico Symphony Orchestra, with guests The 5th Dimension singing "Up, Up, and Away," "Aquarius," and other hits; 8:15 p.m., Popejoy Hall, 842-8565.

Feb. 14 — St. Valentine's Day Concert: Cuarteto Nuevo Mexicano, featuring vocal and guitar music from Spain, Mexico, and Cuba with a flavoring of American instrumentals and Jewish folk music, sponsored by UNM Continuing Education Series for the Arts and the International Classical Guitar Institute's Spring Concert Series; 8 p.m., UNM Conference Center (1634 University NE), 277-1176.

Feb. 16-17 — Classical Concert Six: New Mexico Symphony Orchestra with violinist Miriam Fried, performing works by Bach, Martinu, and Brahms; 8 p.m., Popejoy Hall, 842-8565.

Feb. 21-March 4 — "Stumps," New Mexico Repertory Theatre production of world premiere of Mark Medoff play about two Vietnam veterans, character of Stephen from "When You Comin' Back, Red Ryder?" reappears; 8 p.m. Tues.-Sat., 2 p.m. matinees Sat. & Sun.; KiMo Theatre, 243-4500.

Feb. 22 — Dell 'Arte Players Company, satire with classic comedy spirit of Molière; 8 p.m., South Broadway Cultural Center, 848-1320.

Sympathy

To Lorraine Luna (9130) on the death of her grandmother in Albuquerque, Dec. 23.

To John Long (2636) on the death of his father in Smith Center, Kans., Jan. 3.

To Bob Dedig (2857) on the death of his father-in-law in Albuquerque, Jan. 12.

To Joe Sanchez, Jr., (2857) on the death of his mother-in-law in Ft. Sumner, Jan. 16.

To Ed Young (5132) on the death of his grandmother in Newcastle, Pa., Jan. 17.

To Danny (3520) and Warren (DMTS, 9114) Brown on the death of her mother and his mother-in-law in Florida, Jan. 22.

To Johnny Otero (2612) on the death of his mother in Amarillo, Tex., Jan. 27.

To William Swartz (2636) on the death of his father in Seattle, Wash., Jan. 28.

Welcome

Albuquerque — Julie Clausen (3163), John Lewis (2364), Michelle Lewis (3522), Stephanie Maccario (3426), Cynthia Phillips (1423), Mark Poulsen (3162), Larry Schoof (1511), Timothy Skaggs (7531); *Other New Mexico* — Terri Calton (9352), Virginia Chavez (3426), Margaret Kerns (3426), Ronald Maes (3426).

Elsewhere: *Arizona* — Max Decker (9211); *California* — Holly Dockery (6312), Linda Doran (3162), Linda Gillis (3155), Kevin Lear (1163); *Nevada* — Larry Burke (3212); *Texas* — Kevin Malone (5265).

Congratulations

To Sandi Lynn and Anthony (7812) Chavez, a son, Anthony Joseph III, Oct. 10.

To Susan (121) and David (6516) Bodette, a son, Scott Richard, Dec. 12.

To Julie and Rick (2561) Flores, twin daughters, Jessica Louise and Julie Catherine, Dec. 23.

To Irene (2858) and Bill (7816) Kolb, a daughter, Rachel Renee, Jan. 16.

To Terri and David (7525) Cocain, a son, Lucas Henry, Jan. 18.

To Barbara and Joe (1815) Perry, a daughter, Tiffany Kalynn, Jan. 25.

To Cassie and Mike (5231) Christiansen, a son, Marc Stephen, Feb. 1.

REBA REVS UP — this time at White Sands Missile Range. Sandia's REBA accelerator, a gamma-ray generator used for effects testing, was declared excess equipment in the early '80s and acquired by WSMR at that time. Sandia and the Air Force Weapons Laboratory (AFWL) assisted in the revamping of REBA, with the Labs providing expertise in pulsed-power technology and AFWL designing and installing the data-acquisition system. Participating in ribbon-cutting ceremonies marking the start-up of REBA at its new home on the Range were (from left) Col. Harold Meisterling, Director of Nuclear Technology at AFWL; Jim Powell (9300), Director of Radiation Effects and Testing; Gen. Thomas Jones, WSMR Commander; and John Meason, Director of Nuclear Effects at WSMR.