CONTRACT UNDER WHICH AT&T operates Sandia for the DOE has been officially renewed for another five years, beginning Oct. 1, 1988. Since 1949, Sandia has been operated by AT&T without fee or profit. The final signatures were affixed on Oct. 31 by (from right) President Irwin Welber and DOE/AL Manager Bruce Twining; Bob Kestenbaum (left), Secretary of Sandia Corporation, certified Irwin's signature, as required by law. Tom Thomsen, President of AT&T Technologies, the AT&T entity charged with operating Sandia, had signed the contract earlier (see Thomsen photo and comments on Page Two). After the brief ceremony at DOE/AL, LAB NEWS asked both Twining and Welber to comment: "This is a very important contract signing," said Twining. "It's evidence that DOE recognizes that Sandia is important to the Department's mission, that Sandia's history of performance is something both DOE and Sandia can be proud of, and that AT&T plays a key role in managing the Sandia contract. I look forward to working with Sandia for another five years under the new contract." Said Irwin: "It's gratifying to be able to sign a contract that, I believe, will permit Sandia to continue to perform in the next five years as well as, if not better than, it has in the past. Today, the Nuclear Weapon Complex is receiving more attention than it's ever received. Operating in this sensitive environment will pose even greater challenges for all Sandians than we have faced previously. I know we will do well — and that the new contract will serve us well — over the next five years."

'Great Scrap Heap in the Sky'

Construction Goal: Replace Substandard Buildings

It's happening all around us.

"It," in this case, is Sandia's ongoing building construction and renovation program — unabated since a LAB NEWS story on building activity some two years ago (Oct. 24, 1986).

What's happened since, what's happening now, and what's likely to happen during the next two or three years?

"I said it before, and I'll say it again," says Ward Hunnicutt (7800), whose Facilities Directorate has overall responsibility for construction at the Labs: "One of our top priorities is to get rid of old, substandard and temporary buildings, as people move out of them and into new ones."

The 'Hit List'

"Some Sandians, believe it or not, are spending their workdays in 'temporary' buildings acquired as early as 1946 from Sandia Base [now KAFB East]," Ward continues. "Obviously, those quarters aren't the greatest. So about two years ago, we put together a formal 'hit list' of buildings we'd like to see go to that great scrap heap in the sky.

"During the last two years, we've disposed of Bldg. 895 [south of 892], the 15 trailers west of Bldg 880, 7 trailers in Area V, and Bldg. 886 [east of 887]. We've made a commitment to ourselves and to DOE that we'll dispose of temporary facilities as new buildings come on line — and we're making inroads on that commitment."

Progress toward the "get-rid-of-old-buildings" goal is evidenced by the fact that some 34,000 square feet of older buildings have been removed at Sandia Albuquerque during the last two years, says Mike Nielsen (7821), who has responsibility for SNLA's long-range site plan.

"And that's just a start, because we've targeted another *300,000* square feet for removal during the next four years," says Mike.

WARD HUNNICUTT (7800) proudly displays the glass facade on the west side of the Product Development Laboratory, into which some 180 people will move next April. The PDL move-in, he says, will allow the removal of Bldgs. 844, 845, and 846 — another step toward the goal of replacing substandard buildings with new ones.

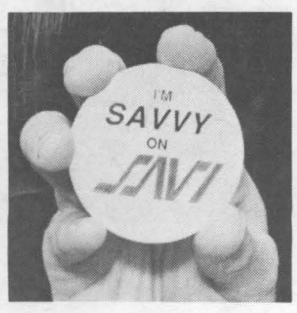
(The "hit list" for the next four years includes Bldgs. 639, 640, 824, 829, 830, 834, 844, 845, 846, 847, 882, and various MOs — mobile offices — and T-buildings — temporary buildings.)

Now under construction are new buildings that should speed up the demolition of old ones. A prime example is the Process Development Lab (PDL), west of Bldg. 887 in Area I. The 119,000-sq.-ft. facility, for which construction is in the homestretch, will house some 180 people from Materials Process Engineering and Fabrication Directorate 7400, headed by Jim King; move-in is scheduled for April 1989.

Functions to be moved into PDL include ceramics, physical electronics, plastics, hybrid microcircuits, electronic fabrication, precision components,

(Continued on Page Four)

See Page Six



LAB NEWS

VOL. 40, NO. 22 SANDIA NATIONAL LABORATORIES NOVEMBER 4, 1988

Antojitos

Contract Renewal from AT&T's Point of View -- I asked Tom Thomsen, President of AT&T Technologies (Sandia's corporate parent and thus President Welber's boss), how he and his company felt about the recent signing of the AT&T-DOE contract, under which AT&T will operate Sandia for another five years (see pic on Page One). Here's his reply:

"AT&T is proud of its affiliation with Sandia. This pride stems primarily from the fine performance of Sandia's people in meeting the complex needs of the Laboratories' several constituencies. I view Sandia's earned respect as ongoing testimony to AT&T's management and people philosophies and continuing commitment to good citizenship. Thanks to the hard work of many, the terms and conditions of the new contract make it possible for this fine relationship to continue for another five years.

"I signed the contract five years ago, and in that period of time, both AT&T and Sandia have prevailed despite turmoil in their respective environments. It is thus with a sense of personal satisfaction that I signed the current contract."

* * *

Tune In Next Issue for the second installment of "Energy at Sandia." We'll cover some hot topics -- focusing like a heliostat on solar thermal, wind energy, photovoltaics, and secondary batteries.

* * *

Misplaced Modifiers Are More Fun than most grammatical gaffes: This plaintive plea was recently heard by a LAB NEWS spy monitoring a Bay Area TV station -- "If you have clothes for children you no longer need, please donate them to . . ." In other words, don't dispose of your kids; recycle them.

* * *

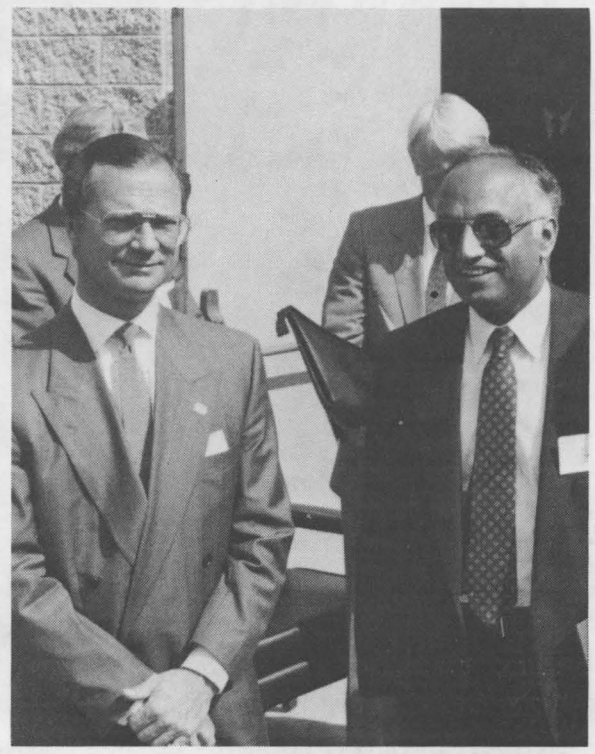
Fashion Note -- I print this letter (addressed simply to Sandia Labs, Albq, NM) in its entirety: "Dear sir or maam, I recommend that your employees wear red ties whenever practical. thanks." Yes, it was signed, but you wouldn't know him anyway.

* * *

It's Official -- According to the last sentence in the "Recognition Awards" SLI, "If a special item over and above that outlined in the foregoing policy is desired, private purchase using personal funds may be made." Hurrah -- we now have permission to spend our own money on private purchases. •BH

* * *

It's not enough to be right. You have to avoid the appearance of being wrong. --Bob Dougherty (no, not the Bob Dougherty in 8270)



VENKY NARAYANAMURTI, VP Research 1000, was elected to the Ingenjörsvetenskapsakademien, or Royal Swedish Academy of Engineering Sciences, last year (LAB NEWS, June 5, 1987). He was cited for his "eminent achievements in solid-state physics and electronics, with special regard to his pioneering effort in developing the field of phonon optics." Venky received his diploma from King Carl XVI Gustaf (left) during a visit to Los Angeles to attend the New Sweden Symposium, organized by the Academy.

Livermore Take Note

Walt Ghio (8162) will be one of three US competitors to enter the world championships of the rubber-band-powered model airplanes competition next May in Argentina. Walt placed second in the US Academy of Model Aeronautics competition last month in Seguin, Tex., which qualifies him for the international event. His racer is entered in the F1B Wakefield Rubber class. A feature on his model plane hobby appeared in the Nov. 23, 1984, LAB NEWS.

* * *

Donna Kuhn (ASI inspector) is part of a four-member mounted color guard that took Reserve Champion honors at the Grand National held in San Francisco's Cow Palace last month. She's part of the State of California Champion Color Guard, based in Manteca, that participates in parades and competitions throughout northern California. The four riders use matched bay quarter horses.

Congratulations

To Lori and John (1235) Aurand, a daughter, Nicole Ahlquist, Oct. 12.

To Marilyn and Otis (9131) Solomon, a son, Shelby, Oct. 13.

To Janell (9212) and Chris Miller, a daughter, Janna Kristine Elizabeth, Oct. 14.

To Sue Posler and Todd Criel (9132), a son, Daniel, Oct. 20.

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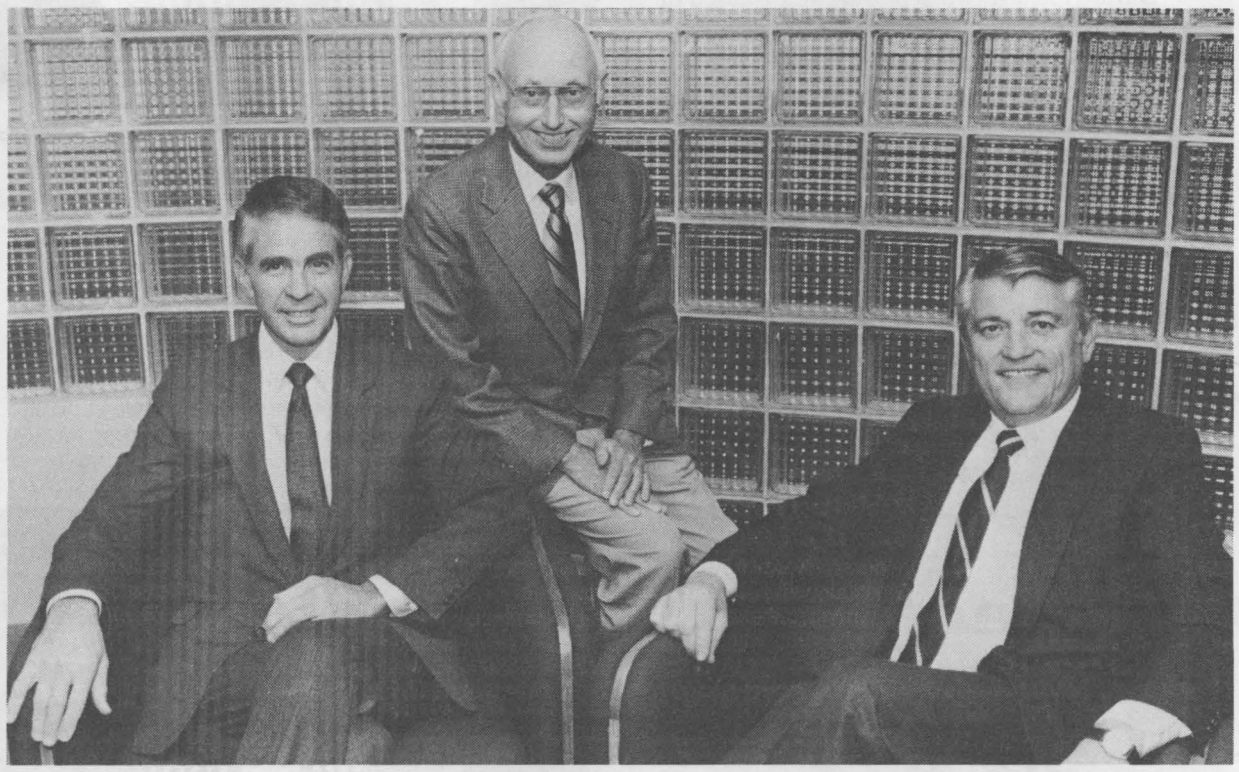


FIRST VISIT TO SANDIA — Robert Allen (left), Chairman of AT&T, was briefed on Sandia programs by Small and Large Staffs and by Sandia's Board of Directors, including Sandia President Irwin Welber and President of AT&T Technologies Tom Thomsen (right), as well as by Orval Jones (20) and Lee Bray (30).

SANDIA LIVERMORE NEWS
VOL. 40, NO. 22 NOVEMBER 4, 1988

23rd Annual Dinner

Livermore Retirees Gather

Some 320 Livermore retirees, spouses, and members of Sandia management gathered for the 23rd annual retirement dinner at Castlewood Country Club Oct. 12.

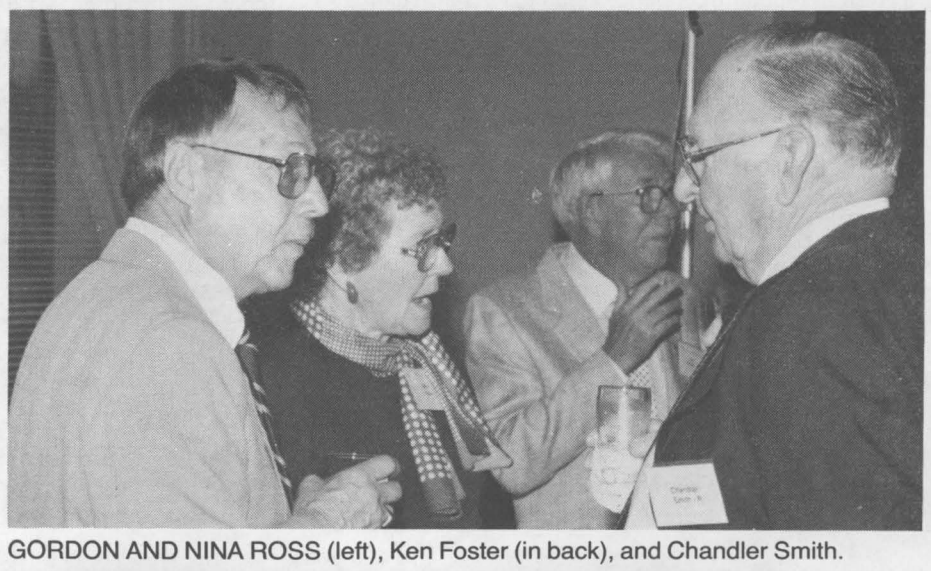
Vice-President John Crawford (8000), introduced by retiree counselor Jeff Manchester (8526), welcomed the group and answered retirees' questions.

Those retirees who traveled the farthest: Gene Aas, Gene Anderson, Burnie Biggs, Walt Dzugan, Elwood Ingledue, Byron Murphey, Bud Pearson, Don Richardson, Bob Thomas, Bob Thompson, and Joyce Willford.

FIRST-PLACE LEAP RACE winner Jim Reitz (8451) congratulates first-time women's winner Carol Caldwell (8514) after they received their trophies from race directors Dan Dawson (8243, center) and partially hidden Barry Bolden (8161). Other winners in men's were Vic Kaliakin (8241), Bill Wilson (8230), Rich Larson (8244), and Tim Shepodd (8313). Women runners-up were Karen Sheaffer (8235), Dee Wackerly (8351), Karen Scott (8524), and Ellen Meeks (8245). There were 135 runners and walkers in the 2000-metre race. Directorate 8200 maintained its lead in number of participants (20.8 percent); second place went to 8500, with 14.4 percent of its directorate participating.

RETIREES, SPOUSES, and some members of Sandia management gathered at Castlewood Country Club for the 23rd annual SNLL Retiree Dinner.

GENE AND VERA AAS (left) with Bob Frost.



GORDON AND NINA ROSS (left), Ken Foster (in back), and Chandler Smith.

REX RICHARDSON (left), Harvey and Marian Pouliot, and Bill Guntrum.

BYRON MURPHEY (left), Arnold Schuknecht (8020), Esther Schuknecht, and Doris Murphey. (Photos by Bud Pelletier)

(Continued from Page One)

Construction

and others — all important contributors to 7400's charter: the job of producing prototype devices, components, and assemblies that are easily reproducible in quantity by the production agencies in the Nuclear Weapon Complex. To help facilitate technology exchange and process transfer, the PDL will include office space for visitors from the Complex.

"PDL occupancy will allow us to tear down Bldgs. 844, 845, and 846 [north of Bldg. 840]," says Ward. "And Bldg. 840, which has housed many of those moving to PDL, will revert to its original intended use — primarily a metal-fabrication facility."

Other SNLA line-item construction projects (those valued at more than $1.2 million) include Phase I of the Strategic Defense Facility in Area IV, now about 50 percent complete; and the Instrumentation Systems Lab (ISL) north of Bldg. 880, now about 75 percent complete, with move-in tentatively set for next summer.

The ISL will house about 375 employees from Monitoring Systems Directorate 9200 and Telemetry Development Dept. 5140; the facility's special test equipment will simulate temperature and pressure environments in space that satellite hardware would be likely to encounter. SDF-Phase I will house some 330 people from Pulsed Power Sciences Directorate 1200 and Field Engineering Directorate 7100.

Building at Livermore

At Sandia Livermore, the three major projects mentioned in the 1986 story — Weapons Lab, Security Building, and Shipping & Receiving Facility — are now complete. Result: removal of approximately 12,000 square feet of temporary buildings, according to Ralph Cozine, manager of Plant Engineering and Hazards Control Dept. 8510.

FY89 construction plans at SNLL include an 85,000-sq.-ft. Defense Engineering Lab — now under design, with construction expected to begin next summer.

Because of changes and funding uncertainties, says Ward, the outlook is unclear — at least in the short term — for other Livermore projects predicted in 1986: a Weapons Engineering Development Lab, a High-Temperature Science Center, a Tritium Components Lab, and a Combustion Research Facility addition (though site work for the latter, begun in FY88, will continue).

R&R Programs

The Labs' construction program doesn't stop with the building of new facilities. Ongoing R&R (remodeling and renovation) programs — much needed in buildings approaching their 40th birthdays — are a substantial part of the effort.

SNLA's administration building, 802, is undergoing extensive renovation — for good reason. "There's been no major rehabilitation work in 802 since it was built — and that was 38 years ago," says Ward. "It's long overdue for some changes." The 802 improvements include new ceilings and light fixtures, energy-efficient heating and ventilation systems, new wall and floor coverings, and the addition of fire-protection sprinklers and double-glazed windows.

"We expect, with this $5.5 million renovation, to get 20 or 30 or even another 40 years of use out of the building before major new upgrades are again necessary," Ward continues. "So the renovation is worth the effort: If we were to build another 802 today — in other words, another 162,000-sq.-ft. building — it would cost at least $20 million."

Renovation of 802's third floor and the second floor (south wing) is complete. Work currently under way in the north and east wings of the second floor should be finished by next June. Renovation of the first floor (south wing) — the home of Finance, Compensation, and other organizations — will start in mid-November.

"We had hoped to relocate the people and functions now in the 802 basement to a new building proposed for construction under a 'third-party financing' arrangement," Ward continues. "But that plan has fallen through, at least for the time being. So we're now going back to the drawing board; we'll continue to work the problem."

What happens to people displaced by the renovation work? "That's where some 'temporary' buildings are mighty handy," Ward answers. "We're using all those T-buildings and mobile offices in the northwest corner of Tech Area I as turn-around facilities. When renovation work gets under way in an area, people normally housed there move into the turn-around buildings while the work's being done; for example, Finance will move to T-17 [west of 824].

"Once remodeling is completed, they move back to the space they vacated — or other space that's been assigned to them. Chances are, the turn-around space will then be occupied by other DPs [displaced persons]."

The first and second floors of Bldg. 802, once renovation is complete, will house approximately the same number of people as before — some 300 from organizations 100, 3100, 3400, 3550, and 4020.

"After we've finished remodeling 802, we hope to tear down those turn-around MOs and — to paraphrase the song of a few years back — put in a parking lot," Ward continues. "I'm sure that will be welcome news to the people who used to park in that area before we confiscated it for temporary living quarters."

The turn-around area has been occupied off and on for the last five years or so by DPs from Bldg. 836, while that building underwent extensive renovation. Approximately 260 people from Organizations 5100, 2800, and 7230 will move back into 836 in January.

Another renovation project scheduled to occur during the next 15 to 18 months is the first floor, north end, of Bldg. 894. Once that area's current occupants move to their new quarters in the PDL next April, the space will be transformed into a new mail-services facility. That clears the way for the removal of a prime hit-list target, Bldg. 824 (acquired in 1946).

1990 — A Banner Year

If the schedule goes as planned, 1990 will be a banner year for major construction starts at SNLA, according to Ward. The selection process is under way for an Architect Engineer (AE) for an Explo-

(Continued on Page Five)

AND THE WALLS CAME TUMBLING DOWN — a not unusual sight, as older, substandard buildings make way for new ones. Photo shows demise last August of Bldg. 886, which used to be east of 887.

'Drinking From the Same Bucket'

Level Construction Funding

A budgeting concept under development since FY86 — Level Construction Funding (LCF) — when fully effected, will smooth out some of the bumps in construction planning, according to Ward Hunnicutt (7800).

"Basically, LCF means that a fixed amount of construction money would be allocated each year to the three weapons labs [SNL, Los Alamos National Lab, and Lawrence Livermore National Lab] and Nevada Test Site," Ward explains. "Since all four [the labs and NTS] are drinking from the same construction budget-bucket, we'll see some trade-offs from time to time — and a spirit of cooperation in the R&D/testing community.

"For instance, if one organization saw a need, say, in 1992, for two new facility starts, and another saw a similar need earlier, there might be an agreement between the two to divide the pot accordingly. Instead of equal shares in those years, they could agree that more would go to the organization that had two starts, less to the organization that planned none."

"If a predictable dollar amount can be counted on each year," Ward continues, "the facility planner can do a much more cost-effective job." Currently, facility planners are jugglers of sorts; funding for each project, allocated over a period of time (usually three or four years), must be figured according to where the project is in the construction cycle — design (about 10 percent of cost), construction (the bricks-and-mortar phase, 60 percent), occupancy (20 percent), or special equipment (10 percent).

"Under LCF," Ward says, "Congress would continue to approve individual projects — a Defense Engineering Lab, for example. Once started, those projects then would be mortgaged for the future; it would be up to planners at each lab and at NTS to allocate specific amounts — out of their share of available funding each year — for each project."

Right now, LCF is working at the lab level, with some support from DOE's Office of Military Application; it hasn't been formally accepted yet by Congress. However, Ward would like to see it tried: "It's much more effective to look down the road a few years, see where you're going to be in terms of current projects, and plan new [building] starts accordingly.

"And you can do that, if you know there's relatively constant funding along that road — a situation more likely with LCF."

LCF is intended to provide parity among the labs as to the level of funding received by each. For the period FY70-FY88, LLNL received an average of $37.6 million per year, LANL received $30.7 million, and SNL, only $26.5 million. Parity was to have been achieved by FY89; however, because of ongoing projects at the other two weapon labs, Sandia will not receive an equal amount until FY93.

"All Sandia construction projects must meet DOE's guidelines — and those guidelines are more conservative than those typical of industrial standards," says Bill Hollis, manager of Budgeting and Resource Allocation Dept. 140. "For example, the number of square feet per employee is lower in DOE labs than in private industry — and, in that respect, Sandia is the lowest of the three labs."

(Continued from Preceding Page)

Construction

sives Components Facility that will bring activities from a dozen Area II buildings (late-40s vintage) under one roof. Once selected, the AE prepares design plans — a process that takes about a year. Construction should start on the explosives facility early in CY90, Ward says.

Design work is just beginning on an Integrated Materials Research Lab, to be located south of RHIC II. The IMRL (another member of the ''Class of '90,'' with construction scheduled to begin early that year) will provide much-needed additional space for computers and laboratory instrumentation to people in the Solid State Sciences 1100, Engineering Sciences 1500, and Materials and Process Sciences 1800 directorates.

Construction of a Primary Standards Lab is set to begin somewhat earlier — in the fall of 1989. The PSL will be located southwest of Bldg. 880.

Further out, other major facilities are planned. Included in Sandia's construction budget request for FY90 is a Center for National Security and Arms Control (CNSAC). Activities related to arms control treaty verification would be housed in CNSAC, which would occupy the space where Bldgs. 632 and 634 (acquired from the military in 1966 and 1965, respectively) now stand.

Two smaller construction projects (under $1.2 million), called General Plant Projects (GPP), are rising from the dust of the demolished trailers west of Bldg. 880. Construction began in mid-October on a Rocket System Development Lab and a Computer-Aided Engineering Facility in that area. In Area III, a packaging/storage facility for handling both radioactive and chemically hazardous waste is under construction, with a projected completion date of June 1989.

The latter building is SNLA's second facility designed for packaging and storing hazardous waste; the first, located south of Area I, is used for handling chemical wastes (LAB NEWS, June 17, 1988).

GPP buildings recently completed at Livermore include an Environmental Test Facility and a Dynamic Test Facility. There's also a new security portal at the main entrance of SNLL's administration building, 911.

At Tonopah Test Range, the Emergency Support Addition predicted in 1986 has been completed, as has the administration-building addition. TTR has two GPP items planned in FY89: a Powder Assembly Building and a Vehicle Service Building.

Funding Outlook

Approved Labs construction funding for FY89 totals $67.7 million, according to Ward. ''That amount covers major line items and three types of GPP — Basic Energy Sciences, Research and Development, and Production and Surveillance — at all locations,'' he says. Funding for construction at all locations amounted to $69.2 million in FY88.

And the future? ''It's hard to say. Budget cuts could mean cuts in construction. But we've had a healthy construction program for the last ten years or so, and I look for pretty much the same situation in the foreseeable future.'' •PW

For Your Benefit

PDP Charges vs. Local Dentist Fees

Since announcement of the Metropolitan Preferred Dentist Program (PDP), Benefits Dept. 3540 has received a number of inquiries regarding the maximum allowed charges under the PDP and how the charges compare to fees charged by Albuquerque area dentists.

The table of Maximum PDP Charges lists:

1. The maximum fees allowed under the PDP for the most common dental procedures; and

2. The scheduled payment under the Sandia Dental Expense Plan (DEP).

You should compare the plan payments with the fees your dentist charges to determine your out-of-pocket expense.

The maximum charges for Albuquerque were based on an analysis of fees for the area and were set at or near the average for each procedure. It is estimated that you, the participant, will recognize a savings of up to 16 percent on some Type B dental procedures with this schedule. (The maximum charges for the Livermore area were previously established by Metropolitan.)

If you need maximum fee information for a specific procedure not listed in the table, you can call the Metropolitan toll-free phone number (1-800-221-9677). You must have a procedure code (available from your dentist) to obtain specific fee information.

Or check the reference copy of the Table of Maximum PDP Charges; it's available for your review in the Benefits office, Bldg. 832 East.

TABLE OF MAXIMUM ALLOWED PDP CHARGES FOR SELECTED COMMON DENTAL PROCEDURES

LIVERMORE PDP Maximum Charge	LIVERMORE Sandia Dental Plan Scheduled Payment	Procedure Code	Procedure Name	ALBUQUERQUE PDP Maximum Charge	ALBUQUERQUE Sandia Dental Plan Scheduled Payment
$17	*	0110	Initial Oral Exam	$15	*
0	*	0120	Periodic Oral Exam	0	*
26	*	1110	Adult Prophylaxis (cleaning)	29	*
20	*	1120	Child Prophylaxis (cleaning)	19	*
27	20	2140	Amalgam filling - 1 surface permanent	28	16
37	28	2150	Amalgam filling - 2 surfaces, permanent	37	22
50	44	2160	Amalgam filling - 3 surfaces, permanent	48	35
35	24	2330	Tooth colored filling - 1 surface	34	19
35	40	2331	Tooth colored filling - 2 surfaces	45	32
60	54	2332	Tooth colored filling - 3 surfaces	61	43
380	312	2750	Crown - porcelain with gold Single tooth only	361	246
370	257	2752	Crown - porcelain w/ semiprecious metal Single tooth only	351	204
329	251	2790	Crown - gold, full cast Single tooth only	329	199
200	185	3310	Root Canal - 1 root	191	145
250	227	3320	Root Canal - 2 roots	224	180
350	285	3330	Root Canal - 3 roots	320	226
30	44	4341	Periodontal scaling & root planing (1 or 2 quandrants)	45	35
500	448	5110	Dentures - complete upper	447	355
380	312	6240	Bridge pontics - porcelain fused to gold	376	
370	259	6242	Bridge pontics - porcelain fused to semiprecious metal	348	205
380	312	6750	Crown - porcelain fused to gold	371	246
370	259	6752	Crown - porcelain fused to semiprecious metal	351	205
329	275	6790	Crown - gold (full cast)	329	218
30	26	7110	Simple extraction - single tooth	34	21

*These fees are paid at 100% of Reasonable and Customary (R & C). For a definition of R & C refer to your Dental Expense Plan booklet.

Fun & Games

Tennis — Winners of the STA/CTC-sponsored Round-Robin Doubles Tournament Oct. 15 were Peggy Walsh (1812) and Ken Hanks (7866); Pat (6442) and Mel (3531) Mefford were runners-up. Ken Hanks and Mark Tucker (5246) won the Men's Doubles event; Bob Boyce (contractor employee, 1251) and Larry McCartney (7522) took second place.

* * *

Cross-Country Skiing — Now that there's a chill in the air, the New Mexico Ski Touring Club is thinking snow and gearing up for the 1988-89 season. Meetings are held the second Thursday of each month from October through March at 7:30 p.m. at St. John's United Methodist Church (2626 Arizona NE, east entrance); prospective members are welcome. Carla Chirigos (7471) is president of the club this year. Other Sandians involved are Gary Tisone (1275), treasurer; Dave Dell (9127), instruction; Dave Saylor (2813), mailing-label committee; and Sam Beard (1553), trails co-chairman. Volunteers are needed for a trail maintenance crew to the Jemez on Oct. 29. If you're interested in helping, meet Sam and the group at Sunwest Bank (Academy & San Mateo) at 8 a.m. that day.

Home for Displaced Guards

FCC Construction Set for Summer

In the spring of 1986, DOE/AL directed Sandia to construct a proper Emergency Operations Center (EOC) and to have it operational by that November.

The only logical place for an EOC was, and is, the basement of Bldg. 801. That space had been occupied by Security Operations, primarily as a place to don uniforms, store weapons, and so forth. But that function was moved to a temporary location in Bldg. 919 in Area II until an appropriate building could be constructed.

The EOC was completed on schedule — and North Area security inspectors are still commuting to work in Area I via Area II. Innovative ways to fund a new Facility Command Center (FCC), a permanent Area I location for the security inspectors, have not been approved.

''So we're going to build the first phase of an FCC with FY89 GPP [General Plant Projects] funds,'' says Ward Hunnicutt (7800). ''It will be located west of Shipping and Receiving [Bldg. 957]. Construction should be under way next summer.''

DOE Facilities Use It

Sandia Security Savvy Leads to Computerized SAVI

For years, Sandia has been developing and using security savvy. It has also developed SAVI — a personal-computer program that DOE is now using to evaluate security-system effectiveness against a wide spectrum of theft and sabotage threats.

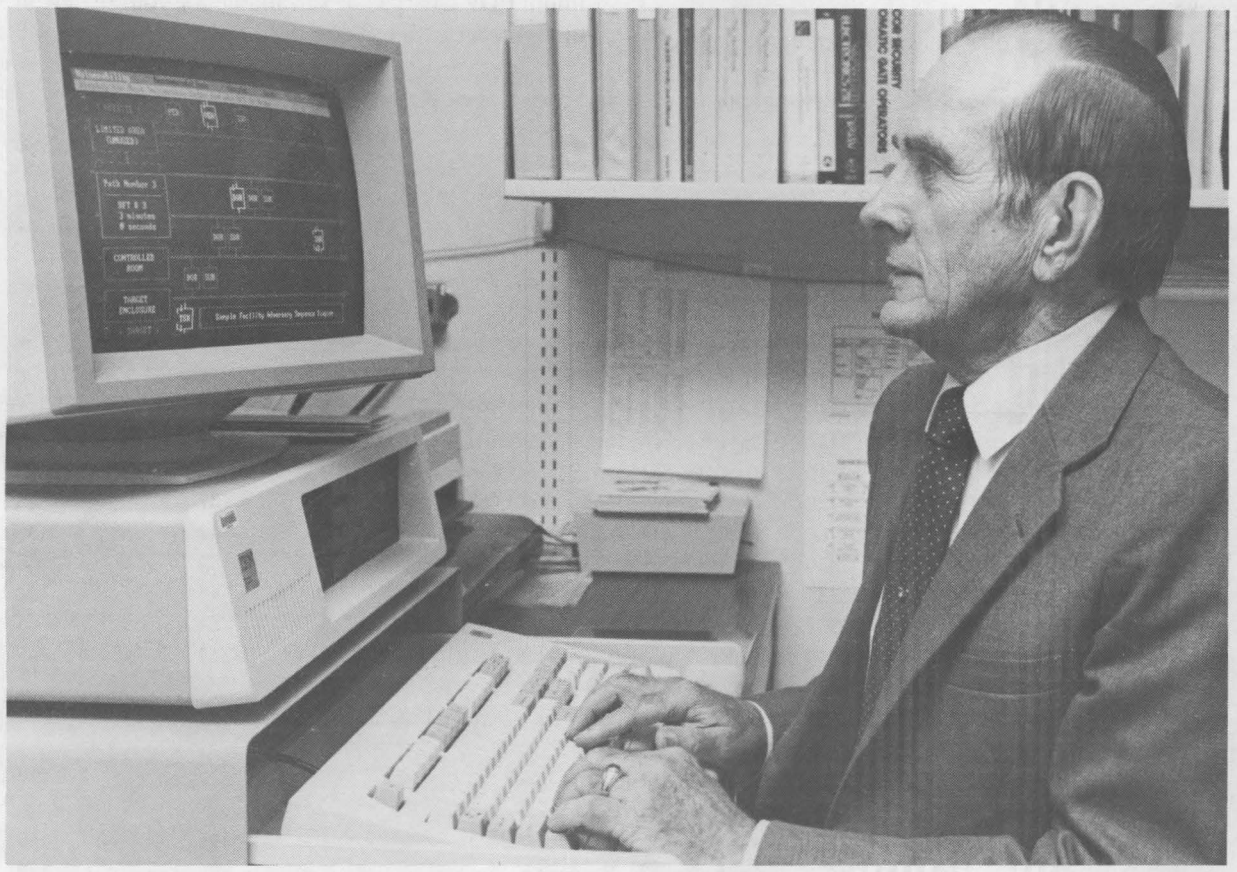
Short for Systematic Analysis of Vulnerability to Intrusion, SAVI also suggests security-system improvements for any weaknesses detected. Developed by Nuclear Security Systems Directorate 5200 for DOE's Office of Safeguards and Security, SAVI is now used by all DOE nuclear facilities, including Sandia.

"In 1985, DOE decided that it needed a standard method for evaluating security at its labs and production facilities, particularly those in the weapon complex," says John Matter, Facility Systems Development Div. 5212 supervisor. "DOE asked Sandia to devise and produce SAVI, based on the strong security-system R&D and analysis capabilities we have developed over the years." Sandia is the lead DOE laboratory for R&D on physical protection systems for nuclear facilities (see "Lead Lab Role").

"Security has always been a high priority at the weapon-complex labs and production facilities," John says, "so SAVI doesn't have to be geared to point out obvious or severe weaknesses. It is instead a tool that gives DOE security specialists a way to examine the systems *scientifically* — to discover, then patch, the 'small holes' that may not be obvious."

John says SAVI even helps users discover potential vulnerabilities from features that aren't part of the actual security system. For example, he points out that it's not unusual for a perimeter-security system to be penetrated by underground drainage and storm sewers that are large enough for a person to crawl through.

"If you don't take such features into account, you would definitely overlook a weakness," John says. "If you overlooked one, you could have the best security hardware and a well-trained guard force, but still have system vulnerabilities. SAVI helps you consider these kinds of vulnerabilities."



AL WINBLAD (5245) displays an adversary sequence diagram from the SAVI (Systematic Analysis of Vulnerability to Intrusion) personal-computer program. SAVI was produced for DOE's Office of Safeguards and Security by Al and others in Nuclear Security Systems Directorate 5200. The program is used at DOE's weapon labs and production facilities to evaluate security-system effectiveness.

Calculates System Effectiveness

SAVI analyzes the effectiveness of physical protection systems against potential theft and sabotage attacks and calculates the likelihood that intruders will be "interrupted" by security forces before the intruders can accomplish their mission. The program evaluates security-system effectiveness against attackers on foot, in a land vehicle, or in a helicopter.

The path-analysis model operates on a personal computer and calculates, for a given target, the 10 paths to it that are considered to have the most security weaknesses. The paths are ranked in order of their potential vulnerability to intruders. The model calculates a measure of security-system effectiveness called probability of interruption — the probability that intruders will be detected and engaged by a facility's response force before the theft or sabotage mission can be completed.

Before the model is used, the site-specific threat is defined in terms of adversary types, their objectives, and capabilities. In all cases, attackers are assumed to have supporting equipment and explosives.

To calculate the 10 paths with the most vulnerabilities, SAVI analyzes the physical protection system and the paths that an adversary might take to reach a target and to exit the site. The interactions of detection, delay, and response functions of the security system are all considered.

The physical protection system is modeled using an adversary sequence diagram in which an adversary attempts to defeat various protection elements. Fifteen basic protection elements that provide delay and detection are considered by the model. The elements include security portals, fences, doors, gates, and tunnels.

Considers All Possibilities

Adversaries could attempt to defeat the elements in several ways, and all are considered by the SAVI code. For example, intruders could try to pass through a security portal by using counterfeited credentials and smuggling out a target item, or they could try to use explosives to blow through a wall.

The baseline information for the SAVI model includes (1) known performance characteristics of the various hardware and protection elements used in security systems and (2) experience from field exercises that test security response forces against attackers.

Once the program analyzes an existing system, SAVI produces a list of potential security-system upgrades for the most vulnerable paths. Security specialists then study the seriousness of the problem and determine whether any upgrades are necessary.

The program also produces several types of graphics, including vulnerable-path displays and three types of graphs. Two graphs show probabilities of interruption for various paths and response-force

(Continued on Next Page)

Lead Lab Role

SAVI Developed as Part of Sandia's Physical Protection R&D

Most of us have heard or read stories about sinister events involving nuclear terrorism and sabotage: Terrorists infiltrate nuclear facilities, steal weapons or weapon-grade materials, and threaten the US, if not the entire world.

But it's just fiction. We either see these events in movies or read about them in novels — thankfully, *not* on the front pages of our newspapers.

Sandia works hard to keep it that way. That's one of the basic roles of the Labs' Nuclear Security Systems Directorate (5200) — to devise, develop, and test physical protection systems to ensure that nuclear facilities and devices are safe from theft, sabotage, and other potential acts of terrorism. Sandia has been the lead DOE lab for this work since 1973.

That role extends way beyond Sandia's fences. All DOE nuclear labs and production facilities use security technology developed or tested at Sandia. So do nuclear-power-reactor operators, the military, and other government groups requiring strong security.

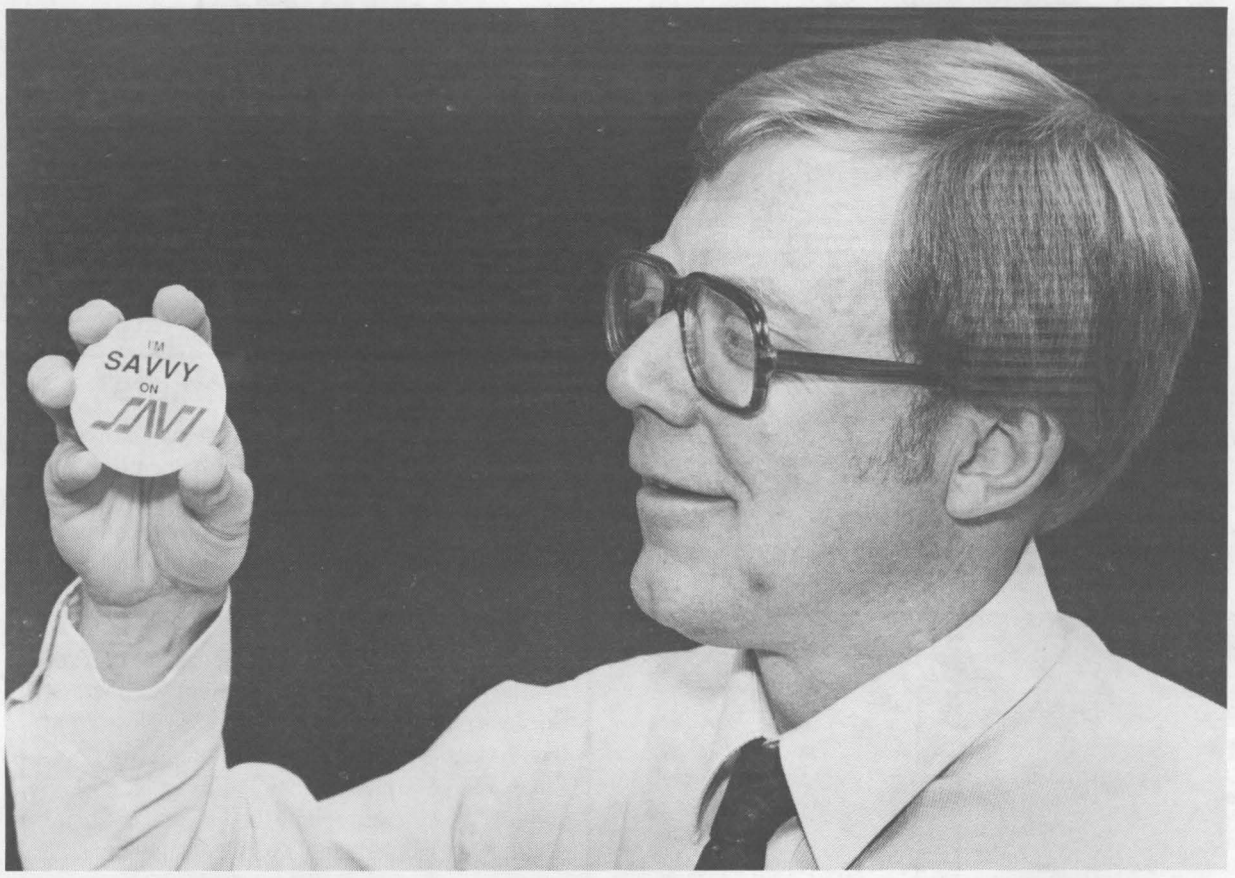
Dennis Miyoshi's Safeguards Engineering Dept. 5240 deals primarily with fixed-facility security systems. The SAVI — Systematic Analysis of Vulnerability to Intrusion — computer-model project involves employees in 5240 and Safeguards Application Dept. 5210 (see main story).

"We deal with a wide spectrum of potential security-system threats," says Dennis. "However, our top priority is to devise, develop, and test systems to combat two basic threats: the theft of nuclear weapons, devices, and materials; and any significant radiological sabotage incident.

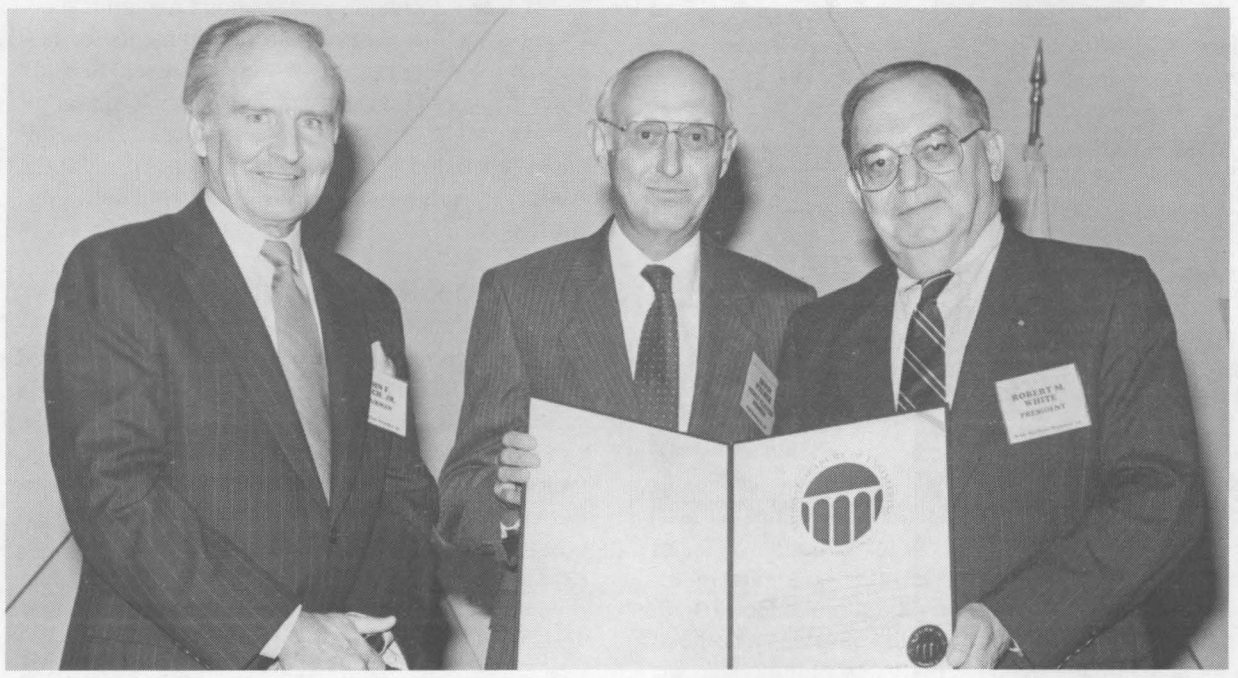
"These threats have such serious consequences that the US can afford to invest considerable resources and time to keep them from ever happening, and that's exactly what our program is all about," he emphasizes.

Much of the work involves R&D on security hardware, including sensors, closed-circuit television systems, all kinds of barriers, personal identification and recognition devices, and security systems that can be operated only by the proper combination of individuals. It also involves developing reliable ways to evaluate the field performance of individual security devices.

When security hardware and security forces are combined, a complete security system results. The complete system can then be analyzed by a vulnerability assessment model that helps security specialists evaluate systems scientifically and identify potential weaknesses. That's what SAVI is all about.

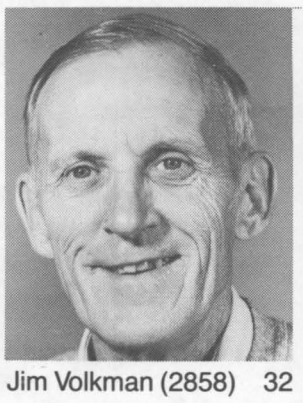


JOHN MATTER, 5212 supervisor, shows one of the buttons that go to DOE security specialists who complete a training course on SAVI — the personal-computer program that Sandia developed for evaluating security systems. About 265 DOE employees and contractors have earned their SAVI buttons.



PRESIDENT IRWIN WELBER was recently inducted into the National Academy of Engineering, one of the highest distinctions given in the engineering profession. Irwin was admitted to the Academy for his contributions to the advancement of capacity and economy in satellite, microwave-radio, submarine-cable, and digital transmissions. Other Sandians who have been inducted into the Academy include former Presidents George Dacey and John Hornbeck (dec.), former Vice-Presidents John Galt and Gene Reed, former Executive Vice-Presidents Tom Cook, Jack Howard, and Al Narath (after he became Vice-President of Government Systems at AT&T Bell Labs), and George Samara (1130).

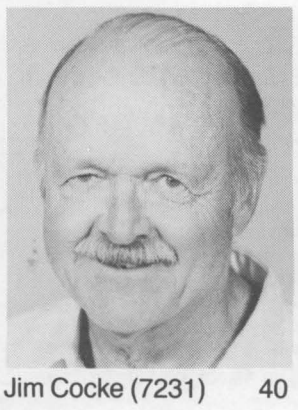
Retiring



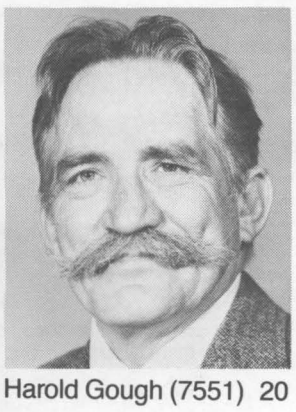
Jim Volkman (2858) 32

Margaret Hawk (6000) 22

J. B. Hamlet (155) 32



Jim Cocke (7231) 40



Harold Gough (7551) 20

Phil Rogers (7112) 32

Eddie Walker (7222) 37

(Continued from Preceding Page)

SAVI

times. The third is a comprehensive vulnerability-results graph for all paths.

SAVI is getting extensive use. At last count, it had been taught to about 265 persons responsible for security at DOE installations. Most training takes place at DOE's Central Training Academy here on KAFB, but John and Al Winblad (5245) have also taught it to officials at DOE/HQ.

Al was instrumental in developing SAVI, and he agrees with John on the computer model's primary utility. ''SAVI is only one of many tools and techniques that DOE facilities use to evaluate nuclear security systems,'' he says. ''However, we think it is particularly valuable for helping analysts discover 'small chinks in the armor.' SAVI is really designed to make strong systems even stronger.''

Sandia completed the model and issued it for field testing at DOE facilities in June 1986. User comments and suggestions were gathered and considered, then a revised version with better graphics support (SAVI 2.2E) was produced and released a year later.

Outsiders and Insiders Considered

Primarily a program for evaluating security against outside threats, SAVI is used by the DOE nuclear facilities in combination with other security evaluation software developed at Lawrence Livermore National Lab (LLNL) for evaluating threats from insiders. Both software packages were developed as a part of the Vulnerability Assessment System Program of DOE's Office of Safeguards and Security (OSS).

Al and John emphasize that the SAVI model is useful not only for evaluating existing security systems, but also for planning system upgrades and in designing entire systems for new facilities. They believe it's a good way to project the effectiveness of new systems before the bucks are spent.

Reports from SAVI users reinforce this point. ''Several have told us SAVI is particularly useful when planning security-system upgrades,'' John says. ''Users say it helps them plan systems that are not only effective, but highly cost-effective as well.''

Sandia and LLNL are working together now to develop an integrated model that can assess threats from outsiders and insiders — working separately and in combination. The new model, due to be released next spring, will go beyond simply assessing the probability of interrupting intruders. John says it will also assess the probability of neutralization — the likelihood that intruders will be defeated, once interrupted.

Commercial Firms May Use Current Model

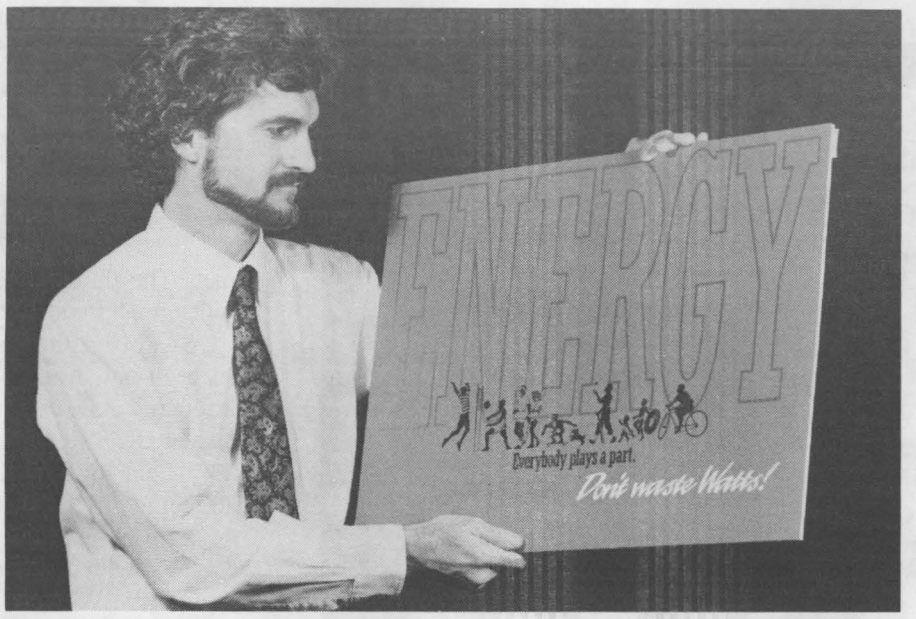
SAVI's use is not limited to DOE sites. The OSS made SAVI available last summer to military and other federal agencies with different security needs and systems. Commercial firms that want to assess their security systems can obtain the software now; DOE recently decided to make it publicly available through the National Energy Software Center at Argonne National Lab.

SAVI evolved from an earlier vulnerability assessment model that Al and Miller Cravens (5252) developed several years ago for operation on a mainframe computer.

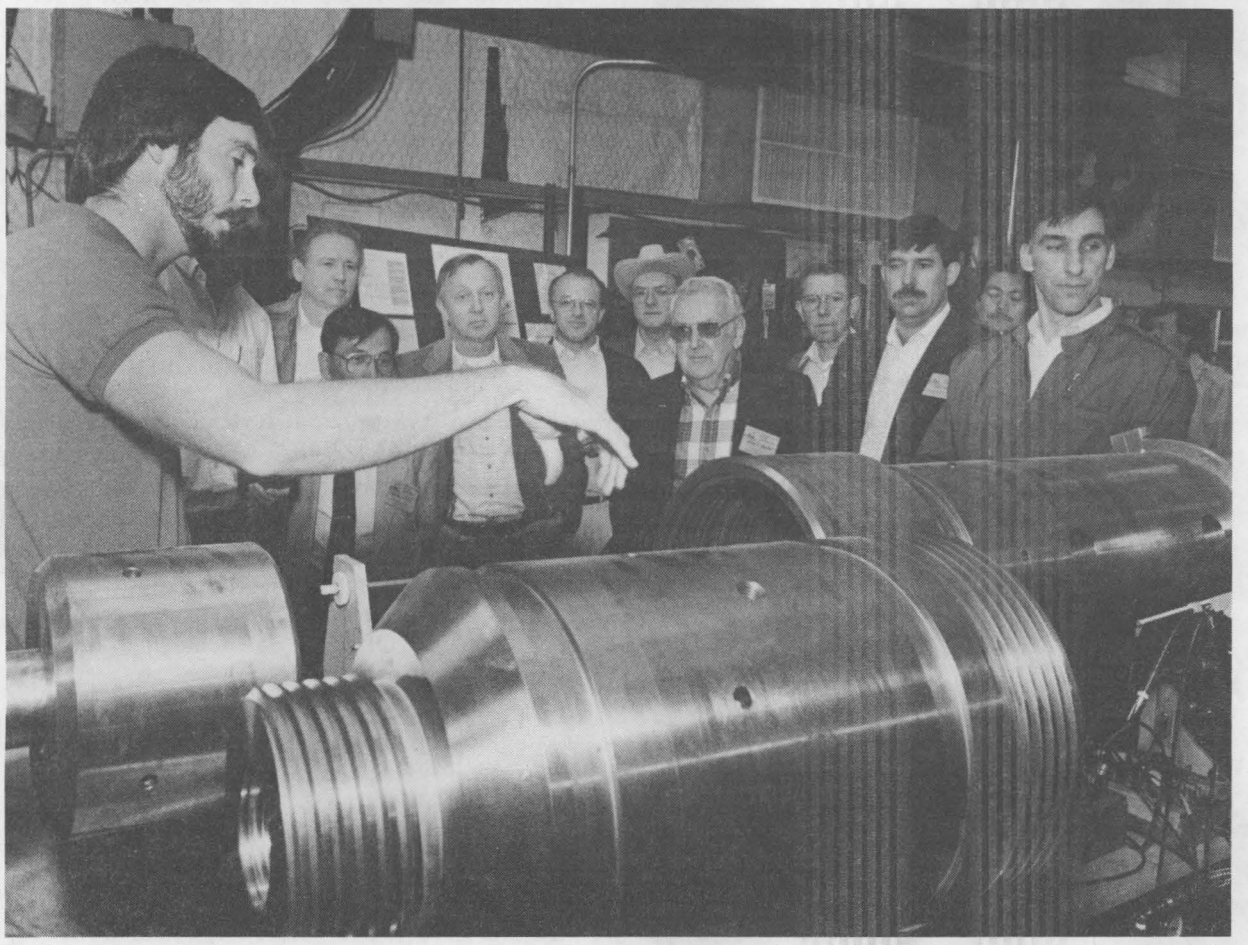
The ongoing project now includes Al, interruption modeling; Bill Paulus (5245), neutralization modeling; Mark Snell (5245) algorithm development; and Sabina Jordan (5212), software development. Former employee Richard McAniff was the original software development project leader.

The personal-computer coding for SAVI was done by Science & Engineering Associates, Inc., of Albuquerque, working under contract to Sandia.

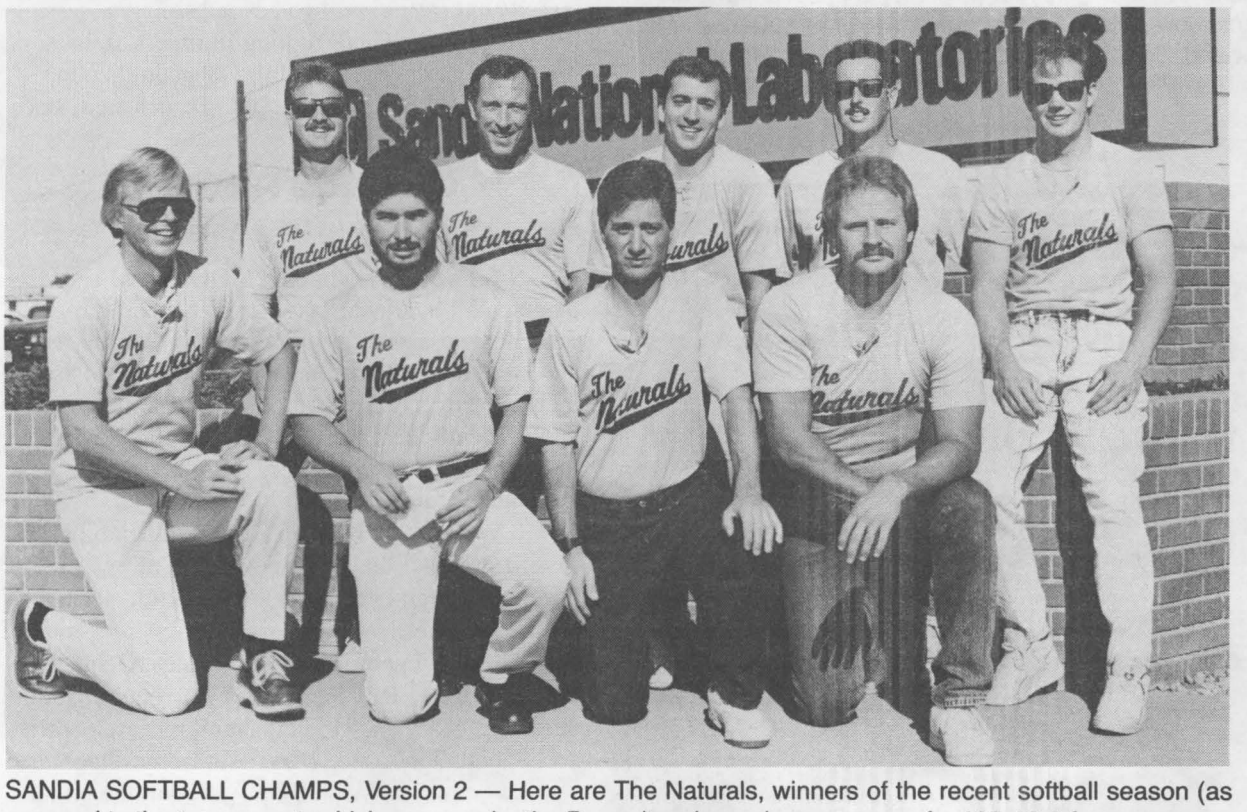
●LP



CONSERVING ENERGY is everybody's business (LAB NEWS, Aug. 12, 1988). Energy engineer Geoffrey Bell (7862 contractor employee) displays a poster reminder, soon to be placed on Labs bulletin boards.



CLINT HALL (1534) explains Sandia's HELEOS (Hypervelocity Experimental Launcher for Equation of State) gun to a group of Aeroballistic Range Association (ARA) members who visited Sandia Oct. 12. The annual meeting of the international group was co-hosted by Sandia and Los Alamos National Lab in Albuquerque Oct. 10-13. Lalit Chhabildas coordinated local activities for the l05 ARA participants, and Jim Asay (both 1534) was a co-host. Jim says that HELEOS, Sandia's newest high-velocity gun for studying the dynamic response of materials, will be capable of accelerating projectiles to velocities of about 15 kilometres/second, the fastest of any facility in the world. HELEOS is a joint project with Lawrence Livermore National Lab.



SANDIA SOFTBALL CHAMPS, Version 2 — Here are The Naturals, winners of the recent softball season (as opposed to the tournament, which was won by the Dawgs) and proud possessors of a 103-19-1 four-year won-lost-tied record ("they have ties in softball, Tyrone?"). Front row, from left: Tim Mooney (5141), Dan Lucero (6422), Chris Robertson (5212), and Steve Mahnesmith (7542). Back row: Dave Johnson (6226), Rich Kreutzfeld (5111), Rick Givler (1511), Bruce Gunckel (3423), and Jeff Ricky (2852). Not shown: Perry D'Antonio (5151), Paul Fleming (3315), Ron Kulju (2312), Bob Padilla (6447), Ed Rogers, Brian Schwaner (9113), Ron Simon (2341), Rob Turner (2312).

Take Note

The Holiday Sharing Center, a project begun last year by United Way and KGGM-TV, helps the needy in various ways during the Thanksgiving and Christmas holiday season. This year, the Center will operate from Nov. 14 through Dec. 22, Monday through Friday, from 8 a.m. to 5 p.m. Donations of food, clothing, toys, and volunteer-time are sought. If you or your organization would like to help, give the Center a call during operating hours on 768-1077.

Retirement Seminars

Guy Trujillo of Financial Network Investment Corp. will present "Asset Allocation," a high-tech approach to developing a portfolio consistent with your needs and changing economic conditions, at 5 p.m. on Nov. 9 at the FNIC office (One Executive Center, 8500 Menaul NE, Suite A-301). RSVP to Guy at 291-8585.

Ben Bolden and David Senasack of Prudential Insurance Co. will present "Financial Success by Design" at 7:30 p.m. on Nov. 15 at the Prudential office (ABQ Bank bldg., 3rd floor, Suite 330, 6501 Americas Parkway NE). The seminar covers retirement topics such as social security, pensions, and loss of insurance as a result of retirement. Seating's by reservation only; phone your RSVP to Sandy Jenkins at 881-1111.

UNM's Technology Innovation Program is sponsoring a seminar on program requirements for federal innovation grants, which are used to fund scientific and technical research that may lead to commercialization of products and services. The seminar is scheduled Nov. 14 from 6:30 to 8 p.m. at the Anderson School of Management (old building, Rm. 1004).

* * *

The 35th annual Reliability and Maintainability Symposium (RAMS) is set for Jan. 23-26 at the Westin Peachtree Plaza Hotel in Atlanta. Sponsored by nine engineering societies, RAMS will feature a variety of assurance-technology program sessions, panel discussions, tutorials, and exhibits. For registration info and other details, write R. G. Schueppert, Beckman Instruments (MS:B-14-D), 2500 N. Harbor Blvd., Fullerton, CA 92634, or call him on (714) 773-8831.

* * *

ISE '89 technical program chairman Charles Christmann (BDM) has issued a call for papers for the 11th Annual Ideas in Science and Electronics Exposition and Symposium scheduled for May 16-18 at the Albuquerque Convention Center. This year's theme is "Economic Growth through Science and Engineering," and papers or tutorials are invited under seven general topics: leading-edge technologies; technology transfer; applications of emerging technologies; design and manufacturing; test and evaluation; instrumentation and measurement systems; and communications, signal processing, and computers.

One-page abstracts should be sent by Dec. 1 to Charles Christmann, c/o ISE, Inc., 8100 Mountain Road NE, Suite 207, Albuquerque 87110. Authors of selected papers will be notified by Jan. 20; completed papers are due by April 14 and must be unclassified, have unlimited distribution, and have company/government clearance before submission. For more information, call Charles on 262-1023.

* * *

Dr. R. Griffey of UNM's Center for Noninvasive Diagnostics will talk on "Magnetic Resonance Imaging in Cancer" at a meeting sponsored by the South Central NM Technician Affiliate Assn. on Nov. 10 at 5 p.m. at the TTC (Bldg. 825).

But It Takes Away the Challenge

Fewer drips are promised by a Fort Myers, Fla., ice-cream chain. Thanks to a new formula and colder dispensing equipment, Twistee Treat Corp. says its cones can be held for 12 minutes before starting to melt, twice as long as other brands.

Lynn Asinof, *Wall Street Journal*

Measuring the Measurers

Sandians Find Mixed Reliability in Wastewater Analyses

Like any other big R&D lab, Sandia monitors its wastewater regularly to ensure that possible contaminants such as arsenic, mercury, and lead remain within safe limits. In our case, ''regularly'' means monthly, as specified in the permit issued by the City of Albuquerque.

It's the job of Environmental Programs Div. 3314 to do the monitoring. Automatic equipment collects samples from just upstream of anywhere a Sandia sewer enters either the Kirtland or Albuquerque system. After that, the sample goes to an analytical lab for testing.

The question — asked and eventually answered by Phyllis Pei (3314) and Julie Einerson (formerly 3314, now with General Electric) — is ''How can we be sure a lab will give us timely and credible results?'' It's not a hypothetical question: Sandia was receiving disparate reports from analyses of its samples. And sometimes the results did not arrive until nearly two months after the sample reached the lab.

This was disturbing, because a false low might allow harmful amounts of contaminants to be discharged. A false high could cause expensive and unnecessary remedial action. And slow response from a lab would hinder Sandia in its attempts to report promptly.

So Phyllis and Julie made a careful check on the performance of analytical laboratories whose services Sandia might use.

NOT A WASTED EFFORT — Phyllis Pei (3314) and Julie Einerson (formerly 3314, now with General Electric) look over the data they compiled on labs that analyze wastewater.

Good News — And Bad

The good news is that they found several labs for Sandia to rely on. The bad news is that they got a few serious errors, such as a 1200-fold overstatement of the arsenic in one of their check samples. That result — 1200 parts per million (ppm) instead of the true 1 ppm — would have raised major concern if the sample had actually been wastewater. Another lab reported less than one percent of the lead actually present in a sample.

Julie and Phyllis's description of their procedure and results became a featured article in the October 1988 issue of *Environmental Science and Technology*. Judging by the letters and phone calls they're getting from throughout the US, their work filled a gap.

There is no standard certification for labs, they point out. The Environmental Protection Agency (EPA) qualifies labs for its own use. ''But the EPA does not endorse them for the commercial user,'' says Phyllis. ''Commercial users are left to their own judgment and discretion.''

''A lot of environmental managers don't have a chemistry background,'' adds Julie. ''Up to now, reliable results are something that many people took for granted. Now that the article has been published, more of the managers will start testing the labs.''

Precisely Measured Contaminants

Julie and Phyllis sent check samples along with routine wastewater samples to ten analytical laboratories. The check samples contained precisely measured amounts of cadmium, chromium, mercury, arsenic, copper, and lead. The labs did not know that they would be getting check samples.

Besides evaluating the precision and accuracy of the analyses, Phyllis and Julie rated the labs' quality assurance plans, their turn-around time, their ability to customize reports to Sandia standards, and their price. (Price did not correlate with performance, either good or bad.)

Along with the report of their own results, Julie and Phyllis offer advice to others using analytical services. They say that users must never take reliability for granted — they must continually monitor their laboratory.

At the same time, the user should not try to mislead or deceive a laboratory. Any lab providing analytical services should know from the outset that it will be receiving quality-control samples; it should also be informed periodically of how well it is doing. Further, the lab needs to understand the user's sample-collection procedures, and the user needs to understand the lab's analytical procedures.

That kind of communication, Phyllis and Julie emphasize, can help maintain credibility on both sides. Both the lab and the customer can then pursue the goal of accurate analyses. ●CS

Sympathy

To Dennis Kramer (2134) on the death of his mother in Chicago, Oct. 6.

To Eva (2564) and Craig (2114) Wilcox on the death of her father and his father-in-law in Albuquerque, Oct. 11.

To Jim Manweller (9141) on the death of his father in Ft. Collins, Colo., Oct. 11.

To Carol Gutierrez (2334) on the death of her father in Albuquerque, Oct. 16.

To John Espinoza (5219) on the death of his brother in Las Cruces, Oct. 20.

To Don Schroeder (5145) on the death of his father in Wyoming, Oct. 27.

Cultural Diversity Colloquium

Three Legal Systems — An Intricate Blend

Philip Deloria, Director of the American Indian Law Center at UNM, will speak on ''Tri-Governmental Jurisdiction'' at the next Cultural Diversity Colloquium, set for Nov. 16 from 10 to 11 a.m. at the Technology Transfer Center (Bldg. 825). The colloquia are sponsored by Equal Employment Opportunity and Affirmative Action Dept. 3510.

''American Indian tribes,'' says Deloria, ''are rapidly moving from passive to active participation in both the economic and the political process. That movement raises a whole new set of questions and issues, many of which are related to a complicated mix of three legal systems — federal, state, and Indian — and how they affect people on and off the reservation.''

His talk explores some of the ''gray-area'' legal issues that sometimes occur under the intricate tri-governmental system, and the special relationship between the federal government and Indian tribes.

Deloria is a member of the Standing Rock Sioux Tribe of Fort Yates, N.D. His special recruiting efforts in UNM's American Indian law program have substantially increased the number of American Indian attorneys in New Mexico and throughout the country. He is the author of a number of publications on tribal legal matters, and has served in the US Department of the Interior as Deputy Assistant Secretary for Indian Affairs Policy.

Jim Shorty (3510) will host Deloria during his visit.

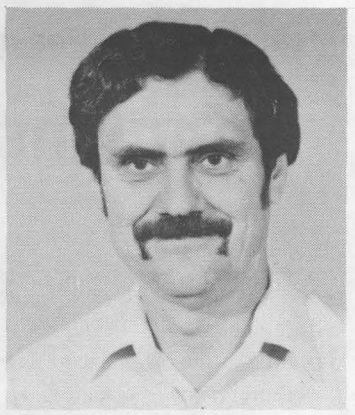
MILEPOSTS

LAB NEWS

NOVEMBER 1988

Jim Rogers (400) 35

Wendell Grimsley (7852) 25



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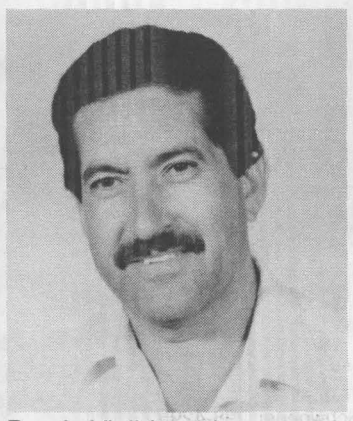
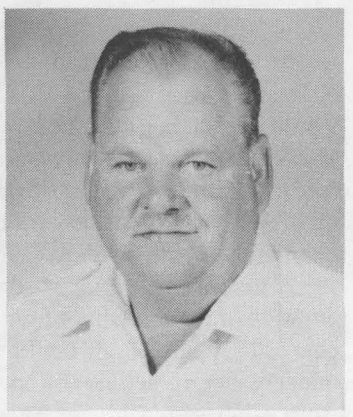
Jim Winter (7813) 40



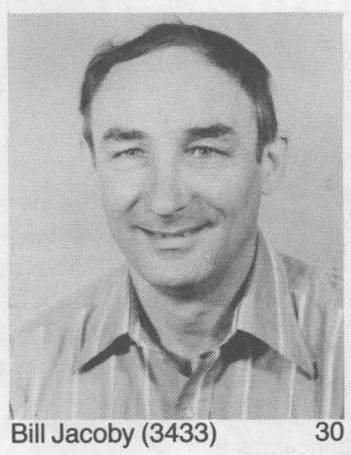
Bernie Vigil (2854) 20

Bob Thompson (1420) 30

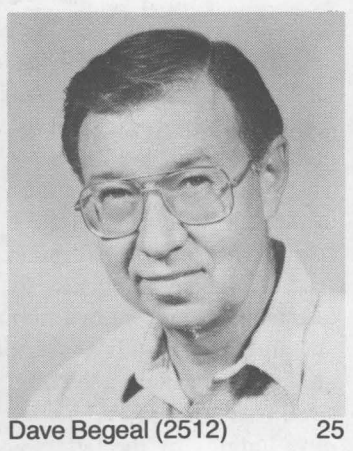


Howard Heerdt (7484) 15

Evelyn Tuttle (3412) 15



Bill Jacoby (3433) 30



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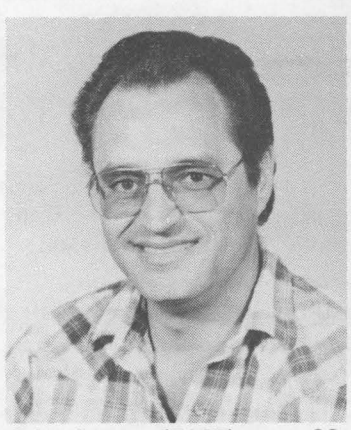
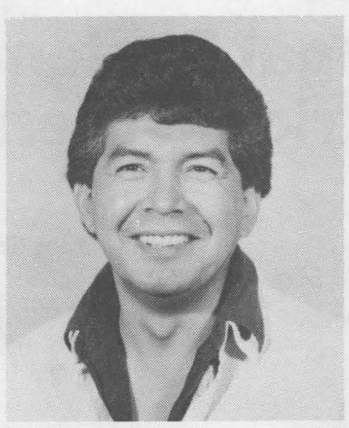
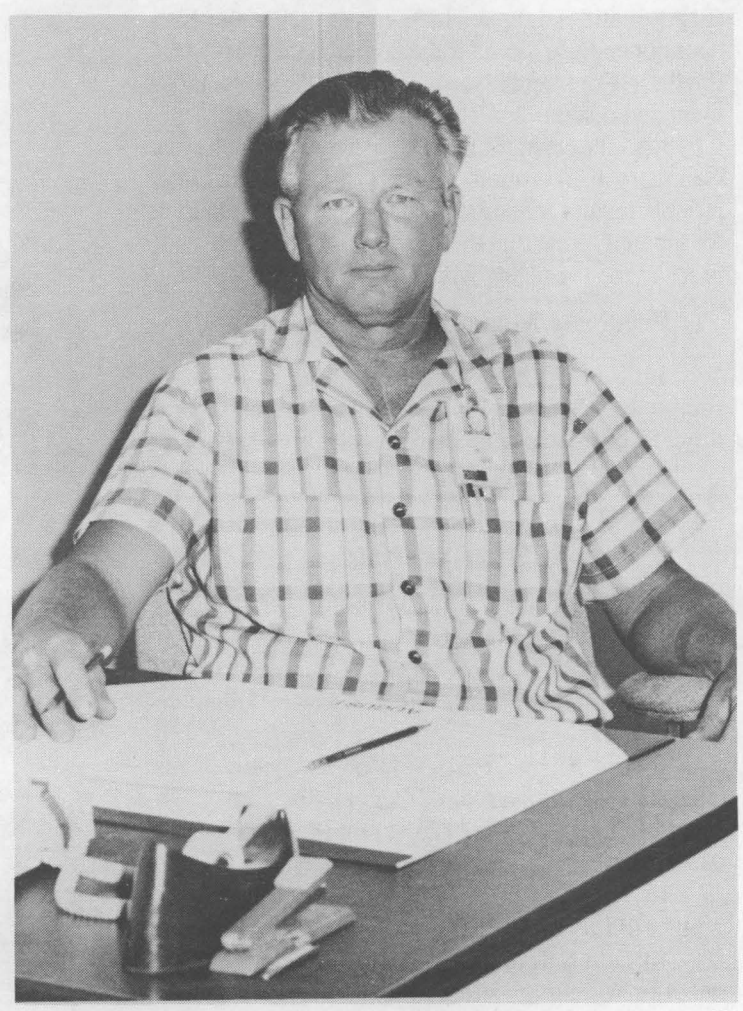


John Aragon (7137) 20

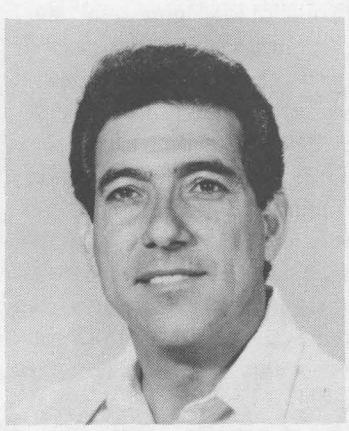


Ed Garcia (9213) 20

Marge Weitzel (7100) 30



Gary Miller (7124) 25



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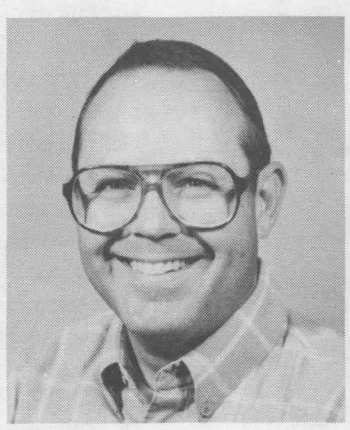
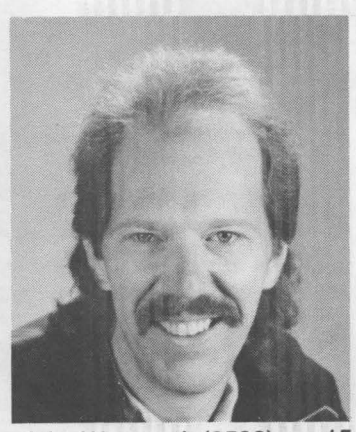


Mike Rex (3521) 20



John Warmouth (8532) 15

Medical Corner

Take a Breather!

By Arlene Price (3330)

Nov. 17, the third Thursday of the month, is this year's Great American Smokeout!

I can't believe it either! Where has this year gone? It was only yesterday that you took the pledge to quit smoking for 24 hours. It was only yesterday that you adopted a smoker to help him or her quit smoking for 24 hours — someone you really cared about, someone to whom you really wanted to give a helping hand. Some of you actually quit for good at that time. Some of you tried for a while and didn't quit.

Research shows that if you are willing to make a commitment to quit smoking on a certain day, you'll have a much greater chance to succeed than if you think that you'll quit smoking ''someday.'' The research also shows that people who quit even for a little while also have a greater chance to quit for good. The GAS is a great opportunity to practice abstinence (from smoking, anyway) for at least one day.

So don't shrug it off! Who knows? Maybe this will be your first day as a non-smoker for the rest of your life! Don't forget how time flies and how only yesterday you said you were going to take that first step. If you've been meaning to quit, why not do something positive for yourself? ''Go for health'' now.

Look around and you'll find us back again this year with all kinds of goodies to help you get through this day successfully (survival kits filled with munchies to help you through those rough moments, and quit-smoking tips). The cafeteria will again offer a Cold Turkey Special sandwich in honor of the occasion. So take a deep breath and slowly exhale (fresh air, that is), and come join us!

Retiree Deaths

George Ison (70)	July 6
Harold Schildknecht (66)	July 17
Jesse Floyd (64)	July 18
Randall Parsons (77)	July 21
Pasquel DiDomenico (65)	July 24
Filiberto Archibeque (65)	July 25
Arthur Cole (68)	July 31
William Davis (70)	Aug. 3
Elmer Hartenberger (82)	Aug. 11
George French (72)	Aug. 18
John Bashaw (82)	Aug. 29
Richard Miner (74)	Aug. 30
Dennis Doherty (77)	Sept. 5
Irl Beall (92)	Sept. 8
Helen Zimmermann (75)	Sept. 12
Charles Abernathy (72)	Sept. 13
George Duda (79)	Sept. 17
Charles Brown (65)	Sept. 21
Basileo Villescas (71)	Sept. 22

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

TWO SETS OF MATCHING CHAIRS, $50/set; gold couch, $50; Story & Clark spinet piano, $650; rotary sewing machine, White, $70 OBO. McMillen, 881-6077.

TOSHIBA 19" COLOR TV, w/stand, $150; super-single water bed, pine frame and headboard, new mattress, $100. Lunsford, 839-9517.

MAN'S SPALDING GOLF CLUBS, 13 clubs, w/bag, $180. Jackson, 881-8011 days.

H-P 71B, IL module, IL printer, cass. drive, Forth assembler, debugger, A.C. circuits, all new in boxes, $500 OBO. Hutchinson, 260-1138.

THREE COVER PLATES, for 4500-cfm evaporative cooler, galvanized iron, $10; toaster, $3. Auerbach, 296-1489.

OLYMPUS OM-88 CAMERA, autofocus, 50mm f1.8 lens, case, new, never used, in box w/warranty, $200. Slutts, 255-3693.

ANTIQUE COFFEE GRINDER, $50. Gibson, 344-8056.

ELECTRIC BASS GUITAR, Arbor, w/ case, strap, cables; Rocktown (J.C. Penney) amp, 50 watts, $150/both. Stauffer, 345-6312.

SYNTHESIZER, Kawai K3, w/stand and pedal, $690 OBO. Biedscheid, 294-6564.

ARMOIRE, recessed doors, footed, walnut, 17th-century, Dutch origin, 6'8" H, 6'6" W, 1968 appraisal $2200, sell for $1900. Caller, 296-9331.

CHILD'S CAR SEAT, Cosco/Peterson, $25; Century stroller, $25; TV/VCR cart, $20. Webb, 828-2271.

GRAVITY EXERCISER, $125; portable kerosene heater, 9500-Btu, $35. Ulibarri, 881-3551.

DOG RUN, freestanding, 6' x 6' x 20', $125 OBO. Cotter, 897-1470.

APPLE IIe, w/duo disk drive, Sider II 20-MB hard drive, monitor, Kensington system saver, computer table w/hutch and printer table, *Appleworks* and *Managing Your Money*. Cox, 344-2221.

BABY STROLLER, "Maxi-Taxi," adjustable back, canopy, shoulder harness, folds up (carry-handle), cost $60, sell for $25. Barr, 821-5870.

BRIGGS ENGINE, 10-hp; 2 golf carts; 18" hydraulic cylinder and pump; garbage disposal; aluminum porch canopy. Wright, 281-5828.

ELECTRIC RANGE & OVEN, drop-in type, Whirlpool, continuous cleaning, $150 OBO. Ruby, 299-0767.

PLATE GLASS, 4' x 8', textured for privacy, you haul, make offer. Slezak, 268-6627.

COUCH, blue/rust floral, $300; garage sale, Nov. 5, 409 Chama NE. Tripp, 822-8580.

COCKER SPANIEL PUPPIES, AKC-registered, male, buff, 9 weeks old, first shots, tails docked, dewclaws removed, $100. Oberkampf, 292-4366.

TRUMPET, w/case, $250 OBO; British 303 rifle, $75. Trujillo, 865-0253.

KING-SIZE WATER BED, w/6-drawer pedestal, padded side rails, heater, liner, $150. Imbert, 294-8176.

KEROSENE HEATER, new, 7200 Btu/hr., $75; Edison cylindrical phonograph, $295; 30" x 48" work table, $8; all prices OBO. Cole, 298-1464.

GOLDEN RETRIEVER, female, 5 months old, purebred (no papers), $50; dog carrier, $35. Aker, 293-2528.

FOUR ELECTRIC WALL HEATERS, 10', $25/ea. Cibicki, 877-7098.

PORTABLE WHIRLPOOL WASHER (can connect to kitchen sink) and Whirlpool dryer, new $750, sell for $300. Allen, 292-4238.

PENTAX ME-SUPER, w/Vivitar telephoto lens, flash attachment, case, $200 OBO; Bang/Olufsen turntable, used twice, $75 OBO; 4' x 5' miniblind, copper-color, $25. Black, 296-8414.

RECLINER CHAIR, black Naugahyde, w/ottoman, $60. Drotning, 294-4807.

MAGNAVOX 25" COLOR TV, console model, $200 OBO. Kozlowski, 822-0117 or 821-8417.

TELEPHOTO ZOOM LENS, Olympus mount, Vivitar 70-205mm, $50. Leonard, 884-8566.

SEARS TENT TRAILER, old, top and canvas in poor condition, possible utility-trailer use, $50 OBO. Suber, 275-1933.

SAILBOARD, Mistral Tarifa, 10'8", 26 lbs., all hardware, 6.2-sq.-metre Gaastra sail, $800; man's small full-body wet suit, $50. Holmes, 292-0898.

SNOWBLOWER, single-stage, 3hp, $125. Bruce, 897-7416.

THREE SHOE RACKS, over-the-door style, hold 12-15 pairs, cost $20/ea. new, sell for $7/ea. or $20/all. Carter, 293-6750.

CONCRETE FINISHING TOOLS: bull float w/extension poles, hand bull floats, trowels, more. Snelling, 294-5751.

PICCOLO, silver, w/tuning rod, case, $250. Morgan, 821-1242 leave message.

SAILBOARD EQUIPMENT: Primex 6.5 mylar RAF sail, $150; Klepper 2-piece 16' mast, $100; Aitken 96.5, 122-litre board, $250. Healer, 298-6967.

SNOWMOBILE TRAILER, Snobird, approx. 4 yrs. old, holds 2 units, $300. Schwoebel, 298-4295.

HAMMOND ORGAN, recently tuned, $350. Tedesco, 888-1068.

GERMAN SHEPHERD PUPPIES, AKC-registered, police/German/champion bloodlines, dewclaws removed, first shots, $200. Gonzales, 898-8728.

LA-Z-BOY CHAIR, tilts and swivels, leather and cloth upholstery. Graff, 268-5291.

PING-PONG TABLE, 3/4" top, metal frame w/casters, folds up, play-back feature, w/net and paddles, $45. Muir, 883-7933.

COMPUTER DESK, $50; Armstrong student flute, $150; Atari game center, $35. Reber, 898-0076.

CONCORD AM/FM/CASSETTE, for car, under warranty, 20 watts, station pre-sets, seek/scan, Dolby, auto-eject, $100. Magnuson, 821-5330.

WOMAN'S SKI CLOTHING: bib and pants (small), mittens, hot pink, w/coordinating sweater and cap, $75. Prew, 296-3815.

66 RED ROOF TILES, $40. Ezell, 821-1768.

PLAYPEN, $25. Koepp, 294-7136.

BONANZA POWDER MEASURE, $20; rollaway bed, $25; rider toys, $5/ea. McFarland, 292-3129.

BABY STROLLER, $20; baby crib, $40; diamond ring, $400. Salisbury, 242-6299.

SIX-PIECE DEN SET: couch, loveseat, chair, 3 tables, Spanish-style carved wood, $200. Chavez, 344-0405.

EXERCISE BIKE, speedometer, odometer, timer, $35; baby stroller, reclines, folds up, $40; exercise trampoline, 40"-diam., $25; 2 wrought-iron table lamps, $35/set. Vigil, 821-8059.

SKI RACK, cartop rain-gutter style, lockable, $30; snow tires w/rims, E78-15, $40; bicycle baby carrier, $15. Ferguson, 293-2853.

CD PLAYER, $50; electrostatic headphones, $15; turntable, $40; modem, $40; car racks, $25. Eichel, 292-5795.

STEREO CABINET, glass front, 23" x 50" x 17" deep, $65; 4 chairs on casters, brown upholstery, w/metal and oak trim, $240. Bickel, 293-6172.

DINETTE SET, w/4 chairs, $50; oak end table, $25; high chair, $10; wicker chair, $5. Hendrick, 296-2163.

TRANSPORTATION

'80 GMC PICKUP, AT, AC, AM/FM, new tires, chrome rims, shocks, starter, $2950, or $3250 w/fiberglass camper shell. Jaramillo, 1-864-3318 after 5:30.

'86 HONDA XR200, skid plate, extra parts, $1075. Pryor, 294-6980 or 293-0372.

'84 CHRYSLER LASER, hatchback, 2.2-L, 5-spd., FWD, AC, extras, $3900. Christoffersen, 292-2887.

'74 CHEV. CARGO VAN, 350, AT, PS, $1200. Gibson, 344-8056.

'64 FORD F250 PICKUP, 3/4-ton, rebuilt 292 V-8, $1800 OBO. Oldewage, 296-0216.

WOMAN'S SPORT SCHWINN BICYCLE, 10-spd., $75. Jackson, 881-8011 days.

'85 BMW K100 RS MOTORCYCLE, custom paint, w/accessories. Bickelman, 299-9453.

'71 VW SUPER BEETLE, blue, $950. Mathews, 881-7368.

'87 FORD F150-XL, 4x4, 4-spd. AT, AC, PS, PB, custom wheels, heavy-duty rear bumper, dual tanks. Montoya, 881-6898 or 345-4163.

HONDA 110 THREE-WHEELER. Wright, 281-5828.

'78 CHEV. PICKUP, w/overhead rack, $2200. Chemistruck, 299-7563.

'84 FORD TEMPO, GL, 4-dr., AT, AC, new shocks, tires, battery, below book, $2375. Boal, 296-4660.

ULTRALIGHT, 30-ft. wingspan, 3 axis controls, 320cc single-cyl. (2-stroke) engine. Grimm, 293-9720.

SCHWINN VARSITY BICYCLE, 10-spd., $75; Diamondback Predator BMX bike, $75; racing helmet, $15. Black, 296-8414.

'86 TOYOTA COROLLA, 2-dr., 5-spd., AM/FM, AC, take over payments. Tillotson, 888-3173.

'79 PRINDLE CATAMARAN, 18', w/ custom trailer, blue sails (main & jib), fitted for 2 trapezes. Blewer, 268-9019.

'84 PONTIAC FIERO SE, sunroof, PW, new brakes and tires, red w/gray interior, 58K miles, extras, $4750 OBO. Atkins, 299-0810.

'87 TOYOTA PICKUP, AT, AM/FM cassette, bed liner, camper shell, $6900 firm. Smith, 275-8185.

'83 MUSTANG CONVERTIBLE, 302 V-8, 5-spd., AC, PS, stereo, trailer hitch, $5980. Evans, 836-4922.

WOMAN'S SCHWINN BICYCLE, 10-spd., $55; side window screens for VW van, complete set, $10. Sabisch, 298-8350.

'65 FORD MUSTANG, 6-cyl., 3-spd., new interior, rebuilt engine, one owner, never wrecked, $2800. Brown, 884-8581.

'71 MG MIDGET, not running, all parts, $400. Reber, 898-0076.

'78 TOYOTA COROLLA SW, AC, AM/FM, 58K miles, one owner, $1800. Padilla, 255-1301.

'69 PLYMOUTH VALIANT, new motor, $500. West, 292-7091.

'81 TOYOTA PICKUP, 4x4, red, $3200. Pfeiffer, 299-3951.

'85 BMW 318i, 4-dr., sunroof, 5-spd., 36K miles, steel gray, $13,000; Redline bicycle, $200. Salisbury, 242-6299.

'64 CHEV. PICKUP, LWB, 4-spd., 6-cyl., $1000 OBO; '82 Honda CB900 custom, 20K miles, $1150 OBO. Phillips, 268-7212 after 5.

'86 MAZDA RX7-GTU, sport package (special wheels, tires, brakes, etc.), tape deck, AC, cruise, 15K miles, $11,200. Dippold, 821-5750.

REAL ESTATE

3-BDR. HOME, 1-3/4 baths, 1249 sq. ft., city/mountain views, assume $535 PITI. Nixon, 892-4685.

3-BDR. MOBILE HOME, '72 Towne-n-Country, 1-1/4 baths, refrigerator, stove, washer/dryer, skirting. Gallegos, 281-5515.

3-BDR. HAP CRAWFORD ADOBE, North Valley, pool/sauna, 3 FPs, 3 baths, landscaping, $145,000. Salisbury, 242-6299.

35' GEODESIC DOME HOME KIT, w/extras, serious inquiries only, $10,000 OBO, or possible trade for land. Phillips, 268-7212.

WANTED

FEMALE HOUSE SITTER, Dec. 14-28, to care for 2 dogs, 2 cats, plants. Sanchez, 243-7016.

22-CAL. RIFLE, small, light, not automatic, reasonably priced. Scussel, 821-7702.

FEMALE HOUSEMATE, non-smoker, share 3-bdr. townhouse, NE, $260/month. Jackson, 881-8011 days.

MANUAL TYPEWRITER, good working condition; telephone, old-style AT&T rotary Trimline. Shapnek, 281-5913.

FABRIC SCRAPS, outdated knits, yarn, other suitable material for Golden Girl Cloggers' lap-robe project. Hill, 275-7415 or 298-1061.

HOUSEMATE, non-smoker, share 3-bdr./2-bath home, Indian School/Wyoming area, $250/month, plus 1/2 utilities. Swahlan, 292-3598.

GOOD HOME for blue Great Dane, neutered male, 15 months old, house-trained, needs room to run. Vittitoe, 299-9298.

BICYCLE EQUIPMENT, accessories, for budding adult biker: white small-to-medium helmet, mirror, gloves, etc. James, 344-7854.

ADD-ON MEMORY BOARD and/or second disk drive for PC jr. Borgman, 299-6010.

PLAYHOUSE, in good condition. Barela, 873-3245.

HOUSE SITTER, or someone to care for pets and plants, mid-Dec. to mid-Jan. Darby, 293-6244.

HOUSEMATE, female non-smoker, 3-bdr. house, office space, Comanche/San Mateo area, $175 plus 1/2 utilities. Boslough, 884-0417.

SMALL CAR, recent model Mazda 323, Honda Civic, Toyota Corolla, etc. Dippold, 821-5750.

ROOMMATE, 3-bdr. house, near Juan Tabo/Constitution, 2 baths, piano, must tolerate barbershop quartets, $300/mo. plus 1/2 utilities. Billups, 291-8123.

WORK WANTED

HOUSE-SITTING JOB, over Christmas holidays, by college couple, NE Heights preferable, references available. Mathews, 881-7368.

SHARE-A-RIDE

CARPOOL WANTED, w/non-smoker, from 2nd St./Rio Bravo area, 1 or 2 times/week, via South Valley gate, work hrs. 8 a.m.-4:30 p.m. Cibicki, 877-7098.

Prime-Time Party Nov. 18 Celebrates Grand (Re)Opening

FANS OF FINE FOOD can proceed to the prime or scoot for the scampi at the C-Club's grand-opening gala Nov. 18, billed as ''New Year in November.'' Prepare for the biggest blast of the year, because this one has it all: wine-tasting and savory snacks at 6 p.m., elegant dining at 7:30, and dancing to smooth music by the Roland DeRose orchestra until 11:30. The buffet menu features your choice of entree — prime rib or shrimp scampi — plus a twice-baked potato, vegetables, and salad bar. Befitting a momentous occasion such as this, cake and a glass of celebratory champagne top off the meal. Cost is $14/person (members only). The party's likely to be SRO, so purchase your tickets ASAP.

CELEBRATE ''YES - WE'RE - BACK - IN - ACTION MONTH'' in the main lounge (after renovation's finished on Nov. 10) at a series of special events throughout November. Monday Night Football evenings feature fan-fundamentals for just fifty cents: draft beer, hot dogs, and tacos. The Night Manager's Special on Nov. 16 offers you a chance to build your own sub sandwich — really pile it on for the measly price of $2.50. And you can get a leg up on Thanksgiving or Christmas dinner if you win one of the 12 turkeys to be given away at lounge drawings all through November.

ALL-YOU-CAN-EAT fried chicken, fish, cole slaw, and fries are available next Friday night (Nov. 11) for the unheard-of price of $5.95. Afterwards, it's tootsie-twirl time as Lito and Friends provide variety music for dancing.

PONDERING PRECIPITATION is what most Coronado Ski Club members are doing these days. And they'll concentrate *en masse* on the white stuff at the monthly meeting Nov. 15. Come on out early for social hour at 7 p.m. The meeting, beginning at 7:30, features guest speaker Paul Souder (DMTS, 7231) — long-time representative of Purgatory Ski Area. He'll describe what's new up there, and show a modified version of a Cybervision ski-instruction film.

T-BIRDS REALLY TAKE OFF this month; this unretiring group of gadabouts has a lineup of things to do and places to go like you've never seen. The card sharks go back to the tables on Thursday, Nov. 17, with a day of gaming, conversation, and free refreshments; shuffling starts at 10 a.m.

Next Monday (Nov. 14), Thunderbirds get together for their monthly meeting at the south end of the ballroom. Meet your friends early for lunch (T-Bird tables are reserved), then listen in on the program — starting at 1 p.m. — to learn about the zoo/museums volunteer-docent programs.

The Roadrunner RVers put the pedal to the metal again this month with a trip to Elephant Butte Lake Nov. 14-18. Fellow T-Birds, if so inclined, are invited to crash the party for a day or two; reasonable accommodations are available, either at the Butte or in T-or-C. More info from wagon masters Duane Laymon (822-1749), Tom Brooks (344-5855), or Joe Shelby (292-4605).

Events Calendar

Nov. 4-6 — ''Kingdom Come,'' tragic comedy by Nancy Gage, story about people driven by visions and fantasies that don't always come true, set on the edge of the Navajo reservation; 8 p.m. Fri. & Sat., 6 p.m. Sun.; Vortex Theatre, 247-8600.

Nov. 4-Dec. 22 — ''A Poetic Vision: Spanish Colonial Painting,'' exhibition of religious paintings from the 17th-19th centuries, on loan from the Institute of Iberian Colonial Art; 9 a.m.-4 p.m. Tues.-Fri., 5-9 p.m. Tues.; UNM Art Museum, 277-4001.

Nov. 5 — Concert, ''Quintessence: Choral Artists of the Southwest,'' Renaissance music; 8:15 p.m., St. Paul Lutheran Church (1100 Indian School NE), 821-0309.

Nov. 5-6 — Collector's Showcase, collectibles from antiques to miniatures; 10 a.m.-6 p.m. Sat., 10 a.m.-5 p.m. Sun.; Exhibit Hall, NM State Fairgrounds, 883-6986.

Nov. 5, 13, & 19 — ''Boxes,'' premiere of Martha Heard's play about modern-day relationships between women and men; 8 p.m., First Unitarian Church (3701 Carlisle NE), 873-4338.

Nov. 6 — NMSO Sinfonietta Series: NM Symphony Orchestra and Chorus perform music of Ravel, Copland, and Haydn; 3 p.m., First United Methodist Church (4th & Lead SW), 843-7657.

Nov. 6, 12, & 20 — ''Mud,'' Maria Irene Fornes' play about a woman's struggles for an education and a better life, presented by the Tapestry Players; 2 p.m., First Unitarian Church (3701 Carlisle NE), 873-4338.

Nov. 10-12 & 17-19 — ''On the Verge,'' comedy about three intrepid Victorian women during the age of exploration; 8 p.m., Rodey Theatre, 277-4402.

Nov. 11 — 16th Annual Veterans Day program, special activities honoring Native American veterans as well as veterans worldwide; all day, Indian Pueblo Cultural Center, 843-7270.

Nov. 11-13 — Southwest Arts & Crafts Festival; 10 a.m.-9 p.m. Fri. & Sat., 10 a.m.-5 p.m. Sun.; Exhibit Hall, NM State Fairgrounds, 262-2448.

Nov. 12 — Hollyberry Fair, annual Christmas bazaar; 9 a.m.-3 p.m., St. Mark's on the Mesa Episcopal Church (431 Richmond Pl. NE), 262-2484.

Nov. 12 — San Diego Feast Day: Buffalo, Comanche, Corn, Deer, & Flag dances at Jemez and Tesuque Pueblos; free, 843-7270.

Nov. 13 — Concert, pianist Eugene Istomin; 4 p.m., First United Methodist Church (4th & Lead SW), 243-5646.

Nov. 15 — Subscription Concert II: Chamber Orchestra of Albuquerque; 8:15 p.m., St. John's United Methodist Church (2626 Arizona NE), 881-0844.

Nov. 15-30 — Exhibit, ''Oasis in the Desert: Charles Fletcher Lummis' Photographs from Isleta Pueblo,'' 30 cyanotype UNM archive photos; call for times; UNM Art Museum, 277-4001.

Nov. 17 — National Opera Competition, 9 a.m.-4 p.m., Keller Hall, 277-4402.

Nov. 18-19 — Concert, ''Happy 70th Mr. Bernstein,'' NM Symphony Orchestra conducted by Neal Stulberg plays Beethoven, Bernstein, and Chavez; 8:15 p.m., Popejoy Hall, 842-8565.

Welcome

Albuquerque
- Pamela Bennett (22-2)
- Chiu Fan Chen Cheng (3411)
- John Hart (3426)
- Anna Himes (22-2)
- Horace Jaramillo (3426)
- Ruth Lippis (22-2)
- William Lucy (3316)
- Patricia Nicasio (21-1)
- Thomas Obenauf (2624)
- Janet Ratliff (22-2)
- Gustavo Rodriguez (2525)
- James Smith (7866)
- Rosemary Springer (22-2)
- Thomas Trodden (2173)
- Celia Violet (21-1)

Florida
- Eric Ryder (6314)

Illinois
- Tony Edwards (2858)

Iowa
- Merlin Decker (2858)

Louisiana
- John Vonderheide (7233)

Minnesota
- Douglas Ammerman (6322)

New Mexico
- Weng Chow (2531)
- William Mairson (3316)
- Dianne Roybal (22-2)
- Mona Sailer (22-2)
- Debra Salazar (22-2)
- Patricia Smith (9133)
- Cheryl Young (3426)

Oklahoma
- Robert Brown (9143)

Oregon
- Judy Geitgey (3144)

Texas
- Stephen Armistead (3545)
- Kevin Stuckly (7842)

Take Note

UNM Continuing Education is offering three one-day technical short courses this month on lasers, laser safety, and electrical safety. Course titles and dates: *Laser Safety for Technicians and Other Users,* Nov. 16; *What Every Engineer Should Know About Lasers,* Nov. 17; and *Practical Electrical Safety,* Nov. 18. Each is a separate course, and all three will be taught by D.C. Winburn, former laser safety officer at LANL. The fee is $255 per course; registration deadline is Nov. 11. For additional information, call 277-CLASS.

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As part of UNM's Centennial celebration, the College of Nursing is sponsoring a series of lectures for the general public. Tomorrow (Nov. 5), speaker Catherine Harris (RN) will present ''Memory and Mental Health,'' from 10 a.m. to 12 noon at the Continuing Education Center (1634 University Blvd. NE). Admission is free.

HELPING HANDS OF KARLA KERN (3741) AND DEBBIE BAILEY (3716) "speak" to hearing-impaired employees in Purchasing Org. 3700 during meetings, presentations, and workshops. Karla and Debbie are also available to use sign language when hearing-impaired employees take computer classes.